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Abstract

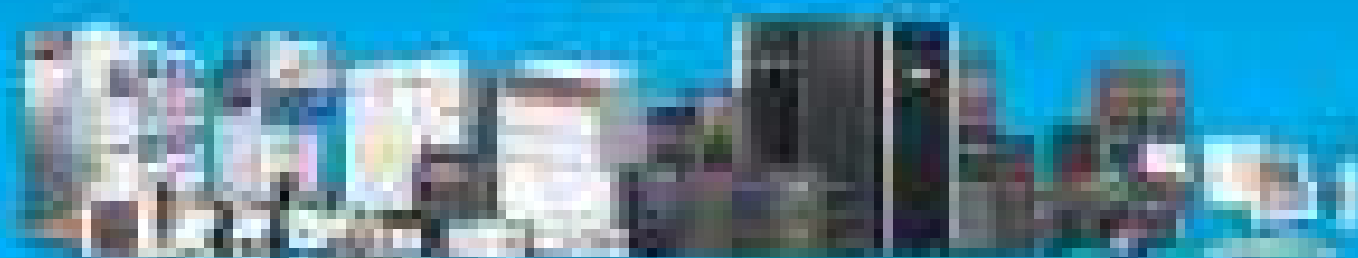
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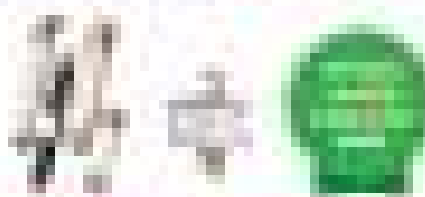
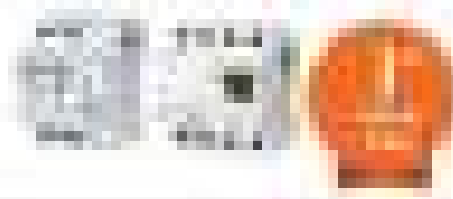
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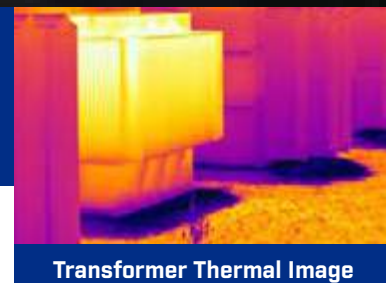
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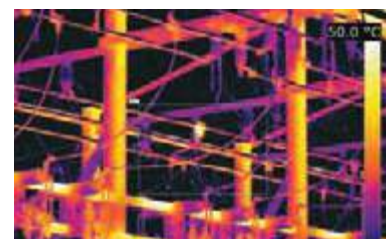
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Publisher's letter

The Indian power sector is undergoing a major transformation in respect of demand growth, energy mix and market operations for past couple of decades. The 19th Electric Power Survey published by the Central Electricity Authority (CEA) estimates that India's electricity demand will grow at the CAGR of 7.1 per cent between FY17 and FY22. On the contrary, the demand for electricity had witnessed a much slower growth in the recent past. According to an analysis of daily load despatch data by state-run Power System Operation Corp Ltd (POSOCO), the power supply fell to 101.92 billion units in December, down 1.1 per cent from 103.04 billion units last year. Earlier, according to the CEA data, the supply fell 4.2 per cent in November and 12.8 per cent in October last year. It is also to be noted that the peak demand grew by a miniscule 2.6 per cent between FY15 and FY18 against the CEA's estimate of 9.3 per cent growth. This is somehow impacting the performance and growth of electrical equipment industry.

However, there are few companies who have done extremely well to stand tall against the prevailing conditions. This time, to mark ELECTRICAL INDIA's glorious 60th year of publication, we feature around 60 electrical and power companies who have made remarkable, impactful contribution in their respective field of business over the years. Hope you will enjoy reading the industry outlook from the horse's mouth.

We hope to hear from you soon, and we welcome your feedback! Please write to me at miyer@charypublications.in.

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The power sector in India is witnessing exponential growth like never before. With a total installed power generating capacity of 367.28 GW as of 31 December 2019, India remains the world's third largest producer and third largest consumer of electricity.

Few factors that are driving the growth of electricity sector including rapid urbanisation and industrialisation, adequate last mile connectivity with 24x7 power supply, and cross border grid interconnection. The government is focussed on achieving 100 per cent household electrification along with the vision to be aligned to one of the sustainable development goals as ensured access to affordable, reliable, sustainable and modern energy for all. Even though this has been majorly accomplished through two flagship programs namely Saubhagya Scheme and Deendayal Upadhyaya Gram Jyoti Yojana, we are still to cover some distance to achieve 100 per cent household electrification for 24 hours. Last mile connectivity with regular power supply is expected to increase adoption of electricity by manifold in the country.

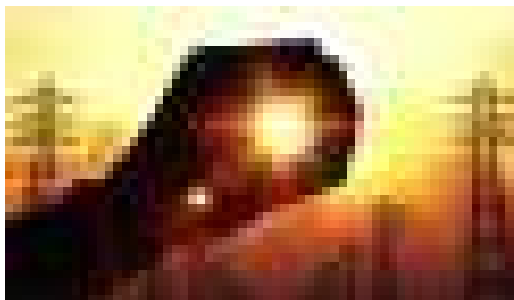
Further, the Indian government has demonstrated a strong commitment to encourage adoption of electric mobility and announced the ambitious plan of making India a primarily electric car driven nation by 2030 and launched a scheme for the Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles in India (FAME India).

The government aims to make India a 100 per cent electric-vehicle nation by 2030. It has proposed that two-wheelers below the engine capacity of 150cc sold in the country after March 31, 2025, and three-wheelers sold after March 31, 2023, should be EVs.

In 2019, this electric mobility movement has not only gained its foothold across metro cities, but also in the hinterlands. Thus, the rise of electric mobility will increase electricity consumption.

Though there is a sluggish demand in electricity, it is expected that stimulus packages to be announced by the government towards becoming a '\$5-trillion economy by 2024' will push the growth. ■

Subhajit Roy
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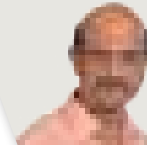
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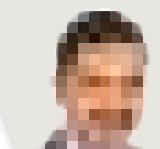
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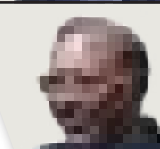
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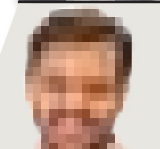
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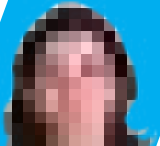
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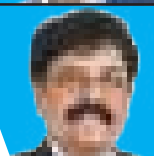
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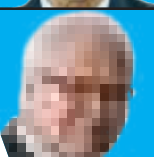
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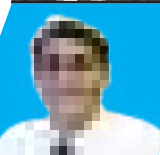
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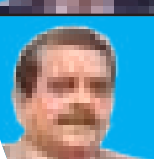
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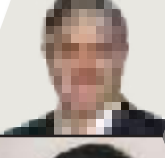
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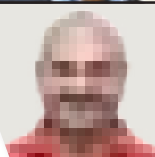
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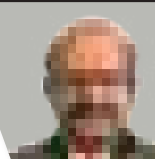
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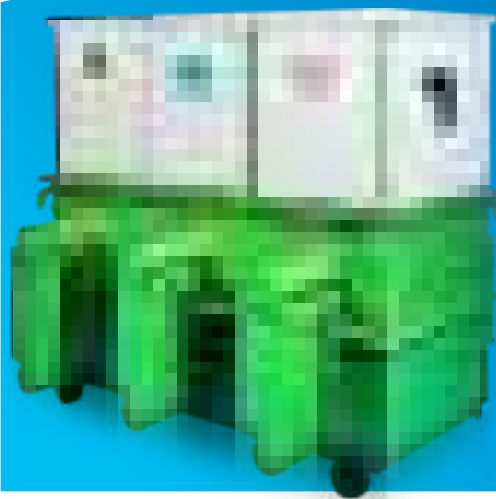
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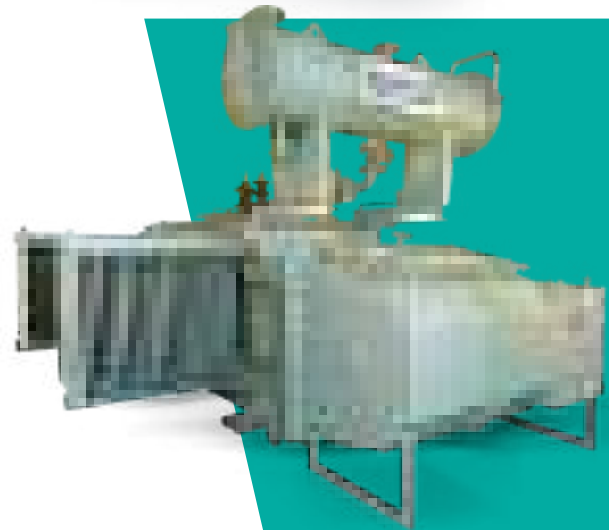
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Shell, Reliance and ONGC JV transfer Panna Mukta fields back to ONGC

After 25 years of operating the Panna Mukta oil and gas fields, the Panna Mukta and Tapti (PMT) Joint Venture partners will be handing over the Panna Mukta oil and gas fields back to the Government of India's nominee i.e. ONGC on 21st December 2019.

The PMT JV constituents include Oil & Natural Gas Corporation (ONGC), Reliance Industries Limited (RIL) and BG Exploration & Production India Ltd (BGEPI), each holding 40 per cent, 30 per cent and 30 per cent participating interest respectively. The Production Sharing Contracts (PSC) for the Panna Mukta and Tapti fields, which were executed by the PMT JV with the Government of India in 1994, will expire on December 21, 2019. The Tapti fields had ceased production earlier in 2016 and the Tapti process platform facilities were handed over to ONGC in 2016. Decommissioning and site restoration of residual Tapti facilities, including five unmanned platforms and in field pipelines, are currently being carried out by the PMT JV under India's first offshore decommissioning and site restoration project. The Tapti Decommissioning and other commercial activities would continue in BGEPI even after Panna Mukta handover.

The PMT fields were the first fields in India to be operated under a Joint Operatorship model. EI

Core melt localisation device installed at Unit 3 of Kudankulam NPP

The case of the core melt localisation device, or the so called 'molten core catcher' was installed in the design position under the reactor pit of Unit 3 of the Kudankulam Nuclear Power Plant in Tamil Nadu.

Vladimir Angelov, Director for Projects in India at ASE, Engineering Division of Russia's Rosatom State Atomic Energy Corporation, said, "Core melt localisation device is a unique development of Russian nuclear experts and one of the most important NPP safety systems. This is a special system for beyond-design-basis accidents management."

Core catcher for Kudankulam NPP is a device of new generation adapted for the relevant site conditions and safety requirements, it has improved seismic resistance, hydro-dynamic and shock strength, as well as equipped with flood protection and simplified installation and assembly technology.

The main feature of the Kudankulam NPP project is its unique combination of active and passive safety systems that provides maximum



resistance against external and internal influences. The passive safety systems are capable of functioning even in the event of a complete loss of power supply. They can provide full safety without the active systems and an operator. The core catcher, one of the elements of the passive safety systems was first installed at China's Tianwan Nuclear Power Plant of Russian design.

A core melt localisation device (CMLD), or a 'core catcher,' is installed at the bottom of the station's protective shell. It is designed to localise and cool the molten core material in case of a hypothetical accident that could lead to damage to the core. The "core catcher" allows the integrity of the protective shell to be preserved and thus excludes radioactive emission in the environment, even if the hypothetical accident is serious. EI

Cabinet approves MoU between India and Japan Coal Energy Centre

The Union Cabinet chaired by the Prime Minister Narendra Modi has given its approval for the signing of Memorandum of Understanding between Central Electricity Authority, India and Japan Coal Energy Centre, on Japan-India cooperation for efficiency and environmental improvement for sustainable, stable and low-carbon supply of electricity.

This MoU will provide an enabling

framework to address issues and barriers in expediting sustainable, stable and low carbon thermal power development by means of studies, training program and knowledge-sharing activities, outcomes of which are to be conducive to overall power development in India as well as to expedite relevant policy implementation by the Government of India. EI

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EESL's first EV public charging station becomes operational

Advancing the effort to build a robust EV charging infrastructure to enable adoption of Electric Vehicles, South Delhi Municipal Corporation (SDMC), a civic body under Municipal Corporation of Delhi, and Energy Efficiency Services Limited (EESL), inaugurated the first electric vehicle public charging station by EESL in the SDMC area. The EV charger has been installed in the SDMC parking area of Greater Kailash 1 N Block market in New Delhi.

EESL has installed the charging station, after the signing the agreement with SDMC. This is the first of the 75 charging stations to be installed across SDMC area as per the agreement.

Sunita Kangra, Mayor, SDMC and Bhupender Gupta, Chairman of the Standing Committee, SDMC inaugurated the charging station in the presence of Kamaljeet Sehrawat, Leader of the house, SDMC, Delhi; Shikha Rai, Counselor of the area; and Tulsi Joshi, Chairperson of the zone Gyanesh Bharti, Municipal Commissioner, SDMC and Saurabh Kumar, Managing Director, EESL amongst other dignitaries.

With installation of public charging stations, the range anxiety among residents is expected to reduce, which would help in increasing the adoption of EVs in the city. With increasing penetration of EVs, the local emission of pollutants is also expected to reduce, leading to cleaner air providing several health benefits to the public. E1

BHEL wins Indian Green Energy Award 2019

BHEL has won the Indian Green Energy Award 2019 in the category, Outstanding Renewable Energy Generation Projects (Solar) for its 7.5 MWp Solar PV Plant at Trichy. The award was received by Anil Kapoor, Director (HR), BHEL from Nitin Gadkari, Union Minister of Road Transport and Highways and MSME, in the presence of Dr Rajiv Kumar, Vice Chairman, NITI Aayog. The award has been instituted by the Indian Federation of Green Energy (IFGE), a partnership



of committed groups of visionaries and stakeholders from diverse industries and services, for creating a sustainable ecosystem and mitigating challenges and concerns. E1

R K Singh presents awards on 29th National Energy Conservation Day

Bureau of Energy Efficiency (BEE), under the guidance of Ministry of Power organised the 29th National Energy Conservation Awards. R K Singh, Minister of State for Power and New & Renewable Energy and Minister of State for Skill Development & Entrepreneurship was the chief guest on this occasion. This year, Energy Conservation is celebrated through a week long activity culminating on the National Energy Conservation Day i.e. 14th December at Vigyan Bhawan. The concluding event witnessed awards distribution to the winners from different industries and establishments, and the winners of National Painting Competition for students.

R K Singh highlighted the importance of energy conservation in the country's sustainable development approach. He emphasised the need for taking measures in order to reduce CO2 emission so as to minimise

adverse impact of climate change. The Power Minister lauded the outcome and efforts of BEE program and complimented the industry for making sincere efforts in implementing various schemes.

On the occasion, Star Labelling Programme for Solar Water Heater was launched. The event witnessed award presentations to 65 industries and institutions from various sectors for their excellent performance in achieving energy efficiency. Altogether 355 units and establishments across the country participated to save 10,566 million units which is over Rs 5,000 crore. Secretary, Ministry of Power, said, "We celebrate NEC Day every year to recognise and celebrate the efforts towards energy conservation. We congratulate every award winner for their performance. We have launched Star Labelling Programme for Solar Water Heater to promote use of efficient appliances." E1

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Coal India and OCPL join hands for supply of coal from Captive Block

In a first of its kind, Coal India Limited (CIL) has joined hands with a state government owned coal company, Odisha Coal and Power Limited (OCPL) for sale of coal produced from its captive mining block, Manoharpur in Jharsuguda. Primarily, coal produced from coal blocks allocated by the government is for captive consumption in the designated end use power plants. However, in a situation where the coal produced at the captive block exceeds the requirement of the designated end use power plant, there is a provision in the Coal Mines Development and Production Agreement for supply of such excess coal to CIL. CIL may supply the coal thus received to its own customers. In this regard, Ministry of Coal has guided CIL and other stakeholders in finalising the modalities for supply of excess coal produced from the mines of captive coal block allocatees. After CIL's Board had given its seal of approval for the modalities on 11th November, 2019 Mahanadi Coalfields Limited (MCL) the Odisha based subsidiary of CIL and OCPL have entered into a MoU for provisioning of excess coal from Manoharpur coal block to MCL.

Manoharpur and dip side of Manoharpur coal blocks with a production capacity of 8 million tonne per annum were allocated to Odisha Coal and Power Limited (OCPL) in August 2015 to supply coal to IB Thermal Power Plant (2X600 MW) owned by Odisha Power Generation Corporation (OPGC). E1

Thermax wins Rs 431 crore order for two Flue Gas Desulphurisation (FGD) systems

Thermax has concluded an order of Rs 431 crore from a public-private joint venture power company to set up two flue gas desulphurisation (FGD) systems at their thermal power plant in the Jharkhand.

The customer will install two units of FGD systems of 525 MW capacity each at their plant, to limit SOx emissions as per the revised regulations from the Ministry of Environment, Forest and Climate Change.

"The Environment business has had a good run in terms of order

intake, and I am happy that we have concluded the year on a high note with this inclusion. It also shows that the implementation of industrial pollution norms has gained momentum in the country, considering that we bagged two large FGD orders within a short span of six months," said M S Unnikrishnan, MD & CEO, Thermax.

The scope of supply includes design, engineering, manufacturing, civil work, construction and commissioning of the FGD systems. The commissioning of the project is scheduled over 30 months. E1

Govt's UJALA & SLNP complete successful five years

The Government of India's zero subsidy Unnat Jyoti by Affordable LEDs for All (UJALA) and LED Street Lighting National Programme (SLNP), marked its fifth anniversary recently.

SLNP is the world's largest streetlight replacement programme and UJALA is the world's largest domestic lighting project. Both have been spearheaded and implemented by Energy Efficiency Services Limited (EESL), a joint venture of PSUs under the Ministry of Power, Government of India.

Under the SLNP program, over 1.03 crore smart LED streetlights have been installed till date, enabling an estimated energy savings of 6.97 billion kWh per year with an avoided peak demand of 1,161 MW and an estimated greenhouse gas (GHG) emission reduction of 4.80 million CO₂ annually. LED streetlights have been installed in various states

across the country, helping generate approximately 13,000 jobs to support 'Make in India' initiative.

Through the UJALA initiative, over 36.13 crore LED bulbs have been distributed across India. This has resulted in estimated energy savings of 46.92 billion kWh per year, avoided peak demand of 9,394 MW, and an estimated GHG emission reduction of 38 million t CO₂ annually. With the concerted efforts towards building a robust ecosystem for LED in India, these programmes have bagged global awards like the prestigious South Asia Procurement Innovation Award (SAPIA) 2017 and for the innovative use of IT and the business results achieved in SLNP, it won 2019 CIO 100 award. The highly successful UJALA and SLNP have also bagged the Global Solid-State Lighting (SSL) award of excellence for the transformational contribution to the LED sector. E1



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Qatar Investment Authority to invest in Adani Power

Adani Transmission Limited (ATL), Adani Electricity Mumbai Limited (AEML) and a subsidiary of Qatar Investment Authority (QIA) have signed definitive agreements for the sale of a 25.1 per cent stake in AEML to QIA and for a shareholder subordinated debt investment by QIA in AEML. The total QIA investment in AEML will be approximately Rs 3,200 crore (the Transaction).


As part of the Transaction, ATL and QIA have agreed definitive plans to ensure that over 30 per cent of the electricity supplied by AEML is sourced from solar and wind power plants by the year 2023. In addition, ATL and QIA have agreed a number of other green initiatives to combat climate change and facilitate the transition to a sustainable, low carbon economy. The Transaction demonstrates the increasingly strong relations between India and Qatar and the commitment of both countries to further develop their close ties in the years ahead. Adani Group Chairman, Gautam Adani, commented, "We are delighted to embark on this partnership with the Qatar Investment Authority. Together, we will continue to work towards improving the reliability of supply and consumer satisfaction for over 3 million AEML consumers served in Mumbai. We believe this transaction is a significant step in the journey of the Adani Group, marking the start of a long-term partnership with QIA." 

1,000 Mahindra EVs power Lithium Urban Technologies fleet

Mahindra Electric and Lithium Urban Technologies announced that their partnership has crossed a significant milestone of 1,000 Mahindra electric vehicles in the Lithium fleet.

Having clocked 100 million ekms, with over 500 Mahindra EVs running more than 1 lakh ekms, this partnership is further set to transform employee transportation solution in India and spur electric mobility adoption in the country. In fact, more than 75 Mahindra EVs have even clocked over 2 lakh ekms, a significant achievement in an otherwise nascent EV industry.


The two leading companies in the electric mobility space have come together, to offer convenient, affordable and zero-emission mobility for employee transportation. With cumulative sales of almost

30,000 electric vehicles, Mahindra has emerged as the leader in 3&4 wheeler EVs in India. Lithium is India's largest EV fleet operator with majority of its fleet from Mahindra. This partnership between two leaders - Mahindra in EV sales and Lithium in shared corporate employee commute - has been bringing about a positive change in consumers' daily lives since 2015, by changing the way they commute to a greener and more sustainable one. Dr Pawan Goenka, Managing Director, Mahindra & Mahindra, said, "Our partnership is aimed at increasing the large-scale adoption of EVs and bringing a positive change in consumers' daily commute. Going forward, Mahindra's expanding portfolio of EVs in both 3W and 4W across multiple price points will transform the way India travels." 

ADB investing over \$1 bn to help Pacific's renewable energy transition

The Asian Development Bank (ADB) will invest over USD 1 billion worth of energy projects in the Pacific from 2019 to 2021 to increase renewable energy generation and improve access to affordable and sustainable electricity in the sub-region. ADB's Pacific Energy Update 2019 details how the bank is helping its Pacific developing member countries undertake a structural shift away from fossil fuel-based energy sources and towards renewables. The report provides a country-by-country snapshot of energy needs and opportunities,

and profiles how 29 ADB-supported projects are enabling governments, communities, and the private sector improve energy security, lower the cost of power, and reduce carbon emissions.

"Between 2007 and 2018, ADB-financed projects in the Pacific installed 62 megawatts (MW) of renewable energy generation capacity, constructed or refurbished 1,600 kilometers of power lines, and connected 10,000 households to electricity grids," said ADB Pacific Department Energy Division Director Olly Norojono. 



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Azure Power wins 2 GW ISTS solar project with SECI

Azure Power, one of the leading solar power producers in India, announced that it has received a letter of award (LOA) for a 2 GW interstate transmission (ISTS) solar power project with Solar Energy Corporation of India (SECI) to supply power for 25 years at a tariff of Rs 2.92 (~US 4.1 cents) per kWh. The solar power project can be developed anywhere in India and is expected to be commissioned in staggered annual phases of 500 MW each with the first commissioning expected by 2022 and full commissioning by 2025. The power purchase agreement (PPA) allows for the waiver of ISTS transmission charges and improved protections from curtailment. As part of the LOA, the company can elect in the next five days to double the capacity.

The project also comes with a 500 MW cell and module manufacturing capacity requirement. Ranjit Gupta, Chief Executive Officer, Azure Power said, "This opportunity is attractive to us for many reasons. The tariff is 8 per cent higher than the last discovered tariff for an ISTS project with SECI which is one of the best solar counterparties in India. Now with a 5 GW portfolio, our scale and the predictability of our growth over the next five years should allow us to capture significant efficiencies." E1

Signify achieves carbon neutral operations in India

Signify has achieved carbon neutrality in India, which is a part of its growth markets. The achievement is part of a total of five more markets – specifically ASEAN, Far East, India, Indonesia and Pacific – achieving carbon neutrality, boosting Signify's number of markets with carbon-neutral operations to 15 out of a total of 19.

By focusing on energy efficiency, renewable energy consumption and office space optimisation, the five markets have reduced their overall carbon emissions by 19 per cent in 2019. This includes a reduction of 33 per cent from non-industrial sites, 17 per cent from industrial sites, 32 per cent from business travel and 18 per cent from logistics. Signify offsets its remaining emissions through contributions to projects that have a positive environmental



and social impact, including small-to medium-sized wind farms in India and a hydro plant in Vietnam that operates without using a dam.

"I'm extremely proud of the relentless commitment of all our employees that resulted in this great milestone, showing that carbon neutrality is possible and that it is possible today," said Sumit Padmakar Joshi, Market Leader – India at Signify. "We hope that our achievements inspire other companies around us and we call upon them to join initiatives that will result in global carbon neutrality by 2050." E1

Fortum-Rusnano wind investment fund to start implementation of 50 MW project in Russia

The Fortum-Rusnano wind investment fund has taken the investment decision for a 50-megawatt (MW) wind power project in the Rostov region, Russia. It is the fifth project of the total 1,823 MW awarded to the fund in the Russian wind auction in 2017 and 2018.

The wind farm is expected to start production during the fourth quarter of 2020. In the Rostov region, the partnership is already constructing 300 MW of wind power. Power production and capacity supply is expected to start during the first half of 2020. The first joint project was

the 50 MW Ulyanovsk 2 wind farm which started supplying capacity to the market on 1 January 2019.

The Fortum-Rusnano wind investment fund is a 50/50 owned investment partnership to invest in wind power in Russia. The investment decisions related to the renewable capacities won by Fortum and the Fortum-Rusnano wind investment fund in 2017-2019 will be made on a case-by-case basis. Fortum's maximum equity commitment is RUB 15 billion.

In June 2018 and June 2019, Fortum won the right to build in total 116 MW of solar capacity. E1



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Vikram Solar commissions 3 solar plants for airports

Vikram Solar commissioned three new solar plants for Airport Authority of India (AAI) in Dibrugarh, Gaya, and Gondia, furthering the company's contribution to solarisation of airports in India.

The capacity of the solar plant at Dibrugarh, Assam airport is 725 kW and the project is designed to serve as a solar carport. The plant is expected to provide accommodation to 200- 220 vehicles. Vikram Solar's 345Wp Mono Crystalline modules were used to cover the 8000 square meter area of the carport. The plant is expected to generate approximately 10,40,000 kWh of green energy annually.

The Gondia, Maharashtra airport project is 220 kW in capacity and used Vikram Solar's 330 Wp Polycrystalline Eldora Grand Series modules. This ground-mounted solar plant will power the Birsai airport office building. The capacity of the solar plant at Gaya, Bihar airport is also 220 kW. The solar plant used Eldora Grand Series 325 Wp modules and expected to power four airport buildings at Gaya Airport. Dheeraj Anand, Head-Distributed Solar, Vikram Solar, said, "Vikram Solar is certain that the successful commissioning of these three new projects is a testimony of our performance, capabilities and dedication towards customer satisfaction." 

Sterlite Power acquires Green Energy Transmission Corridor Project


Sterlite Power announces the acquisition of its inter-state GEC transmission project, Lakadia-Vadodara Transmission Project Limited (LVTPL) from PFC Consulting. The company had won this project (WRSS 21 – Part B) through tariff-based competitive bidding process and would execute it under the Build, Own, Operate and Maintain (BOOM) model for 35 years in Gujarat.

The project is aligned to enable the country's renewable energy target of installing 175 GW Renewable Energy by 2022 and connects the wind energy zones of Bhuj in Gujarat to the load centres in Gujarat and Maharashtra. The project involves laying 350 kms of 765 kV double-circuit transmission line connecting 765/400 kV Lakadia substation to Vadodara substation in



Gujarat, in an aggressive timeframe of 18 months.

Pratik Agarwal, Managing Director, Sterlite Power said, "This is another resounding success for Sterlite Power. We are proud to be part of this energy-transition journey of the country."


With the acquisition of this project, the company has increased its domestic footprint in inter-state transmission projects to 22 states with a cumulative transmission line network of more than 9000 ckms and 16,000 MVA transformation capacity. This marks the 14th addition to domestic project portfolio. 

KEC International wins new orders of Rs 1,025 crore

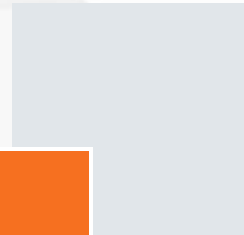
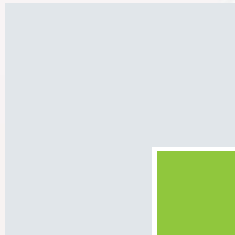
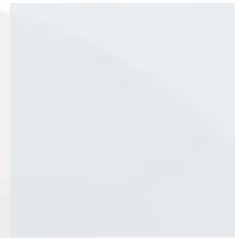
KEC International Ltd has secured new orders of Rs 1,025 crore across its various businesses:

- Transmission & Distribution: The business has secured orders of Rs 750 crore for T&D projects in India:
 - 765 kV GIS substation order from a Power Grid Corporation of India (PGCIL) entity under Tariff Based Competitive Bidding (TBCB) route in Western India
 - 400 kV transmission line and 400 kV GIS Substation orders from Tamil Nadu Transmission Corporation

Limited (TANTRANSCO) in Southern India

- 400 kV transmission line order from a private player in Eastern India
- Cables: The business has secured orders of Rs 150 crore for various types of cables or cabling projects. Vimal Kejriwal, MD & CEO, KEC International commented, "Our order book in India continues to grow, despite the general headwinds in the country. These orders along with the orders announced earlier during the year, reaffirms our confidence in achieving the targeted growth." 

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Shell retains leadership of global lubricants market

Shell remains the leading global supplier of finished lubricants for 13th consecutive years, according to Kline & Company's 17th Edition Global Lubricants Industry: Market Analysis and Assessment: 2019 report. Using 2018 as the base year, the report covers all leading lubricant consuming country markets, market segments, product types, and formulations.

"Shell's growth strategy for lubricants is working. Our balanced portfolio of market leading products and growing digital services are enabling us to build business across all market segments and demonstrate the resiliency of our business in an increasingly dynamic global lubricants market," said Huibert Vigeveno, Executive Vice President, Shell Global Commercial. "The Kline report shows that we are widening our lead over our main competitors and I am particularly pleased with the growing demand for our premium lubricants and our growth in the industrials segment. We have been focusing on what our customers need and adapting our offer accordingly, which is resulting in material earnings growth and contributing resilient free cash flow to the Shell Group."

According to the report, Shell grew its leading global market share in 2018 relative to the year prior, while other IOC competitors saw declines. ^①

Tata Motors signs MoU with Prakriti E-Mobility to deploy Tigor EVs in New Delhi

Accelerating the transition to sustainable transportation for the masses, Tata Motors announced a partnership with Prakriti E-Mobility Private Limited, to deploy 500 Tigor EVs in New Delhi. Prakriti



E-Mobility Private Limited, an EV based taxi service co-founded by Nimish Trivedi, Vikas Bansal and Rajeev Tiwari, will deploy the Tigor EVs on its app-based platform EVERA, which will serve in Delhi/NCR, reinforcing its commitment to service clients while enhancing sustainability. The first batch of over 160 Tigor EVs is expected to hit the road by January 2020.

Shailesh Chandra, President – Electric Mobility Business & Corporate Strategy, Tata Motors said, "Prakriti E-Mobility Solutions

is a valuable partner on our path of social responsibility and environmental sustainability. We are confident that Tigor EVs will be a stellar addition to their company's offerings.

The induction of Tigor EVs will not only help the company achieve their business goals but also accomplish their objective of offering eco-friendly mobility solutions."

Nimish Trivedi, Co-Founder & CEO, Prakriti E-Mobility Private Limited said, "We strongly believe in the inherent benefits of zero emission and lower operating costs of EVs will be the ultimate game-changer for commuting in the city. We plan to deploy 500 Tigor EVs in New Delhi and bring EV solutions closer to our customers." ^①

Finolex Cables launches industrial switchgears

Finolex Cables announce their entry in the MCCB product category to strengthen its presence in the domestic and industrial switchgear market. Manufactured with the latest technology, these will be available



in differential ratings, ranging from 63 to 800 Amps in various pole configurations. The switchgears have been introduced in five different frame sizes across the country. The MCCB launch will further strengthen the switchgear basket of

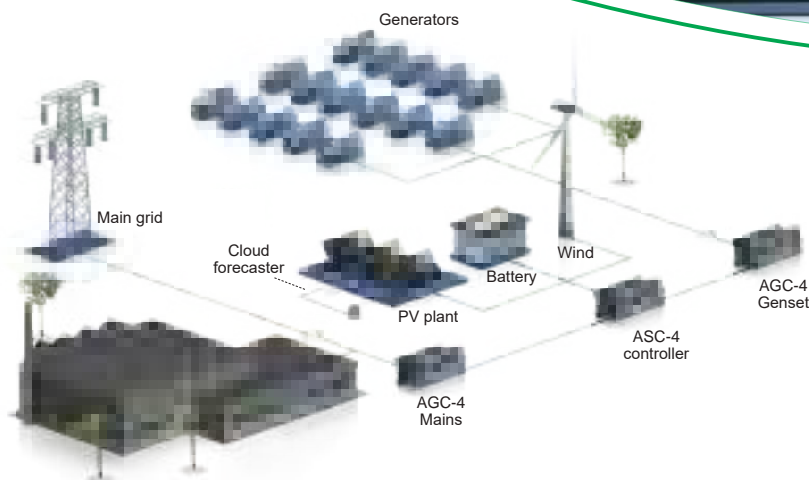
the company and will give Finolex cables access to the enormous and robust Industrial switchgear market to serve its retail and panel builder clients.

Deepak K Chhabria, Executive Chairman, Finolex Cables said,

"The introduction of MCCBs is our latest step in delivering quality products to the industry. With our comprehensive product portfolio and its diverse applications, we continue to meet the requirements of a wide range of customers." ^①

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ReNew Power announces JV with GS E&C

ReNew Power announced a joint venture partnership with South Korea based GS E&C for execution of its 300 MW solar power plant in Rajasthan. The project is part of the capacity auctioned by Solar Energy Corporation of India (SECI) under its tranche-IV auctions concluded earlier this year.

GS E&C is one of South Korea's largest construction and development firms and part of the GS Group, with an asset base of over USD 58 billion. This investment will mark the entry of GS E&C in the Indian renewable energy sector.

ReNew Power's Chairman and Managing Director Sumant Sinha said, "I expect the partnership to set new benchmarks in the Indian renewable energy space and look forward to executing more projects together."

ReNew Power will hold a majority 51 per cent equity under the partnership, while the balance will be held by GS E&C. "This remarkable project is the first step of our great journey putting the technical expertise and financial capability of both companies together. GS E&C and ReNew Power will continue to play an important role achieving the country's ambitious target for the transition to cleaner energy," said Huh Yun Hong, the President and Head of new business division of GS E&C in a statement. 

Siemens Gamesa wind turbine enters Denmark


Siemens Gamesa has entered into a contract with Torp Vind I/S for the delivery of three wind turbines of the new SG 5.0-132 model for Torp Vindmoellepark in the municipality of Struer. The three wind turbines will be the first in the world of their kind to be installed. Torp Vindmoellepark will have a total capacity of 15 MW and it will be operated without subsidies.

"We will exchange our three old Bonus wind turbines, each featuring 1 MW, from 1999. They have always worked well and with the high wind we have in this area we expect the new wind turbines to give us good production," says Carl Lyngs from Torp Vind I/S. "This wind farm is deeply rooted in the local community," he continues.

The installation of Torp Vindmoellepark will begin in late summer of 2020 and the production



from the repowering project will be supplied to the grid. Besides delivery and installation of the wind turbines, Siemens Gamesa has also sold a long-term service contract.

"We are happy that Torp Vind has renewed our long-standing partnership. We have recently introduced this type of wind turbine and the first order has come from Denmark. The order shows that our product helps to secure a positive business case for our customers without public subsidies," says Mikael Nielsen, Sales Director at Siemens Gamesa. 

growX ventures invests in Cell Propulsion as part of Huddle's EV Accelerator Program

growX ventures has invested in Cell Propulsion (CP), a forerunner in the deployment of electric LCV and electric bus solutions, as part of the EV accelerator program being conducted Huddle. Other investors that have invested in CP include Endiya Partners, Sangam Ventures, CIIE (IIM-A).

The EV accelerator program by Huddle is the first dedicated acceleration program for EV companies in India. CP will work closely on strategy with Huddle team and gain access to contextual business development and pilot opportunities while also getting to work with

other Huddle partner companies. Paras Kaushal, Founder & COO of CP said, "A major obstacle for the adoption of ECVs is the lack of local support ecosystem and the indigenous availability of core technologies. We are focused on solving these issues and this investment will enable us to quickly bring our solutions to the market." Ishaan Khosla, Co-Founder & Partner at Huddle, stated, "By targeting use-cases around commercial vehicles, Cell Propulsion is bringing value to the EV value chain. We will be working closely with the team to partner with the right set of organisations to drive this revolution in India." 

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Aggreko to provide 24 MW hybrid power solution to UAE

Aggreko, one of the leading suppliers of mobile and modular power, temperature control and energy services, announces that it has signed a five-year contract to deliver a 24 MW gas-battery hybrid power solution to United Steel Industries Fujairah steel mill, the largest of its type in the United Arab Emirates. The new Aggreko hybrid solution will deliver a 49 per cent saving on the cost of fuel to the customer, while also reducing the company's carbon emissions.

The steel mill is of international significance, supplying 1.1 million tonnes of steel components to the construction and manufacturing sectors in the UAE and beyond. This project milestone for Aggreko, marks the first time it will deliver a gas-battery hybrid solution to an off-grid industrial complex in the Middle East. Aggreko will deploy a range of specialist mobile and modular power equipment on the site, including 13 highly efficient gas generators, delivering 19 MW of primary power, a 5 MW-battery system, comprising five battery packs providing frequency regulation and backup power.

Aggreko's Microgrid and Storage Solutions (AMSS) team will install the battery system to remove the need for a spinning reserve and out balance sudden jumps in the mill's load. Traditionally, this is managed by diesel generators that run constantly at part load, consuming excessive amounts of fuel and increasing overall carbon emissions. E1

ABB completes divestment of two electrification JVs in Shanghai

ABB has completed the divestment of all its shares in two Shanghai-based electrification joint ventures, Shanghai ABB Breakers Co and Shanghai ABB Guangdong Electric Co Ltd to holding subsidiaries of Shanghai Guangdong Electric Group (SGEG), ABB's joint venture partner in the two companies. Financial details have not been disclosed.

Tarak Mehta, President of ABB's Electrification business, said, "The completion of this divestment reduces the complexity of the electrification business in China and improves our focus in this key market. It is a significant step forward in ABB's ongoing strategy of active portfolio management."

ABB acquired a 60 per cent



stake in the two joint ventures as part of the GE Industrial Solutions acquisition in 2018. With the sale now complete, SGEG now owns the two Shanghai companies. ABB and SGEG will continue to operate as long-term partners via a multi-year mutual supply agreement.

After decades of development, ABB has a full range of business activities in China. The company operates 44 local companies with nearly 20,000 employees located in more than 130 cities. China is ABB's second-largest market worldwide with more than 90 percent of sales from locally made products, solutions and services. ABB has invested more than US\$2.4 billion in China since 1992. E1

Sembcorp signs agreement to increase stake in Sembcorp Energy India to 100%

Sembcorp Industries (Sembcorp) announces that its wholly-owned subsidiary Sembcorp Utilities has signed an agreement with its local partner, Gayatri Energy Ventures Pte Ltd (GEVPL), a wholly owned subsidiary of Gayatri Projects Limited (GPL), to acquire the remaining 5.95 per cent stake in Sembcorp Energy India Limited (SEIL).

Neil McGregor, Group President & CEO of Sembcorp Industries, said, "Since Sembcorp's entry into the fast-growing Indian energy market in 2010, Gayatri has been a valuable partner in our journey to become



an established energy player with a strong track record in delivering commitments. This acquisition will give Sembcorp full flexibility to evaluate and pursue an exciting range of growth opportunities in the renewables segment, while at the same time seeking the right equity window to list our India business or to pursue other capital recycling options." E1

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ABB's Power Grids in India appoints N Venu as Managing Director



Venu Nuguri

The Board of Directors of ABB Power Products and Systems India Limited (APPSIL) have appointed Venu Nuguri as Managing

Director, APPSIL. ABB Power Products and Systems India Limited is the new standalone legal entity of ABB's Power Grids business in India. Venu brings over three decades of experience in the power sector in India and around the world where he has held several leadership roles including Head of ABB's Power Grids Business in South Asia, Middle East and Africa region.

"I am honoured to have this opportunity at such a pivotal time for power in India," said Venu Nuguri. "At APPSIL, we will continue to serve our customers by pioneering power technologies that enhance productivity and contribute to India's sustainable energy future."

ABB Power Grids business is a global leader in power technologies and aspires to be the partner of choice for enabling a stronger, smarter and greener grid. E1

Murali Madhavan P takes over as Executive Director of BPCL



Murali Madhavan P

Murali Madhavan P takes over as Executive Director and unit head of Bharat Petroleum Corporation Limited Kochi Refinery, that is one of the largest public sector refineries in India.

Prior to this, Murali was Executive Director (Refinery Operations), heading the Refinery Operations of Kochi Refinery. A chemical engineer from the Government College of Engineering, Thrissur and a Management Graduate from SP Jain Institute of Management Studies, Mumbai, Murali began his career in the erstwhile

Cochin Refineries Limited in 1985.

He has worked in various departments of Kochi Refinery including Projects, Operations, Process and Marketing. He led the technical team that conceptualised the Integrated Refinery Expansion Project (IREP) and also headed the team that successfully and safely commissioned the IREP units.

His immediate challenges will be the successful commissioning of the Process Units under the Propylene Derivative Petrochemical Project (PDPP) which is the first phase of the Petro Chemical initiatives of BPCL in Kochi and drive the Phase – II, Polyol Petrochemical Project which involves an investment of Rs 11,130 crore. He hails from Ottapalam in Palakkad District. E1

Orient Electric appoints Salil Kapoor to lead its Home Appliances business



Salil Kapoor

Orient Electric Limited, part of USD 2.4 billion diversified CK Birla Group, has appointed Salil Kapoor as Business Head, Home Appliances business. Salil will be based at the company's head office located in New Delhi.

An industry veteran with more than two and half decades in consumer durables and media distribution, Salil has held leadership positions at leading brands like LG Electronics, Samsung, Microsoft, Dish TV and Voltas. His previous assignment was with Voltas Limited where he was working as COO for the UPBG division

and was leading air conditioners and other appliances business. Rakesh Khanna, MD & CEO, Orient Electric said, "It gives me immense pleasure to welcome Salil to the Orient Electric family to lead our Home Appliances business. He brings with him extensive experience and deep understanding of consumer durables industry which will help us to propel growth in our Home Appliances business."

At Orient Electric, Salil's focus will be on strengthening the product portfolio, increasing marketing effectiveness, improving service levels and ramping up the distribution network in the country in the next one year. Salil will also be responsible for the expansion of other partner brands in small appliances which currently include De'Longhi, Braun and Kenwood in India. E1

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Sterlite Power wins S&P Global Platts Global Energy Awards 2019

Sterlite Power has been awarded Construction Project of the Year at the prestigious S&P Global Platts Global Energy Awards 2019 for its Northern Region Strengthening Scheme (NRSS-29) project in Jammu & Kashmir (J&K). The program bestowed 23 awards upon companies and individuals before an audience of over 500 energy and finance executives at an award ceremony held on 12th December in New York.

Finalists hailed from a record of 37 countries. Sterlite Power was selected as finalists in 3 award categories - Rising Star Company, Financial Investment of the Year and the Construction Project of the Year.

"We congratulate NRSS-29 project for its win of Construction Project of the Year," said Martin Fraenkel, President of S&P Global Platts. "The independent panel of judges was impressed with Sterlite Power for its stand-out performance in this awards category and for its commitment to the energy industry's advancement."

The NRSS-29 project in Jammu & Kashmir is one of the largest and toughest private sector transmission projects commissioned in the country till date which plays an important role in bringing reliable power to over 12.5 million people in the region. This 414 Km long transmission



corridor of national importance ensures reliable power access and augments Jammu & Kashmir's power transmission capacity by at least 33 per cent and was constructed by overcoming extreme challenges of terrain and weather. Sterlite Power delivered this critical project ahead of schedule with innovative

use of technology, synergistic partnerships and deeper engagement with local communities.

Pratik Agarwal, Managing Director, Sterlite Power stated, "We are honoured to be recognised as a winner at the prestigious S&P Global Platts Global Energy Awards for our NRSS-29 power transmission project, which solves the toughest challenges of energy delivery and lights up 12.5 million lives. It is commendable to see the determination of our employees, partners and local communities who worked together to overcome the toughest conditions and build this transmission corridor ahead of schedule. We dedicate this award to their spirit and contributions."

Established in 1999 and often described as "the Oscars of the energy industry," the S&P Global Platts Global Energy Awards highlights corporate and individual innovation, leadership, superior performance and project management excellence. E1

Vikram Solar wins Best Employer Brand Award for Kolkata

Vikram Solar was conferred with prestigious Best Employer Brand Award for Kolkata for the year 2019. The award ceremony was an effort by World HRD Congress to identify the companies with growing capacities to generate employment and their capability to offer an engaging environment to work at. The award competition involved critical scrutiny of

various areas such as employment generation potential, growth trajectory, previous and new strategies for skill development, employee engagement and recognition



activities, previous recognitions in employment generation etc.

Gyanesh Chaudhary, MD and CEO of Vikram Solar, said, "We are very proud to have won this coveted award two years in a row. It clearly shows how focused we are in community development through employment generation and development of the perfect workplace that challenges, engages, and allows employees

to grow. I am grateful for this recognition as it would serve as motivation for us to move forward and surpass the milestones set." E1

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AI in energy management market to generate revenue worth \$12,200.9 mn by 2024

The integration of IoT in EMSs is observed as a major trend in the market. In EMS, IoT plays a vital role in delivering software automation, remote controls, and data insight services.



The global AI in energy management market was valued at USD 4,439.1 million in 2018, which is projected to reach USD 12,209 million by 2024, growing at a CAGR of 19.8 per cent during the forecast period (2019–2024). On the basis of end user, the utility category held the largest market share in 2018. This is attributed to the fact that companies, such as Duke Energy Corporation and Dominion Energy Inc, have been actively deploying AI solutions for managing supply–demand balance and optimising business infrastructure.

Integration of IoT in energy management systems

The integration of IoT in EMSs is observed as a major trend in the market. In EMS, IoT plays a vital role in delivering software automation, remote controls, proactive monitoring, and data insight services. It helps to display the energy consumption value with the help of smart meters and sensors at the machine and production line levels. IoT provides an integrated suite of software and services that helps in reducing the energy costs.

Leveraging AI to Improve Grid Stability

A grid system is an interconnected network that stores and maintains the flow of energy. Electric grids vary in size and technical specifications, such as grids for single building, national grids for an entire country, and transnational grids for continents. Grids store energy from multiple sources, such as solar power plants, wind power stations, and electricity generation plants. Thus, operating these

systems is a complex process. By leveraging AI for analysing massive data sets, grid systems become far more stable and energy efficient in managing more than one energy source simultaneously.

Use of AI-enabled Robots Offering Growth Opportunity

AI-enabled robots have the potential to revolutionise the cost structure and operations of energy companies, along with the reduction in risks and health improvement of the energy personnel. AI-enabled robots are capable of inspecting, certifying, maintaining, and repairing energy installation units. Also, robots can be used in cleaning up and decommissioning of nuclear waste.

The cloud category held larger share in the AI in energy management market in 2018. This is owing to the fact that around 70 per cent of the total US companies invest in cloud-based solutions. The renewable management category in the AI in energy management market is projected to observe the fastest growth during the forecast period. This can be attributed to the increasing focus on energy generation from renewables, such as solar, wind, thermal, geothermal, and biomass.

The energy output forecasting category held the largest share in 2018 in the AI in energy management market. This is attributed to the fact that AI solutions assist utilities in providing effective energy management services to consumers by utilising data, machine learning techniques, and statistical algorithms. The machine learning category is projected to witness the fastest growth in the AI in energy management market throughout the forecast period. This can be attributed to the fact that machine learning technology gaining traction as it uses different algorithms and statistical models to provide systems the ability to automatically perform tasks with more accuracy.

The utility category is projected to account for the fastest growth across the forecast period. The growth can be attributed to the fact that utilities require advanced systems, such as smart meters, that help improve the integration of renewable energy by providing real-time information about transmission line capacity and usage statistics. EI

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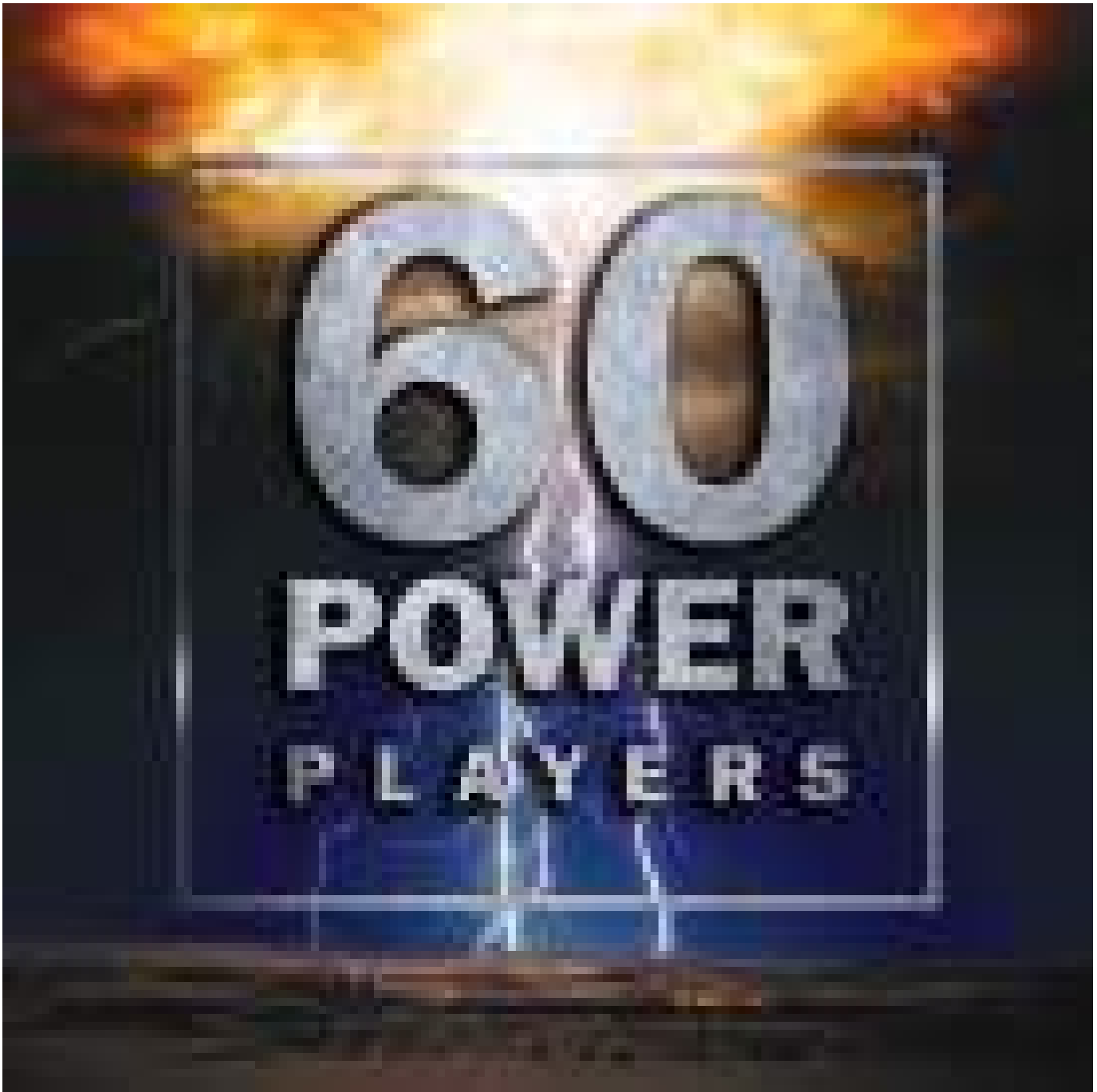
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Oil Quantity : 165 litres

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Featuring electrical and power companies who have made remarkable, impactful contribution in their respective fields of business over the years.

- Subhajit Roy,
Group Editor

The power sector in India has witnessed substantial growth during the past few decades. According to the 4th Annual World Energy Investment (WEI) report, published in May 2019 by the International Energy Agency (IEA), investments in the energy sector in India have seen the highest growth in the world. The industry attracted US\$ 14.32 billion in Foreign Direct Investment (FDI) between April 2000 and March 2019. Total installed capacity of power stations in India stood at 364.96 GW as of 30th November 2019.

With the outlay of Rs. 2.6 lakh crore announced by the government for the five-year period ending FY2022, the transmission and distribution (T&D) sector continued to remain in focus. There was also a sharper focus on high-voltage transmission lines along with the government's aim to provide 24×7 power, which is opening up opportunities in the sector. DISCOMs which have joined the UDAY scheme are expected to improve their T&D infrastructure through renewed investments. The government's target of generating 175 GW of renewable energy by 2022 and initiatives such as "Faster Adoption and Manufacturing of Electric and Hybrid Vehicles in India", popularly known as FAME India, will augment the demand for electrical equipment.

As Electrical India celebrates its glorious 60th year of publication, we list 60 electrical and power companies who have made remarkable, impactful contribution in their respective fields of over the years. Here are some of the key highlights:

Highlights

HPL Electric & Power Limited is one of India's leading electric equipment manufacturers. From energy meters to lighting to switchgears to wires and cables to LED products, HPL has successfully catered to consumers' needs. Now the company has been working extensively to grow in the electrical equipment industry and furthermore, aspires to expand its wings in the solar and lighting

industry, says Gautam Seth, Joint Managing Director, HPL Electric & Power Ltd.

Wires and cables manufacturing major Polycab offers extensive range of wires and cables as well as advanced range of FMEG products such as electric fans, LED lighting and luminaires, switches and switchgear, solar products and conduits. During the first-half of FY20, Polycab has done well to stand tall against the prevailing economic conditions to achieve a 20 per cent y-o-y revenue growth and 28 per cent y-o-y growth in EBITDA.

In future, the company plans to enhance its geographical penetration. "Our strategy is to expand our market share by targeting key growth sectors such as mining, oil and gas, shipping, power, renewables, infrastructure, construction, automotive and telecommunication," says Shashi Amin, President and SBU Head - Cables, Polycab India Ltd.

Established in 1962, Universal Cables Limited (UCL) is one of the leaders in the Indian cable industry with a comprehensive product range. In the first half of the current financial year, UCL's turnover has increased over 25 per cent in comparison to the first half of the preceding year. Now the company is stepping into the 400kV EHV market segment. "Our ambition is to increase the market volume on the turnkey business in EHV underground power cable segment," says Amitava Bose, Chief Operating Officer, Universal Cables Ltd.

Dynamic Cables is a renowned

manufacturer and supplier of cables and conductors. The company has a strong presence not only in India but also across another 32 countries globally. Now the company targets to penetrate the maximum western countries in next five years, informs A.K. Sharma, AVP Marketing, Dynamic Cables Ltd.

Schneider Electric expects to complete the acquisition of L&T's electrical and automation business soon. With this, India will become one of the key innovations and manufacturing hubs for Schneider Electric, globally, anticipates Anil Chaudhry, Zone President and Managing Director of Schneider Electric India. He says, "The combined business will create significant synergies and efficiencies by leveraging the complementary businesses of Schneider and L&T's E&A business."

Indian transformer market is saturated for EHV like 765 kV range of transformers. According to Pradeep Kumar Verma, MD and CEO, Accord Transformer & Switchgear (ATS), many companies who had their infrastructure ready for 765 kV, are lying almost idle. He also estimates that the business volume is quite less even for 400 kV transformers. However, when it comes to 220 kV and 132 kV transformers, ATS envisages significant potential. Now the company would like to focus on international business and they target to have more than 60 per cent of their business share from

the international domain.

The need for a continuous power and electricity pan India has led to improvements in the infrastructure segment by the government's funding in various programmes. Seeing the current momentum, Uttam (Bharat) Electricals is exploring to diversify in other electrical products like CT/PT, solar invertors, panels etc. The company has also developed its first prototype of 315 KVA 11/0.433 kV EEL-2 transformers in amorphous core construction, informs Atul Agrawal, Managing Director, Uttam (Bharat) Electricals Pvt. Ltd.

Jaipur-based Elektrolites Power Pvt Ltd (EPPL) is a manufacturer of power transmission and distribution products. In future, Elektrolites plans to focus on developing new smart grid products for Railways, the defence and renewable market. "We are planning for collaboration with European companies to upgrade our technology and products which will enable the company to double the turnover by increasing the export to Southeast Asia and the African market," informs EPPL CMD Anil Saboo.

UPS which is often referred as the "heart" of the electrical network has widespread application ranging from continuous process operations to healthcare to Information Technology or any other mission critical installations. Eaton is one of the leading providers of backup power UPS. Eaton Power Quality is 'future ready' and plans to introduce new products and

solutions in the Indian market which have already proven its performance globally.

The \$8.3 billion Japanese energy and power electronics major Fuji Electric has acquired an Indian UPS firm Consul Neowatt a few months ago. Recently the company has announced its India 2.0 plan to expand business operations in the country. According to Sriram Ramakrishnan, Managing Director, Fuji Electric India, the plan envisages the revenues from the Indian market to reach Rs 1,500 crore by the year 2023-24.

Meter industry is gearing up towards fulfilling the Power Ministry's vision of replacing all the existing 240 million meters by smart prepaid meters in next three years. In the last one year, Landis+Gyr has put more focus on delivering end-to-end Advanced Metering Infrastructure (AMI) solutions to the utilities which will enable the latter to add smarter pre-paid meters in their network as per the Power Ministry guidelines.

Another significant player in the metering industry, Secure Meters, is an Indian multinational and a privately-owned business with operations in India, UK, Australia, Sweden, and the Middle East. According to Sunil Singhvi, CEO, Secure Meters, the company's business has grown in different segments during the last one year with key emphasis on value-added services offerings. Now they are focusing to align their products with the vision of 24x7 quality power for all and also with the need of distribution

utilities and end consumer. "The changing landscape of utilities would see a transformation with more and more focus on helping the consumer get better facilities, good quality and reliable products," Singhvi added.

With the advent of advanced technologies like Artificial Intelligence (AI) and Machine Learning (ML), the test and measurement (T&M) solutions are becoming smart. SCOPE T&M has developed IoT-based solutions for distribution companies to give quick visibility of their feeders and transformers, improving their quality of supply and reducing losses. This will not only help utilities but also other industries to maintain the availability of feeders, quality of power, reduces losses and save money, claims Sanjay Kulkarni, Chairman, SCOPE T&M.

Electronic test and measuring instrument expert KUSAM-MECO offers the wide range of "UL" listed digital clamp meters which have surge protection from 6 kV to 12 kV. In 2019, the company has increased revenues by over 20 per cent from the last year. In future, KUSAM-MECO plans to add more instruments in its range to meet special and customised demands of the customers, such as steel, cement, pharma and electric utilities companies. 

(Note: The power list published in this issue is not exhaustive and only includes selective companies that have responded to our questionnaire. Also, the companies are featured in alphabetic order, not on the basis of any ranking.)

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ATS AIMS TO BE 'MOST TRUSTED BRAND'

International Energy Agency (IEA) report predicts that the power demand in India will triple between 2018 and 2040. What potential do you envisage for your company as a manufacturer of transformer?

We had already matured ourselves in distribution segment. Now envisaging the growth in transmission sector as well, we are planning to set up our new state-of-the-art transformer facility at electrical capital of India at Vadodara, Gujarat. This plant will be equipped with all modern and latest technology with global level of inhouse testing facility. We will not only establish our new facility but we will also have highly skilled manpower to run the business professionally.

Our main focus shall be on international business and accordingly we are designing our executable team. Our target is to have more than 60 per cent of our business share from international domain.

We are also in process of expanding our existing plant to meet our customers' requirements. As major chunk of the business is with private customers and

Our main focus shall be on international business and accordingly we are designing our executable team. Our target is to have more than 60 per cent of our business share from international domain.

Pradeep Kumar Verma,
MD and CEO,
Accord Transformer &
Switchgear Pvt. Ltd.



MNCs, seeing our quality product and after-sales services from our dedicated team, we are getting repeated orders from our existing customers.

Expansion will not only happen towards CAPEX, but also, we will venture into new product lines like, renewable products (solar and wind transformers), furnace transformers, traction transformers, special transformers, SMS and many more.

Towards customer front, we will try to increase our basket with inclusion of prominent customers like PGCIL, NTPC, MES, metros, state utilities, steel sector, Indian Railways, and all major private clients like Reliance, Tata, and Adani.

What is your take on transformers segment?

Over a time span of 5 years, ATS (Accord Transformer & Switchgear Pvt. Ltd.) has made its remarkable presence in the T&D domain significantly. We are ISO: 9001:2015, BIS certified and MSME certified and having type test of all major ratings of transformers to the utmost satisfaction of our valued customers from all segments across



Technology of Measurement... **defined**

Our Metering Product Range

- Digital Panel Meters
- Multi Function Meters
- Load Managers & Demand Controllers
- Single / Three Phase, Whole current counter / LCD type meters
- LT Trivector Meters
- Prepaid Metering Solution
- LPR (Zigbee) Metering Solution
- Data Acquisition & Billing Solutions



HPL serves wide range of metering solution with the commitment to modern technology. Offers range of meters with its Digital Panel Meters, Digital Energy meters, Multifunction Meters, Load Managers, Demand Controllers, Power Quality Meters with Metering solutions based on the wired and wireless technology such as Zigbee, GSM/GPRS etc.

Other Product Range



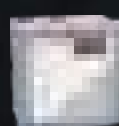
ebrit Range of
Digital Panel Meter



Dual Source Multi-function
Load Manager



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Trivector Meter



ISO-27001:2005



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Power Talk

Continued from page 46

the globe. Presently our business profile covers:

- Transformer - oil type upto 10 MVA, 33 kV
- PSS/USS - 100 kVA to 2,500 kVA with and without OLTC up to 33 kV
- LT panels(entirerange)
- MEP/EPC projects
- Substations and electrifications up to 33 kV.

What is your company's future roadmap?

To be the most trusted brand nationally and globally.

How are you gearing up for the future opportunities and challenges?

Indian transformer market is saturated for EHV like 765 kV range of transformers. For 400 kV transformers business volume is quite less, but when it comes to 220 kV and 132 kV, there we envisage significant potential. Many companies who had their infrastructure ready for 765 kV, are lying almost idle. This is creating debts on such companies. Recently, many globally acknowledged MNCs are closing their business in India

and many Indian transformer manufacturers are also closed down. Some are under extreme cash-flow crunch. This has not only disturbed their business but also badly affecting small manufacturers as competition for 220 kV and 132 kV has grown up significantly. The government has to intervene and design a guaranteed payment structure with all international business territories, so that payment shall be secured.

Key challenges are:

- Effective government policies.
- Tuff empanelment system in utilities
- Buying and pre-qualification criteria varies from utility to utility
- Same business objective understanding with supplier base
- Skilled manpower
- Professional approach
- Acceptability level of Indian make at international domain
- Timely payment and security from international clients.

How your business has scaled in last one year?

India's first company that

ATS at ELECRAMA 2020

ATS is presenting products from all segments like, solar, wind, PSS/SMS, export transformer, LT panels etc.

- Marketing Partner – Wellman Power Pvt. Ltd. and Global Energy Corporation
- Service Partner – ABL Electricals
- Overseas Partner – Global Transformer & Manufacturing Co. LLC.
- Product Partner – Voltamp Transformer Ltd. & C&S Electric Ltd. (for PSS Transformer).

works on zero defect policy, our team have rich experience in respective segments, our capacity is doubled during last year, our main focus is to manufacture only good quality products under the ATS brand.

What your company has done differently from competitors?

We work on zero defect, least delivery time, minimum overhead, all power and controlling products in one basket.

Ⓢ

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- SF6 Density & Leakage Monitoring
- Battery Voltage

BECKHOFF: MEETING END-USER EXPECTATIONS

How Beckhoff's business has scaled in last one year

Slowing economic growth has also lowered the industrial demand significantly and affected all projects in core industrial sectors. Our business too is not bucking trend and not growing significantly. However, this was expected.

Instead, Beckhoff has been investing in research and development of new technology products for automation of machines, processes and electrical systems, measurement automation, vision- and speech-based integrated automation, IoT, Cloud Engineering, analytics and motion automation. TwinCAT Cloud Engineering provides a foundation for highly efficient IoT automation strategies.

Smart engineering directly in the Cloud with TwinCAT Cloud Engineering, users can instantiate and use existing TwinCAT engineering and runtime products directly in the cloud. Quick and easy to access from the Beckhoff website with a web browser and requiring no additional software, the new solution enables registered users to work with the TwinCAT development environment even from previously unsupported devices such as tablet PCs.

Similarly, Engineering 4.0: One-Click Dashboard eliminates an entire work step. TwinCAT Analytics

Beckhoff focuses on technology promotion and ensures end-customer benefits form the new automation technology for profitability of his business.

Ajey Phatak,

Head Marketing, Beckhoff Automation Pvt Ltd



supports this kind of Engineering 4.0 approach with the One-Click Dashboard, a new feature that reduces the once time-consuming process of dashboard creation to nothing more than a simple mouse click. With One-Click Dashboard, all it takes for users to generate an entire HTML5-based analytics dashboard based on the PLC code and to load it into a selected Analytics Runtime container is a simple mouse click. When the process completes, users receive a network address that they can then use to access the dashboard in a web browser. This ability to generate dashboards without the need to write a single line of code or

design graphics is a huge time-saver within the engineering process.

Revolutionary technologies are introduced for extreme fast data acquisition and 1GBPS Ethernet communication using industrial computers. Ultra-precise, fast and robust measurement technology modules will become an even more integrated part of PC-based control solutions. The new EtherCAT measurement technology modules can be directly integrated into the modular EtherCAT communication system.

Continued on page 52



www.erda.org

TESTING OF TRANSMISSION & DISTRIBUTION COMPONENTS

Transmission & Distribution (T&D) lines play vital role in the power sector. ERDA is the premier T&D Evaluation Laboratory with State-of-the-art Electrical and Mechanical test Instrumentation / Equipment for Design, Type & Acceptance certification of various T&D Products.

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- Vertical Bending Machine

Products tested at ERDA

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3-phase power measurement terminal with extended functionality. EL3443 | 3-phase power measurement terminal with extended functionality. The RMS values of voltage U and current I as well as the active power P, apparent power S, reactive power Q, frequency f, phase shift angle $\cos \phi$ and harmonic are available. The EL3443 offers extended functionality for mains analysis and energy management.

Future Roadmap

High-end energy measurement and automation for factories, electrical installations. Highly scalable EtherCAT I/O product range for energy management, energy management in machine operation and in the energy industries create a wide range of demands, starting with basic monitoring of the supply network and process control to high-end power monitoring. In response to these demands, Beckhoff is making an even broader range of EtherCAT Terminals available, which is exceptionally scalable in terms of price and performance.

Together with the proven EL37x3 power monitoring oversampling terminals (and the associated TwinCAT Power Monitoring software library), the EtherCAT Terminals for energy management provide a comprehensive product portfolio that can be optimally adapted to the varied tasks found in a wide range of applications.

The generation of EL34x3 sets different priorities. High-feature version EL3443: three-phase power

measurement terminal with comprehensive evaluations; economy version EL3423: basic energy measurement, also in DC networks for IoT and energy management projects, for example; Mains monitoring version EL3483 | threshold value monitoring for voltage, frequency and phase with output of warning and status bits.


Via the distributed power management with the new EL3446 Terminal, real performance values can be determined even if voltage and current measurements are carried out at different locations.

The EL3773 and EL3783 power monitoring terminals are designed to detect the state of a 3-phase AC or DC voltage system.

The new SCT current transformers make it possible to implement reliable power sensor technology in the field which is directly integrated into the PC-based control system.

Compact industrial PCs with high computing power and IT-OT Software as the future. Beckhoff is working towards the future with a roadmap.

Key Differentiators

Beckhoff focuses on technology promotion and ensures end-customer benefits from the new automation technology for profitability of his business. Beckhoff also focuses on long-term availability of products to its buyer and user customers. The technical support, openness, compliances to all international standards are few USPs of Beckhoff. 

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BPE: EXPANDING THE REACH

BPE in 2019

Since the last year, we have been scaling our business in all aspects ranging from product range, manpower, technology to revenue. We have introduced a new product range of modular UPS which are more sustainable, reliable, safer, efficient and very high in quality. We have been constantly improving the performance of all our equipment in terms of saving energy through various innovative methods like using fuel cells, hydrogen storage which last longer, high-resolution sinewave output. The energy wastage has been minimised a lot using data centre carbon cuts, preventing failures and optimising maintenance. We have been upgrading our designs of the technology and focusing more on increasing efficiency and modularity. As we are on an expansion mode, domestically and internationally, we have generated many employment opportunities in these regions of expansion. In the last one-year, we have expanded to Malaysia, Dubai, Philippines and Taiwan in international markets and Tier-2 and -3 cities in India.

We have seen a 25 per cent year-on-year growth in revenue which gives us more confidence to expand and innovate.

Future Roadmap

In the coming years, we would want to concentrate and put in our energies in innovation, R&D, expansion and technology. We wish to align ourselves to (Industry) 4.0 technology. We have seen that India

We have recently expanded our offering to Philippines market and planning to expand BPE products' reach to all over the world by the end of 2025.

Amitansu Satpathy,
Managing Director,
Best Power Equipments (BPE)



did not grab opportunities in Industry 3.0 because of the availability of labour, access to limited software with paper-based processes and total dependence on humans. But today, the situation is different as it has been observed that Reserve Bank of India reported that 1,734 manufacturing companies posted Rs 47,100 crore in Q3 FY2019, up 29.4 per cent.

Our future objective is to be the leading manufacturer in the industry, with innovation and adapting the market change like inclusion of IoT and 5G is our key product strategy. The end-user experience will be taken up to 100 per cent satisfaction level.

Regarding the product portfolio, we have recently expanded our offering to Philippines market and planning to expand BPE products' reach to all over the world by the end of 2025. The company will also enhance its after-sales services which enable their customers to minimise business interruptions, improve system availability, enhance the manageability of power devices and optimise the cost of ownership.

Key Differentiators

The biggest difference, we see, is the product support. As we are Indian manufacturers and we are more than 2 decades old in the industry, we understand the market very well, which has led us to reach to the level of product localisation. We understand the demand of each industry and based on that we have been expanding and customising the product range. **ET**



**UPGRADING DISTRIBUTION NETWORK WITH OUR EFFICIENT, SAFE & RELIABLE SOLUTIONS
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25 KVA to 3150 KVA up to 33 kV Class

Hermetically Sealed Ester Oil filled K-Class Distribution Transformers (KNAN):

25 KVA to 3150 KVA up to 33 kV Class

** As per BIS Norms, Energy Level 2 & 3 are available as per requirements

Non-Standard product line:

Inverter Duty Transformers & Furnace Duty Transformers

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COMPANY CREDENTIALS

- ❖ "Groupe Cahors- A French Multinational Company", established in 1910 in France
- ❖ Supply & operations +100 Countries worldwide by french group company.
- ❖ Supply & operations by Transfix India in +35 Countries worldwide
- ❖ More than 7500 Qty transformers exported from India
- ❖ More than 1500 Qty Transformers are installed in India
- ❖ Approved by all leading consultants / Utilities worldwide
- ❖ Associated with all major Export houses of India
- ❖ Regular supplier to Africa & European countries
- ❖ Expanding our reach to Asian countries

KEY FEATURES OF "ECO GREEN K-CLASS TRANSFORMERS"

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- ❖ Enhances insulation life & overall performance
- ❖ In Compliance with IS 2026/14 & IEC 60076/14
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EXPERTISE

- ❖ State of Art manufacturing facility in Pune with all modern equipments
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“INDIAN ELECTRICAL EQUIPMENT INDUSTRY HAS A BRIGHT FUTURE”

Citizen Metalloys is a leading manufacturer of world-class copper products made of copper and copper alloys. Can you please apprise us regarding the power sector scenario in India?

Today India is on of the fastest growing economies in the world. Our central government has planned to provide electricity to each and every household. Also, we are moving towards 100 per cent electrification of the Indian Railways. In addition, the government is introducing electronic vehicles to curb pollution and move towards greener environment. The sector is sure to grow by the day.

What are the products of Citizen Metalloys that are catering to the power segment?

We are manufacturing high conductivity copper components, copper bus bars, copper rods, copper profiles, copper sections, solid copper earth rods and copper tape. All such products cater to the power segment.

We have developed copper components which can be useful for power industries. Our components are up to the latest industry standards and are innovative.

Jayesh Shah,
Managing Director,
Citizen Metalloys Ltd.



How do you see the demand for your products in India?

We can foresee a sizeable demand in the nation. The simple reason being copper is useful in so many applications i.e. for water purification, automobile industries, electrical industries, electroplating industries, astronomical efforts, religious applications and the likes. And in fact, the demand is set to grow in the coming years.

What are the initiatives taken by you for power specific products to adopt advanced digital solutions to become efficient and customer-centric?

We have installed latest technology CNC machine, milling machine

and tapping machine to develop different types of critical and high precise copper components which are useful for power specific segments.

What are your plans to introduce new products in ELECRAMA?

We have developed copper components which can be useful for power industries. Our components are up to the latest industry standards and are innovative.

What are your expectations from ELECRAMA?

We are expecting to witness some latest trends of the industry along with network with a wide customer-base coming from across the globe.

What's on the cards for India's electrical equipment

Indian electrical equipment industry has a bright future because we can witness rising demand in power industries, agriculture, automobile, railways and domestic supply.

industry in 2020?

Indian electrical equipment industry has a bright future because we can witness rising

demand in power industries, agriculture, automobile, railways and domestic supply.

How are you gearing up for the future opportunities and challenges?

Quality speaks in millions of words! So then, we will adopt latest technology, automation and use skilled manpower to compete with worldwide manufacturers. Also, we are going big on our marketing efforts. We are leveraging print media, electronic media, social media and other online promotional media for gearing up for the future opportunities and challenges.

12



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3. Frontec Termination Installed at Gateway Towers
4. Frontec MV Tapoff
5. Frontec End Termination

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DANISH EYES 50% REVENUE FROM EXPORTS



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Our focus has been on renewable energy generation projects and exports. We continue to strive forward in the same areas and are preparing ourselves to meet with the changing demands of these sectors.

Shivam Talwar,
Director,
Danish Private Limited

Performance of Danish in 2019

Last year has been challenging. Due to a global slowdown, there is limited business in the market and hence, the prices are falling. We have taken up upgradation of our quality systems to be able to create a niche for ourselves. Thankfully customers are becoming quality conscious and therefore, we are able to sustain.

Future roadmap

Our focus has been on renewable energy generation projects and exports. We continue to strive forward in the same areas and are preparing ourselves to meet with the changing demands of these sectors. We aim to at least keep up with 50 per cent of revenue from exports.

Focus on quality

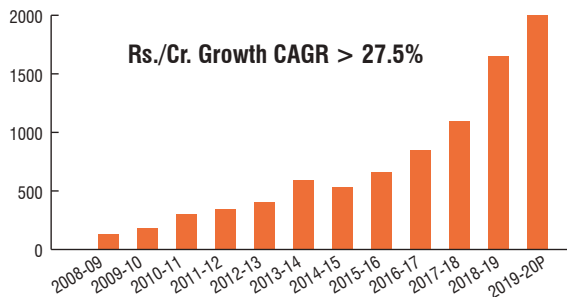
Our focus has always been to supply a quality product. We aim to work with customers who demand a quality product. We are happy that our transformers and control relay panels have been performing well for over 25 years at various sites in India and in over 30 countries. In the renewable energy sector, we have installations in over 2.5 GW of solar and wind plants.

Danish at ELECRAMA 2020

We are participating in ELECRAMA 2020 and will be displaying oil cooled transformers, cast resin transformers, inverter duty transformers and control relay panel at our stand. Our objective is to meet our existing clients as well as establish new relationships with customers for sales and joint ventures. **EI**



Innovative Cable Solutions



APAR's Uniflex Cable Division part of the Rs. 8000 crore (Over USD 1.10 Billion) APAR Group is a leading manufacturer of cables in India and caters to various segments viz, Railways, Defence, Utility Solar, Windmill, EPC, Mining & Material Handling. The company has recently extended the business of flexible wires and cables powered with E-Beam Technology and other specialty products. The cable division, having sales of Rs. 1750 Cr., with a plant at Umbergaon and Khatalwada near Vapi has been growing at CAGR of 27.5% for last 10 years.

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INDIA IDENTIFIED AS A PRIORITY GROWTH MARKET FOR DUPONT

There is no doubt the external environment is challenging; however, we are confident that we have a good strategy and team in place to deliver on our growth mission.

Rahul Yadav,
 Global Market
 Development Leader,
 Electrical
 Infrastructure, DuPont



DuPont's business in 2019

Globally, 2019 has been a transition year for DuPont. We celebrated the creation of the new DuPont in June, a leading innovation company that makes a positive impact on the world. Despite the market slowdown and uncertainties of the economy, our teams have done a great job to work with customers and partners to deliver great results. For the electrical infrastructure segment, there is a renewed focus on developing new applications, focusing on faster growth segments like renewables and working towards an EIS (Electrical Insulation System) offering to satisfy our customers. There is no doubt the external environment is challenging; however, we are confident that we have a good strategy and team in place to deliver on our growth mission.

Future Roadmap

Electrical infrastructure is a key growth segment for DuPont. The global team has a mandate to partner with customers to expand offerings and address needs in electrical equipment manufacturing. We plan to leverage our global scale and innovation pipeline to drive differential growth in spaces

like Traction market expansion, auto electrification, urban infrastructure development, Industry 4.0, and renewables.

Key Differentiators

India is an identified growth market for DuPont globally and the corporation has committed resources and investments to drive accelerated growth. In addition to best-in-class products, we continue to develop local talent to leverage our global expertise and application development know-how. As an example, DuPont offers more than 400 pre-tested, globally approved UL/IEC electrical insulation systems based on Nomex.

DuPont at ELEC RAMA 2020

ELEC RAMA is a network with key stakeholders under one roof. The show is truly global in terms of layout, theme, design and we look forward to discussing how DuPont Nomex solutions can help our customers win in the market place. The electrical industry is going through rapid change globally and this is a great time for key stakeholders to come together to deliver the needs of the future. We look forward to connecting with customers at ELEC RAMA to share how we can partner together. 



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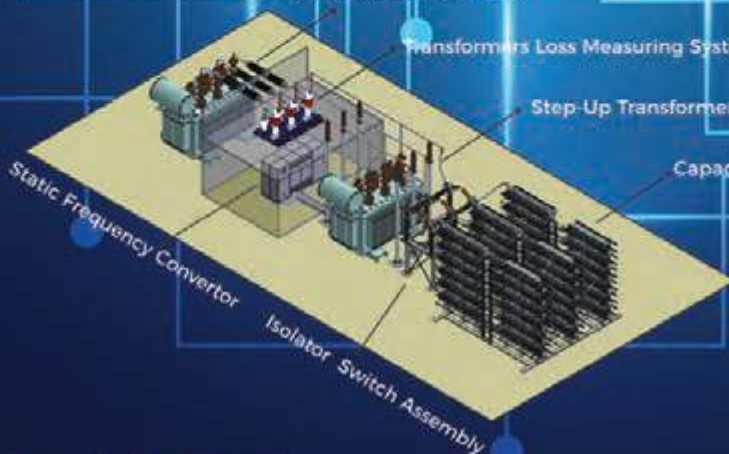
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Multi-channel Partial Discharge Detector

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Routine and Type Test Equipment for the testing of:

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- ❖ Instrument Transformers
- ❖ HT Cables
- ❖ HT Switchgear
- ❖ Motors & Generators
- ❖ Epoxy Components

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- ❖ Educational Institutes

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- ❖ Setting-up of complete test labs on turnkey basis
- ❖ Upgrade, modernize and refurbishment of existing HV Test Systems
- ❖ Erection, commissioning, repair and testing

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Tyco, UK
AQ Magnit, Bulgaria
BHEL, India
CPRI, India
Siemens, India
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DYNAMIC MAKING GALLANT ENDEAVOURS TO ENTER GLOBAL MARKET PARALLEL

In present scenario, it's a total turnaround for the industry. Market is turning more competitive in terms of quality and the prices as well. Today quality is the major concern to the customer and he never wants to make any kind of compromise on it. So, it has become mandatory for the entire industry to meet the customers' expectations in terms of the quality of the products or services. In India, about 35 per cent of cable industry is still unorganised, having least control over the processes and the quality of the finished product as well. Dynamic Cables' strategy "Follow the process, Quality shall follow" is the only mantra which guides it to plan the complete roadmap with a sharp focus on strategic growth and expansion to deliver the highest quality products, winning the customers' trust and satisfaction in total. The steering force behind its success is its values and beliefs as well as the global experience of its workforce technically sound to face any kind of challenge. Dynamic Cables has been continuously expanding its capacities

Our target is to penetrate the maximum western countries in next five years of time span and to grab a good international market by providing our world-class quality services successfully.

A.K. Sharma,
AVP Marketing,
Dynamic Cables Ltd



and capabilities to meet the need of the day successfully. Today Dynamic Cables is known to be a customer-centric company, providing its world-class quality products and services and this is evident in the manner, we share a close relationship with all our customers and business associates all over.

Dynamic Cables in 2018-19

The transmission and distribution (T&D) sector continued to remain in focus especially with the outlay of Rs. 2.6 lakh crore announced by the Government of India for the five-year period ending FY-2022. There was also a sharper focus on high voltage transmission lines

along with the government's aims to provide 24x7 power, which is opening up opportunities in the sector. DISCOMs which have joined the UDAY scheme are expected to improve their T&D infrastructure through renewed investments. The government's target of generation of 100 GW of solar energy by 2022 and measures such as excise duty exemption on ferro-silicon magnesium used

for manufacturing components for wind-operated electric power generators have augmented the demand for electrical wires and cables. During the year, Dynamic had good order booking from state utilities directly and through various EPC contractors working for DDUGJY and IPDS. We had a significant growth of around 36 per cent in 2018-19 in comparison to the previous year and captured a good market share in the year. Dynamic contributed a good share in to the growth of the country and supplied its highest quality products to all the distribution companies in the government campaigning of total electrification. The recent growth of renewable energy market applies to both wind energy and the solar energy as well. In many countries, this growth is supported by the government subsidies. Outdoor applications in renewal energy plants demand high thermal and mechanical requirements from cables and other components. Being well aware of the risk

today, Dynamic attempts to combine technology, innovation and ecological awareness and making good use of solar power in production of cables and conductors.

Future Roadmap

We as Dynamic Cables own the reputation of being the customer oriented, fast-growing company. The company has made steady inroads into a wide gamut of electrical products over a period of more than two decades by successfully catering to the requirements of various prestigious domestic customers like Powergrid, NTPC, Tata Power, Reliance BSES, Adani Electricity, BHEL, and all SEBs including various institutional customers. We have one of the most dedicated technical teams with wide technical expertise to face the technological challenges. We also happen to have all capacities inline for the future demand which goes on to show the management's vision and grip over the

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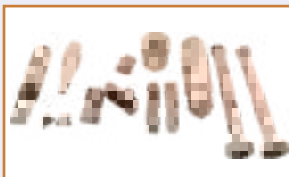
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market. It's a turnaround for the industry, Dynamic is making gallant endeavours to enter the global market parallel. We have strong presence not only in India but also in around 32 countries including Kenya, Tanzania, Rwanda, DR Congo, Mauritius, Ethiopia, Togo, Benin, Nigeria, Senegal, Gambia, Yemen, Iraq, Libya, Nepal, Bhutan, Zambia, Laos, Syria, Mauritania, Malawi, Ghana, Jordan, Uganda, Afghanistan, Bangladesh and Sri Lanka and others. We have an experienced market and business development team supported by our local associates in Middle East, Africa, Nepal, Sri Lanka, Iraq, Bhutan, Afghanistan, Zambia and Bangladesh etc. Today we stand very competitive in terms of quality and prices in the global market and are reckon with. Our target is to penetrate the maximum western countries in next five years of time span and to grab a good international market by providing our world-class quality services successfully. We have successfully developed the Railway cables also and got the same approved in RDSO. We should be able to successfully cater to the requirements of Railways also soon, probably from the start of the new year 2020. With this we would be able to add a good figure to our annual turnover. Today quality is the highest concern to the customer and no organisation can afford to ignore it if it wants to retain in the market for a longer period. The main focus of the company today, lies on meeting the needs of the day without compromising the abilities of the future generations to meet their specific technological requirements. Lining up to the latest requirements over the years, we have adopted many sustainable development strategies.

Key Differentiators

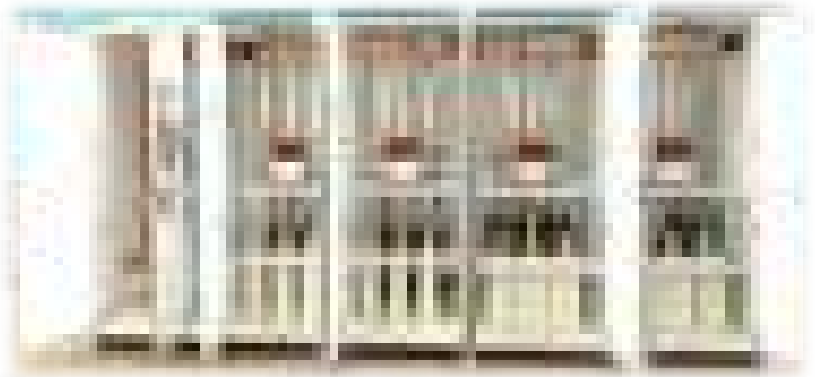
Dynamic has three ultra-modern manufacturing facilities with latest testing facilities. Two of our units are located in VKI Area in Jaipur. With the increasing demand of the market, we planned to establish one more plant at Khatushyamji Industrial Area Reengus with most modern testing laboratory equipped with the latest, world-class testing equipment. This plant is also operational for last two years with a state-of-the-art manufacturing adding 66 kV high voltage cables manufactured with CCV technology, into our existing range. We have a very talented R&D

team to meet any technological challenge as per the requirements of the customer. It was really a first time in India, we designed and manufactured the biggest size of cable in 33 kV voltage rating i.e. 630 sq. mm. against the requirement of our customer Tamil Nadu Electricity Board. We got this innovative product type tested in NABL accredited independent laboratory successfully. It was an ultimate success of our design team to develop such a unique size in high voltage cable and manufacture the same in line with the customer requirements.

Dynamic at ELECRAMA 2020

We are actively participating in ELECRAMA 2020 and are coming up with our latest innovative products developed for the first time in India. Although we have been regularly participating in ELECRAMA since a long time, this will again be a special occasion for Dynamic where it will have its most innovative exposure. The event ELECRAMA is the flagship showcase of the Indian electrical industry that brings together probably the whole electrical industry. It's an event where the entire electrical fraternity within the country and even some delegates from abroad ensure to make their presence felt. Being the largest gathering of electrical industry, the show has been widely praised as it provides a wide forum for knowledge sharing in the form of technical conclaves and industry summits. For Dynamic, ELECRAMA is an important event, we expect wide participation of our customers and fruitful interaction with various targeted visitors. This is the best platform for us to showcase our entire basket of products and its features showing our capacities in growing technological trend. ELECRAMA 2020 is expected to feature the new business areas that are redefining the electricity space and expose the electrical industry to new technology innovations. The participation of foreign companies in ELECRAMA is also increased over the years as it helps in introducing the world level contractors and consultants. Global investors now consider India as a potential market for high voltage (HV) and extra voltage (EHV) cables. The government's 'Make in India' program has placed India on the world map as a manufacturing hub and given global recognition to the Indian economy. **ET**

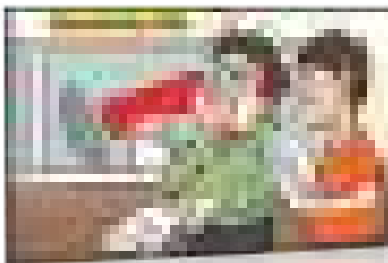
Are your APFC Systems capable of providing maximum Power Factor Incentive along with maintaining Harmonic levels as per IEEE 519-2014 Norms ?



- *Electrical Tariff Structures by Utility Companies are changing fast.*
- *Many Utility companies have shifted towards KVAH Billing from KWH billing.*

KVAH billing needs that Power Factor is close to unity all the time & any failure or inefficient operation of APFC system results in higher KVAH billing & this loss cannot be made up as is the case in KWH billing where PF incentive is calculated on monthly average basis.

- *Manual control by fixed capacitor banks is no more suitable for achieving maximum incentives!!*
- *Gazette Notification by Government of India issued in February 2019 defining norms for Harmonic levels has set the ball rolling for introduction of penalties on Harmonic levels exceeding IEEE519-2014 norms.*



All Industrial and commercial Units which are bulk consumers of Electricity need correctly and optimally designed APFC systems to save maximum on electrical energy bills and to avoid penalties on Harmonics



*We at **CLARIANT POWER SYSTEM LTD** in association with **FRAKO KONDESTATOREN Germany** design and manufacture customized APFC systems with finely tuned Harmonic Filter Reactors which provide combined solution for Power Factor and Harmonic Mitigation. Active Filters are in many cases may not be needed. We give Active Filters only for fine correction in rare cases where Passive Filters are not able to achieve Harmonic values as per IEEE519-2014. This makes ROI on our systems very attractive.*

For more information, enquiry and solution please contact 7719996868/9175106355



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EASUN-MR ADDING ADVANCED SOLUTIONS TO ITS PORTFOLIO

Easun-MR (EMR) is an Indo-German joint venture with the Maschinenfabrick Reinhausen GmbH, (MR), Germany and the Easun Group of India. Maschinenfabrick Reinhausen GmbH, (MR), Germany, the joint venture partner in EMR, is a specialist in voltage regulation equipment and caters to the requirements of the transformer manufacturers worldwide.

How Easun-MR's business has scaled in last one year

We are the established players in world of OLTCs (On Load Tap Changers) segment with dominant No. 1 position over the last 50 years. Trust and reliability are our forte. Two of our innovative products, Nitrogen Injection Fire Prevention System (NIFPS) and Smart Breather have gained successful acceptance in India and abroad. In view of this our business has scaled up significant level during this year.

Easun-MR's Future Roadmap

We are a focused company to build products around

In every product which we offer to the market, we make sure that the product offers full-proof technically advanced solutions and meet the real needs of the customers.

Prakash R,

Country Head Marketing & Service, Easun-MR, Chennai




transformers. We are planning to add a few more advanced solutions in this segment which will address and solve critical customer needs. We have created a nationwide sales and service network to augment our customers reach.

Key Differentiators

In every product which we offer to the market, we make sure that the product offers full-proof technically advanced solutions and meet the real needs of the customers. For example, in NIFPS, while our competitors offer solution based on external sensors, we provide in-built Live Arc Sensors to quickly predict the onset of arcing and prevent the transformer

from fire, thereby, saving the precious assets i.e. transformers. Our focus always remains in providing full-proof technically advanced real solutions over competition.

Easun-MR at ELECRAMA 2020

We have booked space at Hall 1, Stall A9 (H1A9) at ELECRAMA 2020. We will be showcasing our innovative products at the event. 

intertek
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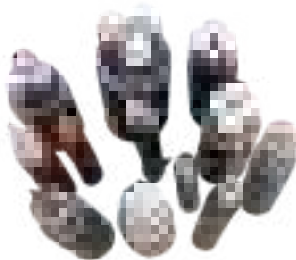
VISION & COMMITMENT TO EXCELLENCE

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"EATON POWER QUALITY IS FUTURE READY"

According to a market report, India storage market is expected to be Rs 30,000 crore. What potential do you envisage for Eaton?

Energy storage is becoming equally demanding and at the same time challenging as there comes a lot of discussion over the cost of operations and environmental impact. While diesel abatement is rising its peak due to multiple reasons like carbon emission and depletion of natural resources, the demand for keeping a generator is coming at a cost. Solar would be one of the preferred sources of energy. However, we are still seeing a lot of research and development going in terms of effective PV tracking to maximise the power yield.

Eaton as UPS manufacturer and energy storage solutions has been at the forefront to meet the rising demands. We have xStorage solutions that work in an optimised way for utilising power from various sources – which may be renewable or utility mains.

Our UPS systems are compatible with multitude of storage technologies – from valve regulated lead acid batteries, lithium ion batteries, flywheel, ultra-

We have witnessed our business growing in healthy way and we have been able to meet all expected results and surpass all measured parameters.

Shailendra Shukla,
Director Sales & Service –
Power Quality Business, Eaton
Electrical Sector, India



capacitors and fuel cells. Globally, Eaton has been the most preferred brand for providing power backup solutions.

What is your take on UPS segment?

UPS which is often referred as the "heart" of the electrical network has widespread applications ranging from continuous process operations to healthcare to Information Technology or any other mission critical installations. UPS solutions has direct impact on energy savings, safeguarding against various power problems and uptime of electrical installations. Due to definitive advantages of UPS, it has high demand and is playing an important role in overall electrical

infrastructure of the country. Eaton Power Quality is proud to have partnered with various customers in delivering value in terms of uptime, reliability, efficiency, robustness and cost saving.

What is your company's future roadmap?

Eaton Power Quality is future ready and keen to make what matters work. This has been our brand promise and we will continue making products

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► **Quality**

► **Safety**

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which address user requirements. We make continuous connect with our customers and take their feedbacks which help us to innovate further. We will be introducing new products and solutions in the Indian market which has already proven its performance globally and develop India for Indian products. We have also been continuously upgrading our manufacturing capabilities to meet the future demands.

How are you gearing up for the future opportunities and challenges?

Indian market is undergoing significant transformation as demand pattern of buyers is changing. Adoption of technologies and digitisation of business processes has been on a rise and so is our spend on areas like education, healthcare, modernisation of infrastructure and thus, the need for power management. We are catering to entire spectrum of users representing various segments – like home and business network to small IT and large IT to manufacturing to ITeS to banking to healthcare and large colocation centres.

Eaton Power Quality is proactive to understand the needs and challenges of its customers and is agile to have the products and solutions to meet their demands. We take continuous actions on our product development, product roadmap and manufacturing capacities to meet these needs.

How your business has scaled in last one year?

Last one year has been a great journey, not only in terms of business but also in terms of customer experience. We have seen our customers adopting new technologies and happily reaping the benefits out of it. As a manufacturer, Eaton feels extremely proud to have further strengthened the trust and loyalty which its customers envisage in it. We have witnessed our business growing in healthy way and we have been able to meet all expected results and surpass all measured parameters.

What your company has done differently from competitors?

Eaton Power Quality puts their customers at the highest pedestal and our perpetual endeavor is to meet and exceed their needs and pain areas.


We continuously enhance our technical offerings but also are proactive in terms of our approach to problem solving. We believe in retaining and delighting our customers as we value long term relationships.

We are equally committed to improve the quality of life and environment through our power management technologies and solutions

Tell us about your participation in ELECRAMA 2020.

Eaton's electrical business is a global leader with expertise in power distribution and circuit protection; backup power protection; control and automation; lighting and security; structural solutions and wiring devices; solutions for harsh and hazardous environments; and engineering services. Eaton has been attending ELECRAMA since past few years as an exhibitor and has always focused on bringing innovative power management solutions for the customers helping them improve the quality of life and the environment. At ELECRAMA 2020, Eaton is showcasing its breadth of industry-leading power distribution and power quality solutions across multiple segments – utility, buildings, data centre, industries and renewables. We are also very excited to showcase some of our newly introduced globally proven technologies for the Indian market this year.

We will demonstrate our safe, reliable and high-performance medium voltage power distribution equipment at our booth. These solutions fit very well for utilities in India who are seeking clean and green global standard solutions suitable for Indian conditions. Also, on display will be Eaton's latest technology in low-voltage electrical equipment to mitigate the risks of arc flash.

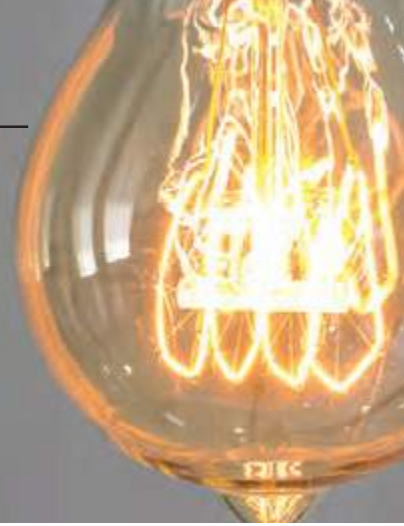
Eaton has a unique solution for electric vehicles (EVs) in the form of its new Bussmann Series EV Fuses that are specifically designed to protect sensitive electric and hybrid automotive equipment, including high voltage, high capacity batteries, power conversion equipment, contactors, cabling and other auxiliary circuits – enhancing electrical system safety and reducing potential warranty costs. Eaton makes modular, scalable and energy efficient UPS solutions for IT and non-IT applications which help our customers to stay always-ON. 

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EESL AIMS PROVIDING UNIVERSAL ACCESS TO SUSTAINABLE ENERGY



EESL aims to become a global leader in implementing innovative business models, to promote the rapid and profitable adoption of energy efficiency solutions.

Venkatesh Dwivedi,
 Director (Projects),
 Energy Efficiency Services
 Ltd.

How EESL's business has scaled in 2019

EESL registered a revenue of Rs 1,935 crore in FY19, a 37 per cent increase over the previous fiscal, and pre-tax earnings growth of 178 per cent to Rs 171 crore during the same period. The EESL group turnover stood at Rs 2,435 crore, including an impressive revenue of Rs 500 crore from its UK subsidiary, registering an overall revenue growth of 70 per cent. The Profit After Tax (PAT) of the group was Rs 110 crore which marks a 214 per cent increase.

Besides Unnat Jyoti by Affordable LEDs and Appliances for All (UJALA) and Street Lighting National Program (SLNP), we have experienced significant development in our initiatives for agricultural pumps, super-efficient ACs, smart meters, decentralised solar power plants, leasing services for next-generation technologies like electric vehicles and

turnkey offerings for efficient energy generation alternatives like trigeneration.

Some of the landmark achievements this year include the dedication of 1 crore LED streetlights to the nation, completion of the installation of over 5,00,000 smart meters across India, enabling NDMC to become the first ULB to convert to smart meters and the introduction of India's first of its kind, super energy efficient AC. We are also focusing on strengthening the electric vehicle charging infrastructure in the country. Advancing our efforts to build a resilient e-mobility infrastructure across the country, EESL is focusing significantly on building public and captive charging stations for electric vehicles. Till date, 65 nos. of Public Charging Stations (PCS) complying with DC-001 (15kW) have been commissioned in Delhi. Apart from these public charging stations, EESL has installed total of 470 captive

chargers, out of which 170 are DC-001 fast charger and 300 are AC-001 chargers.

Future roadmap

EESL aims to become a global leader in implementing innovative business models, to promote the rapid and profitable adoption of energy efficiency solutions. We are implementing energy efficiency projects in Saudi Arabia, Malaysia, Maldives, Bangladesh, SE Asia (Vietnam/ Thailand) and Myanmar.


We are working towards providing universal access to sustainable energy solutions, in a bid to enable a low carbon future, with significant economic and social impact. We will continue to work towards that vision.

Inspiring innovations

EESL has been leading the mandate for demand side management of energy in India for almost 10 years, while implementing the world's largest energy efficiency portfolio.

The company has pioneered an innovative new energy service model, and its success has created a blueprint for commercial growth of energy service companies in India's energy efficiency space. These include cost reduction attributed to aggregating demand and economies of scale, which have stimulated India's private energy efficiency investments.

Further, EESL is also providing a platform which enables multi-stakeholder collaboration to promote new innovations in energy efficiency. It has been organising an annual symposium, 'International Symposium to Promote Innovation & Research in Energy Efficiency (INSPIRE)'. This event presents a unique opportunity to meet and exchange ideas with key Indian and global experts and incubate partnerships and collaborations.

Last year, EESL started the first edition of '#InnovateToINSPIRE', a first-of-its kind energy innovation challenge, which was organised to invite ideas for scalable solutions in the realm of energy efficiency. 

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ELEKTROLITES FOCUSING ON DEVELOPING NEW SMART GRID PRODUCTS

To achieve the target of USD 5 trillion economy, India shall be requiring multiple time energy and power requirements as such Elektrolites shall be adding more smart products to meet the requirement.

Anil Saboo,
 Chairman,
 ELECHEMA-2020
 and CMD, Elektrolites
 (Power) Pvt. Ltd.



Elektrolites in 2019

Elektrolites continuously expanding our customer base and last year we added 50 per cent more new clients. Our company policy for continuous R&D investment resulted in introduction of new products to have various sectors like railway, renewable energy and smart grid products. We have also started representing renowned companies from Germany and Turkey for energy efficient products.

Future Roadmap

Elektrolites Power Pvt Ltd (EPPL), Jaipur, is a renowned primary manufacturer and innovator in the field of power transmission and distribution products since 1983 and has played a pivotal role in its growth in India over the last four decades.

In the future, Elektrolites will be focusing on developing new smart grid products for railways, defence and renewable market. We are planning for collaboration with European companies to upgrade our technology and products which will enable the company to double the turnover by increasing the export to Southeast Asia and the African market. To achieve the target of USD 5 trillion economy, India shall be requiring multiple time

energy and power requirements as such Elektrolites shall be adding more smart products to meet the requirement.


Key Differentiators

Elektrolites is a constantly growing venture and is well-known for its ground-breaking and cost-effective products.

Now we have entered into new segments like renewable energy, railway and smart grid products. We developed new designs which will be cost effective and maintenance free for customers. Our inhouse R&D activity is a major part of our business expansion, Elektrolites investment in R&D and acceptance by international players would provide the opportunity for exports.

Elektrolites ELECHEMA 2020

Elektrolites will upgrade and explore the business of switchgears upto 420 kV.

We are also searching for partners who have adopted and incorporated new technologies like Industry 4.0, IoT, and Artificial Intelligence to explore the electrical industry over the world. We will to display the energy-efficient products in green environment to give the message to the world to create sustainable environment. 

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Partial Discharge Test Set-up

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ERDA REAFFIRMS ITS COMMITMENT TO ITS CUSTOMERS

Business of ERDA FY 2018-19

In the year 2018-19, Electrical Research and Development Association (ERDA) focused more on the expansion of its international market and achieving new accolades. During the year, we have received approval from Dubai Electricity & Water Authority (DEWA) and Sharjah Electricity & Water Authority (SEWA) as world-wide independent testing laboratory.

ERDA has renewed its mutual co-operation and collaboration agreement with GIPCL for working in specialised energy audit sector related areas. ERDA has also signed Memorandum of Understanding (MoU) with PVVNL, Meerut to work together for the achievement of common goals and objectives related to testing and improving quality of the product used under DISCOMs.

During the year 2018-19, ERDA handled approximately 58,000 nos. samples. Apart from inhouse testing, ERDA also catered to more than 4,000 inspection calls for third party inspection and 700 nos. of field or site testing jobs.

ERDA is having a well-known brand image today in the field of R&D, electrical testing and evaluation, field services and expert services across India.

Hitesh Karandikar,
Director, ERDA



With these services ERDA has been able to reaffirm its service commitment to its customers and spread its business and brand image all over India as well as abroad. ERDA is having a well-known brand image today in the field of R&D, electrical testing and evaluation, field services and expert services across India.

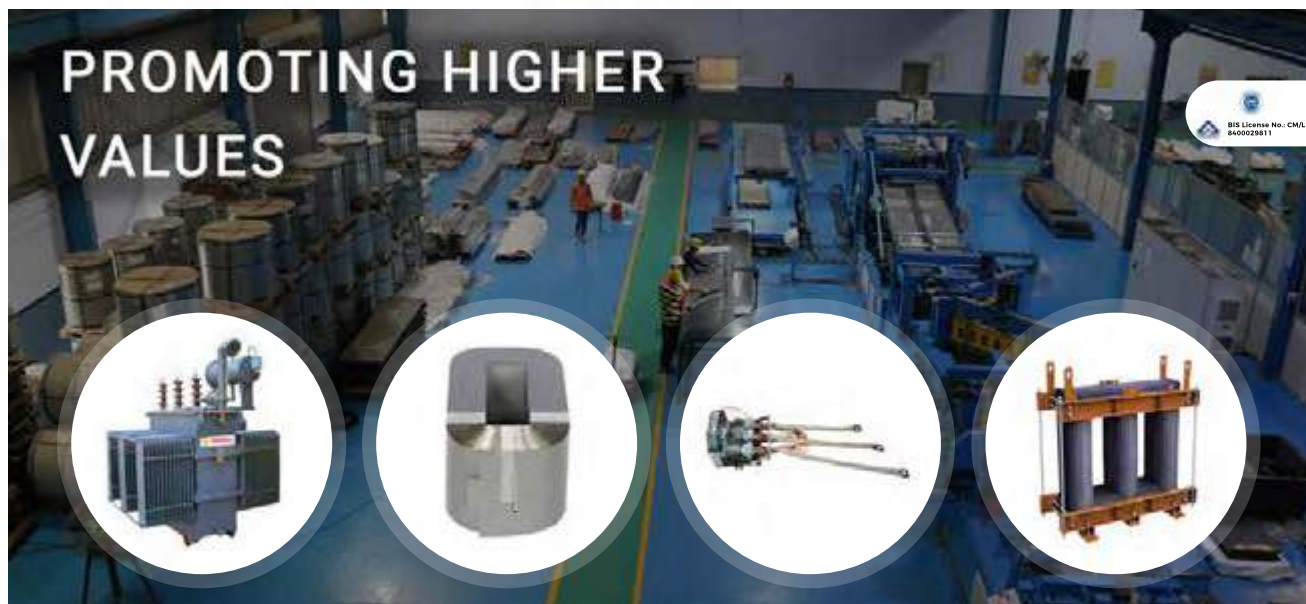
ERDA's future roadmap

Vision of ERDA is to become "An Internationally Renowned Laboratory and Center of Excellence in R&D for Electrical Industries and Utilities".

ERDA is presently accredited with DEWA, Dubai; SEWA, Sharjah; ADWEA, Abu Dhabi; DCRP, Oman; TNB, Malaysia etc.

We are working for approvals from SAARC countries e.g. Nepal, Bangladesh, Sri Lanka etc. and far-eastern countries e.g. Vietnam, Singapore, Taiwan, Indonesia etc.

In the R&D sector, ERDA wants to grow much bigger. ERDA is looking for partnership opportunities with global and national manufacturing companies and government sector e.g. MNRE, NETRA etc.



Mangal Electricals Industries Pvt. Ltd. is the manufacturing and retailing of CRGO/Amorphous Distribution & Power Transformer. With a rich and diverse experience of 30+ years in this industry and having an annual production capacity of 1 Lakh units of transformers and 2500 Metric tons of CRGO, it is one of the most reputed and renowned transformer companies in India.

- | | |
|---|---|
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Mangal Electrical Industries Pvt. Ltd.



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Manufacturing Unit 2: E-40 TO E-46A, SHREE KHATU SHYAM JI INDUSTRIAL AREA, RENGUS, SIKAR, RAJASTHAN, INDIA



H.V. Partial Discharge Laboratory at ERDA

In the field of testing and evaluation, ERDA is in an advanced stage of setting up a state-of-the-art High Temperature Low Sag (HTLS) conductor testing facility at Vadodara. Presently India is having no HTLS conductor testing facility and manufacturers have to go abroad for testing of such conductors. This facility is expected to be commissioned by April 2020.

ERDA is also setting up complete type testing facility of solar PV panels as per IS 14286 and IS / IEC 61730 at Vadodara in the near future.

However, the dream project of ERDA is to set up Centre of Excellence for Medium Voltage Short Circuit Laboratory for testing of medium voltage switchgear equipment and power transformers upto 50 MVA, 132 kV. This project is having an outlay of around Rs 600 crore. Financial closure of this project is still awaited from Government of India and Government of Gujarat.

How ERDA is different

ERDA has continuously improved and upgraded its testing equipment and facilities over the last

decade. Every year ERDA spends on an average Rs. 30-40 crore to upgrade and augment its facility and infrastructure for various R&D activities. Over the last few years ERDA has added many world class testing facilities e.g. Type “C” Goniophotometer for LED and luminaries testing, best-in-class 600 kV, 3 Amp. High Voltage Partial Discharge Laboratory, IEC – 61850 protocol testing facility, smart energy meter testing facility, flame proof testing facility etc. Many new ambitious projects e.g. HTLS Conductor testing facility, solar PV panel testing facilities are under construction. Many more projects are in the pipeline. ERDA continuously upgrades itself to remain aligned with global laboratories.

On the accreditation front, ERDA is one of the first movers to new ISO 17025:2017 standard and got itself NABL accredited under this new version of standard. Similarly, for most of the upgraded version of IS or IEC standards, ERDA has kept itself upgraded with time. In the third-party inspection services, ERDA has obtained accreditation as Type “A” Inspection Body as per ISO / IEC 17020:2012.

Continued on page 80

TOGETHER
LET'S STRENGTHEN
THE POWER
INFRASTRUCTURE
OF INDIA

CABLE
ARMOUR WIRE
RCA/FCA



POWER
TRANSMISSION
ACSR WIRE
STRANDED STEEL WIRE
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We draw **customer satisfaction**.



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LED Luminaire Testing with Type C Goniophotometer

In view of the above, customers repose immense trust and confidence on the results and services provided by ERDA. This customer confidence is the key differentiator between ERDA and other laboratories in India.

ERDA at ELECRAMA 2020

Like earlier years, ERDA is participating in ELECRAMA 2020 also in a big way. We have a 42 sq. mtr. 3 sides open stall H3A1 in Hall no. 3 of the exhibition centre. The theme of our stall is “Supporting Energy Transition to 2030”. In this exhibition, we shall be focusing on our futuristic developments to support transition of the electrical industry to the new decade 2030. We shall be highlighting our newly developing HTLS testing facility and solar PV panel type testing facility. We shall also be showcasing our various new technology developments e.g. robotic arm solar PV panel cleaning system, IoT based hot spot temperature measurement in switchgear panels and transformers. We shall also be presenting our existing future generation testing facilities e.g. LED lamp and luminaire testing facility, IEC – 61850 protocol testing facility, smart meter testing facilities, our power system analysis facilities using latest software tools etc.

ET

Customer satisfaction is the key to success of any organisation and ERDA strictly follows this maxim. ERDA through its customer relationship management team provides excellent service to its customers without compromising its integrity and impartiality. ERDA provides on-line test date booking facility, status of ongoing testing through its website. ERDA also keeps its customers informed at every stage of testing of its samples through emails and SMS.

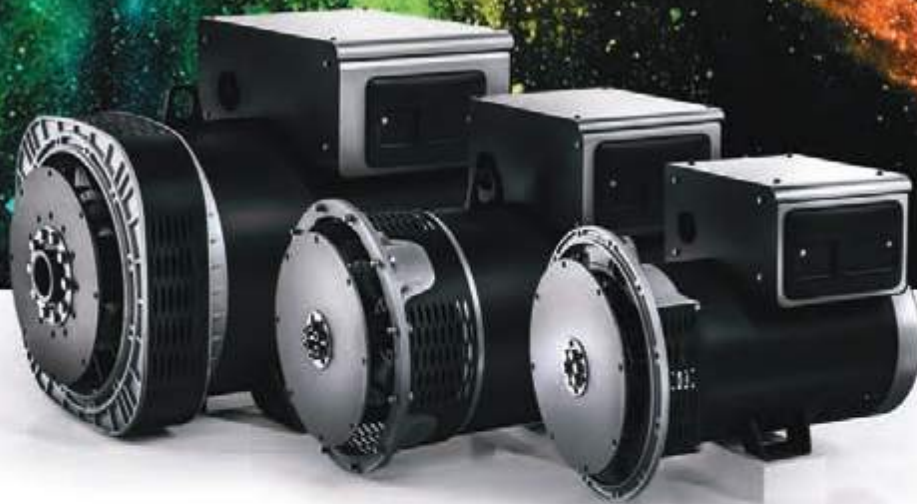
ERDA never compromises on integrity and impartiality on its pursuance to excellence. ERDA has introduced code of conduct and ethics, and whistle blower policy for all of its employees and other stakeholders. All the employees of ERDA are committed to follow this policy.



Solar PV Panel Testing under progress

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POWER FROM WITHIN

"DEMAND FOR T&M PRODUCTS CONTINUOUSLY INCREASING"

What is your assessment of testing and measurement sector during last year?

India is growing and so is testing and measurement (T&M) sector. We have received good response from market in 2019. FLIR T&M range solves many operational preventive and post maintenance issues and hence, is critical part of O&M kit for many organisations.

How do you see the demand for T&M products in India?

Awareness to use effective predictive maintenance is increasing at fast pace and hence, demand is continuously increasing as well.

How are you gearing up for the future opportunities and challenges?

We already have all actions in place to cater to increased demand. Starting from partners who can reach customers fast to providing after sales support, complete support is available in India.

What are the products offered by FLIR and in particular catering to Indian energy market?

Awareness to use effective predictive maintenance is increasing at fast pace and hence demand is continuously increasing as well.

T P Singh,

Sales Director, Emerging Markets-Ins (India, ME, CIS, Turkey, SS Africa), FLIR



What are the growth drivers for your products?

FLIR has series of products for energy market. Starting from basic multi-meters, clamp meters, non-contact voltage detectors, insulation testers to low, mid and high-range thermal imaging cameras. We have two main sub segments: thermal imaging cameras, and T&M range.

FLIR imaging cameras range has vast selection possibilities. We have many different thermal cameras for electrical transmission, distribution and generation utilities. Within this range, there are three options: Handheld uncooled series, fixed type thermal cameras, and series for gas visualisation (SF6).

Under handheld uncooled, starting from point and shoot Ex range to professional T series, there are number of models available to choose, depending upon applications. If the object is bigger and is very near then basic point and shoot series may help. For smaller objects at longer distances, Exx and Txx options are very useful.

If someone needs 24x7 remote monitoring, then FLIR has complete range of options available to

choose from F series or Pan & Tilt series. Multiple different thermal cameras can be configured over Ethernet and results can be visualised at centralised control room.

FLIR also offers handheld cooled thermal cameras for visualising SF6 from safe distance under normal operating conditions. Monir SF6 Gas leakages can be visualised with this highly specialised product. These were details regarding first segment named thermal imaging cameras.

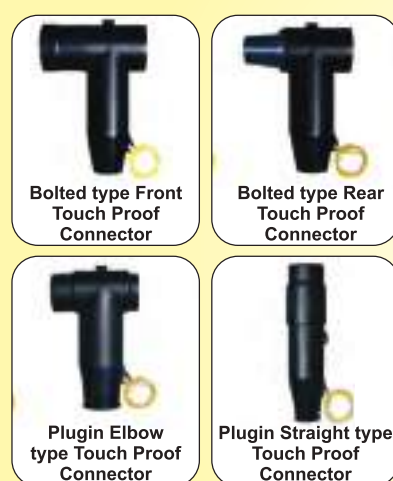
Talking about T&M range, FLIR has more than 100 products – a few key products for energy customers are digital multi-meter with infrared guided measurement, clamp meter with infrared guided measurement, Cat IV utility clamp meters, voltage continuity and current tester, non-contact voltage detector with flashlight, infrared windows for temperature measurement inside cabinets without opening the same., insulation testers etc.



FLIR's newly launched products

- New T 8xx range of thermal cameras: This very successful range with tiltable optics has two more members. This range is having two key very useful features:
 - The optics is tiltable which doesn't give too much strain to person using the camera in the field.
 - This has a viewfinder in addition to touchscreen with switchable display to save battery – very useful feature again when the camera is used under bright sunlight.
- New Ex range with extended temperature measurement capabilities
- New Exx range with crisp sharp images
- New clamp and digital meters with infrared guided measurements
- Open jaw clamp meter.

World Leaders in Touch Proof TECHNOLOGY



Hongshang 24kv T type rear connector



FEATURES

1. Type Tested as per IEC 60502-4.
2. In Market since 10 years.
3. Available in both Plugin & Bolted designs.
4. Suitable for Installation in SF6 Rmu's.
5. Each connector is tested for AC High Voltage & Partial Discharge before despatch.
6. Products available upto 630 Sq mm & for use upto 42 Kv.
7. Can connect double cable or one cable with Surge Protector.
8. Extensively used to terminate XLPE Cable to Transformers & Rmu's.
9. Offers very compact solutions.

Where the Quality means lifestyle !

We offer top of the line Touch Proof Screened Connectors from Hongshang. They are suitable for installation in SF6 RMU'S of all manufacturers like ABB, Schneider, Siemens, Lucy, and C & S Electric, L&T, Eshwari etc. These connectors are in the market for last 10 years & there are more than ten thousand installations in India alone. They are thoroughly type tested to IEC 60502-4, both in India & internationally. This design also enables users to connect double cables or to connect one cable with surge protector. The connectors are moulded from special synthetic polymers.

**So just try this one.....
for total satisfaction !**

Namonkar Electricals Pvt. Ltd.

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FLUKE INDIA POISED FOR DOUBLE-DIGIT GROWTH



We strive to maintain our leading position in the predictive maintenance tools and calibration standards through market leading innovations.

Prabhakaran PV,
Head - Product Management,
Fluke India

Fluke India in 2019

The industrial growth in India is going through a tough phase for a few quarters for now and in general majority of the companies across various segments are struggling to keep up the pace they had gathered in last few years. At Fluke, we believe in innovation and providing solutions to the customers to win. Fluke's commanding position in quality, accuracy and reliability makes it a preferred brand in the market and we outdo our competition in every product or market segment we work. We continuously push ourselves to create value for our customers who work across multiple segments, industries and geographies which help us maintain our leadership position. Even at the current economic conditions, we are poised to post a strong double-digit growth in year 2019.

Future Roadmap

We strongly believe in our shared purpose of providing essential technology for the people who accelerate innovation and progress; hence, we try to walk a bit ahead of the curve to serve market requirements

and lead it with examples. We started adopting new technology measurement sensors and communication features aided by IoT a couple of years back itself and now majority of our products are equipped with technologies to meet the Industry 4.0 standards and new age connected environment challenges.

We strive to maintain our leading position in the predictive maintenance tools and calibration standards through market leading innovations. Our recent new product launched like Fluke ii900 Sonic Imagers, Fluke PTi120 Pocket Thermal Imagers and Fluke T6-1000 Non-contact current and voltage measurement tool using field sense technology are all unique products and first in product category they operate using all connected sensors are just the beginning.

Key Differentiators

We help our customers win over their challenges through innovative products and solutions. Some of our innovations include Fluke 550 Motor Drives Analyser which can calculate motor efficiency without using mechanical sensors, Fluke 810

FC Vibration testers with built in diagnosis engine, and Portable oscilloscopes with the highest safety rating etc. which are helping the customers meet their day to day challenges efficiently and cost effectively. We have revolutionised the industrial thermography by introducing Fluke 401 Pro and Fluke TiX 501 thermal camera with 640x480 resolution offering high resolution imaging at affordable price points when the professional grade thermal imagers were considered out of reach to many.

Every associate of Fluke and our channel partners believe in our founder's words – "The customer should always get more than they thought they paid for" - and work towards achieving this. This philosophy combined with relevant and innovative products and solutions are keeping Fluke ahead of its competition even after 70 years of its inception.

Fluke conducts regional seminars across India
ELECRAMA, perhaps the biggest exhibition of electrical and electronic products and technology,

offers a huge platform to connect with various industry leaders, customers, and suppliers and showcases latest technology. It a great opportunity to meet a wide set of audience from a very diverse background. However, Fluke has gone one step ahead and decided to conduct its own version of product exhibitions through regional seminars across India to connect directly with its target audience at their place of work.

It offers us a great advantage to meet our customer at their place of work, understand their daily routines or challenges and offer hands-on demo along with proof of concept and clear ROI. This gives customer a great amount of confidence that the product or solutions suggested to them will work in their real-life applications and makes their decision making faster.

These regional seminars give Fluke India a tremendous advantage over our competition by providing us with deep insights about our customers, their work challenges and offer real time solutions. We shall continue to invest in customer training and on field product demonstration.

13

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WILL CONTINUE TO FOCUS ON CLEAN ENERGY, EV CHARGING INFRA: FORTUM

How Fortum's business has scaled in last one year

Fortum is a leading clean-energy company that provides its customers with electricity, heating and cooling as well as smart solutions to improve resource efficiency. This year (2019) has been great (for Fortum India) in terms of collaborations with some of the key stakeholders in the segment. In the electric vehicle (EV) segment, we have established India's first public charging network of 50 KW DC chargers in partnership with MG Motor India. We have already witnessed an uptake in the adoption of EVs in the last one year through our existing charging network of 15/20 KW DC001 chargers. This collaboration will further bolster this growth. Today, we are operating 66 DC fast public charging points in Hyderabad and Mumbai sub-urban areas. While these DC charging points serve to 4-wheeler passenger cars, Fortum has also launched a battery swapping pilot project for 3-wheelers.

Fortum has taken another step towards building options for significant new businesses that improve resource efficiency and reduce the use of fossil raw

Our ambition and vision are tied to solar which is our main focus going ahead.

Sanjay Aggarwal,
Managing Director,
Fortum India



materials and ingredients in a variety of industries. We have taken our first step by investing in India's first commercial biorefinery (Numaligarh Refinery) in Assam. We have also signed a Memorandum of Understanding (MoU) with one of India's leading universities, Chaudhary Charan Singh Haryana Agricultural University (CCSHAU), to conduct research on paddy and paddy straw.

On another front, given that many countries including India already have a strict limit on the emission of nitrogen oxides, NOx reduction technologies are being widely deployed. Keeping this in mind, Fortum is

bringing its own advanced time and cost-saving primary NOx reduction technology to India which will help India reach its sustainable goals. Taking this forward, Fortum signed its first commercial deal with Hindalco Industries Ltd this year, to provide NOx reduction technology in power plants through combustion modification on one of the 150 MW boilers located at the aluminium smelter unit in Mahan, Singrauli District, in Madhya Pradesh. The timeline for completion of this project is around February 2020.

Future roadmap

Our ambition and vision are tied to solar which is our main focus going ahead. Along with our financial partners, we should be able to install around 250-300 MW of solar per year. We will be happy with that level of growth. We have been successfully bidding for projects in solar parks and while we will continue doing that, we are willing to look at projects outside as well. We will also scout for business opportunities outside India.

Our new business venture, Bio2X, aims at more resource efficient use of biomass. Through Fortum's fractionation technology, valuable end-

For EVs, we believe that there will be many disruptions in the next decade. EV will completely change the face of mobility and it will create a huge impact on oil as a fuel.

products can be produced from biomass and used in place of fossil or other less sustainable raw materials.

For EVs, we believe that there will be many disruptions in the next decade. EV will completely change the face of mobility and it will create a huge impact on oil as a fuel. The way solar has emerged in the past decade, we believe EV adoption would follow the same pace.

Additionally, we provide services to reduce NOx in coal-based plants at the primary level. We are watching how the market and business evolve and we will take steps towards the same accordingly.

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FRONTEC AIMS TO INCREASE FOCUS ON INSTALLATION SERVICES

Frontier's performance in the recent past

Frontier Technologies Pvt Ltd (Frontec) has been in the business of manufacturing heat shrinkable products since 1987. During the last few years, we have seen a significant growth in terms of volumes of existing product lines as well as an increased contribution from emerging market opportunities. New products like a fully-insulated tap-off connector for AB Cables (Frontec-MVT) have contributed strongly to business volumes and have also helped establish a technological advantage for Frontec. Frontec manufactures all its heat shrink components inhouse, helping it guarantee product performance to meet customer expectations. Frontec has also started providing jointing services for installation of its jointing kits. This helps ensure quality workmanship and longer service life for the installed joints.

Future Roadmap

Looking forward, Frontec is aiming to increase its focus on installation services. This coupled

Development of new products based on customer feedback and inputs, especially field related and installation issues will help Frontec be in touch with the ground reality.

Ashok Saigal,
Managing Director,
Frontier Technologies Pvt Ltd.



with orders from focus customers who look at life cycle costs and long-term system reliability, will help to establish Frontec as a benchmark for good quality reliable products.

Development of new products based on customer feedback and inputs, especially field related and installation issues will help Frontec be in touch with the ground reality. This ground-up approach will ensure that Frontec products are the preferred choice for both jointers and field staff as well as top management and key decision makers.

Frontec is looking at increasing R&D and customisation of its offerings as per customer

requirements – both for heat shrink cable joints as well as other allied products and services.

Key Differentiators

Frontec manufactures all its heat shrink components inhouse from the granules stage. This is a very different approach from the most of our competitors, and helps us ensure consistency and full traceability

of our products and components. All Frontec products are embossed with our logo to prevent counterfeiting, traceable batch numbers are printed on each and every component. Inhouse manufacturing coupled with a strong system for product improvements based on customer feedback help us stand-out from the competition.

Frontec at ELECRAMA 2020

Frontec will be participating in ELECRAMA 2020. This will be the first time that Frontec is taking up a stall in ELECRAMA. Frontec chose not to participate in previous editions, as we felt that there was not enough of

Development of new products based on customer feedback and inputs, especially field related and installation issues will help Frontec be in touch with the ground reality.

a differentiating factor, and we would not be able to showcase our capabilities optimally.

To highlight our technological advantage as an end to end manufacturer, we have planned a key exhibit, to focus on how our material properties are designed to not only meet, but exceed the required specifications and customer requirements manifold.

We will of course also be looking at networking with potential partners and customers and setting up new avenues for business growth, both in the cable jointing segment as well as any other product development opportunities.

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FUJI ELECTRIC CHARTS INDIA 2.0 PLAN



The Fuji Electric India 2.0 plan envisages the revenues from the India market to reach Rs 1,500 crore by the year 2023-24.

Sriram Ramakrishnan,
Managing Director,
Fuji Electric India

Fuji Electric India's recent performance

With the recent acquisition of Consul Neowatt Power Solutions Pvt Ltd, Fuji Electric has a strong presence across India with almost 1,000 employees, four manufacturing plants and a pan-India sales network operating out of 25 offices with ability to provide support services in over 80 locations through 400 factory trained service engineers. We have identified India as one of the key markets as part of Fuji Electric's global growth plan and will expand our power electronics systems business in India, targeting mainly the manufacturing industries, core heavy industries, buildings, infrastructure and data centre market. The targeted markets in India for Fuji Electric products represent a market

opportunity in excess of Rs 10,000 crore.

Future Roadmap

We recently announced our India 2.0 plan to expand our business operations in India. The Fuji Electric India 2.0 plan envisages the revenues from the India market to reach Rs 1,500 crore by the year 2023-24. It will also involve integration of the Fuji Electric business in India including Consul Neowatt, Fuji Electric India and Fuji Gemco to ensure all Fuji Electric customers in India have the same and consistent pre-sales and post-sales experience. We will also look to expand our local manufacturing capabilities for faster introduction of products in the market with establishment and

localisation of the entire process of production and supply in India—from product development to material procurement, manufacturing, and quality assurance—of AC Drives, UPSs and other components.

Key Differentiators

We have been able to utilise our local R&D capabilities to develop products that are priced competitively and designed to perform in demanding site and power conditions. We are also working to address emerging applications coming up like energy storage, EV charging, MW scale solar power plants, smart city with cutting edge products, solutions and services with an overriding focus on energy efficiency and environment conscious technology.

About Fuji Electric in India

Fuji Electric started direct operations in India in

2009 as a sales company, in 2015 it opened a low-voltage AC Drives factory in 2015 in Bhiwandi near Mumbai. That same year, Fuji Electric also established an engineering company (Fuji Gemco Private Limited) as a joint venture with a local company. In 2019, Fuji Electric acquired UPS company Consul Neowatt Power Solutions. Fuji Electric in India today has four modern manufacturing facilities located in Chennai, Pune, Faridabad and Bhiwandi that are ISO 9001: 2015, ISO 14001:2015 and ISO 45001: 2018 certified facilities. The company today offers customers a wide range of products including Three Phase UPS, Single Phase UPS, Active Harmonic Filters, Solar Inverters, Servo Stabilisers, AC Low Voltage Drives, AC Medium Voltage Drives, Servo Systems, HMI, Motion Control, Factory and Process Automation, Instrumentation and Power Semiconductors to customers in India, Middle East and Africa. B1



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MODEL - KM 887 /
KM 878 / KM 877



**15KV HIGH VOLTAGE
INSULATION
TESTER**
Model - KM 7015IN



**HIGH VOLTAGE 5KV
INSULATION RESISTANCE TESTER**
Model - KM 6305IN



**DIGITAL MULTIFUNCTION
INSULATION RESISTANCE &
CONTINUITY VOLTAGE TESTER**
Model - KM 1154TMF / KM 1152MF



**5KV DIGITAL INSULATION
RESISTANCE TESTER WITH
PI & DAR MEASUREMENT**
Model - KM 2805MK-1



**DIGITAL INSULATION
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GENUS CLOCKS RECORD ANNUAL PRODUCTION & SALES OF ENERGY METERS

Our order book has continuously been growing and stood at Rs 1,498 crore at the end of FY19.

Jitendra K Agarwal,
 Joint Managing
 Director,
 Genus Power
 Infrastructures Ltd.



Genus in FY 19

FY19 had been an exhilarating year, in which we crossed the coveted landmark of Rs 1,000 crore in revenue; the company achieved its highest-ever annual revenue that stood at Rs 1,055 crore against FY18. Our order book has continuously been growing and stood at Rs 1,498 crore at the end of FY19. Genus also achieved the highest-ever annual production and sales of around 7.5 million units of electronic energy meters of different types in the last financial year. Genus's exports business has been growing gradually since last few years and last year was no exception. It executed several prestigious orders from South-East Asia, Middle East and African countries.

With decades of experience, domain expertise and unmatched installation base of around 60 million energy meters across the world, Genus has been aggressively participating in smart grid pilots or projects, either directly or indirectly as main or OEM supplier of smart metering solutions. Today, Genus is recognised for supplying smart metering solutions and services for power distribution companies globally and more

so in India. Genus smart metering solutions or services come with communication modules, high-end systems, controls, and automation software which are designed to address critical issues faced by power distribution companies and thereby, eventually improve their financial health, quality of services and commercial sustainability. Genus tamper proof meters or smart prepayment are also gaining momentum as a key solution for reducing AT&C losses of power T&D sector.

Here, we take pride in mentioning that in the recent past, Genus was awarded the Global Center of Excellence at Jaipur for the successful testing and integration of Genus Smart Electricity Meter Solution in the Living Lab in Jaipur. Genus also received recognition from CESC, a reputed generation and distribution company for "Active Involvement in the Development of Smart Meters". Our quality team also won 7 Gold and 3 Silvers in the 32nd National Convention Quality Circle Awards organised by "Quality Circle Forum of India" at Gwalior and Haridwar. Furthermore, Genus has recently set up an Advanced Metering Infrastructure (AMI)

Continued on page 94



TRANSFORMERS

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11KV to 33KV/66KV/110KV

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lab at Smart Grid Knowledge Centre (a resource centre for providing technical support in all technical matters) of PowerGrid Corporation of India Limited. This setting up of an AMI Lab affirms Genus's capability of offering AMI solutions to meet the government's ambitious goal of smart grid and smart cities in India. These recognitions and accolades are a testimony of the company's technical capabilities and strong evidence of consistency in the quality of its products and services.

Future Roadmap

Genus provides end-to-end energy solutions to power utilities, wherein software plays a vital role. To address the complete functional requirements of AMI and looking into future needs of power utilities, we have ventured into software development for power utilities in a more comprehensive way in line with "Digital India" and "Make in India" initiatives. We have strengthened our specialised application software development in our R&D to serve this purpose. It also aims to make digital resources and services accessible to all electricity consumers using IoT (Internet of Things) interventions and intelligent Apps and self-service portals ecosystem development. The company has plans to offer its software platform and systems to power utilities as a service (PaaS, SaaS). We see a multi-fold growth potential for software solutions in the AMI or smart grid deployment space and are determined to tap this opportunity going forward.

Electricity meters with high-level of security features and suitable for grid modernisation, NB-IoT, data analytics, modular and scalable meters, gas and water meters with communication or prepaid features, smart street lighting for smart city applications etc figure in our future product road map. Bottomline, we invest substantially in our R&D so as to be prepared with ready products for the future needs in the metering domain which is our core expertise.


Key Differentiators

Genus has acquired several national and international quality accreditations or certifications, that bears testimony to the quality of its products and production process or procedures. The company has an advanced R&D Centre, which is recognised by the Ministry of Science and Technology, Department of Scientific

and Industrial Research, Govt of India. Its test lab is accredited by NABL and has a proud CMMI Level 3 Certification for its R&D Software division. These compliance to standards, certifications and accreditations give a competitive edge to Genus over its competitors. All the metering designs are its own. Together with cutting edge equipment, manufacturing plants with automated lines, spread in Jaipur, Haridwar and Guwahati with a production capacity of over 10 million meters, reliability test set-ups, advanced design software for the design of PCBs and moulds, full-fledged tool room for making dies and moulds, injection moulding lines and lean assembly techniques enable the company to continuously improve its products as well as launch new innovative products to meet utilities' future requirements quickly and efficiently. This complete forward and backward integration coupled with technology development capability makes it different from the competition.

Genus at ELECRAMA 2020

I have attended various national and international events in electrical and electronic sector. I have no doubt in admitting that ELECRAMA is the biggest exhibition in the electrical transmission and distribution equipment industry. I will have no surprise if ELECRAMA 2020 grows out to be the world's largest "one-stop-showroom cum shop" for electrical equipment, items, and services. The holding of co located events and parallel activities such as "World Utility Summit", "eTECHnxt", RBSM (Reverse Buyer Sales Meet) further increases the fruitfulness of ELECRAMA for players like Genus.

Though Genus is a well-known brand in India, participating in ELECRAMA enables us to showcase all its products, solutions and capabilities under one roof. Key decision-makers like power utilities, government officials, financial/funding agencies, technical specialists, SIs, communication players, EPC contractors, electrical consultants, overseas visitors, academia, start-ups, students get to realise after visiting our stall or interacting with Genus that here is a company which is not just "Make in India" but is a true "Made in India" company with best of the technologies available within India. To me, this realisation to all stakeholders is the biggest benefit Genus carries forward by participating in this event. 

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Puncture Insulation Detector

GOLDMEDAL TO SET UP A FANS MANUFACTURING PLANT IN HYDERABAD

About Goldmedal

Goldmedal Electricals is a home-grown fast-moving electrical goods (FMEG) company which was established in the year 1979 with a vision to create electrical switches and accessories that make a positive difference to the lives of consumers. In 1981, Goldmedal entered the wires and cables business. In 1995, the company set up a state-of-the-art manufacturing unit in Goregaon, Mumbai for the manufacturing of wires and cables and modular switches. Alongside wires and cables, Goldmedal today manufactures a range of electrical products including various types of switches, home automation systems, security systems, entertainment devices, door bells, wires, cables and more for residential buildings as well as commercial establishments.

How Goldmedal's business has scaled in last one year

With a turnover of Rs 1,400 crore last financial year, we have been growing at a healthy rate of over 40 per cent per annum. While our range of modular switches continue to be the star performer, this year we have expanded our

We have had a steady growth rate so far and are driven to deliver the best results even in this challenging economic environment.

Kishan Jain,

Director,
Goldmedal Electricals



product portfolio with the launch of LED lighting range. Additionally, we are gearing to set up a plant in Hyderabad to manufacture fans. The results yielded so far are promising and we are optimistic about achieving our target turnover of Rs 2,000 crore in the next financial year.

Future Roadmap

We have had a steady growth rate so far and are driven to deliver the best results even in this challenging economic environment. There are some exciting projects in the pipeline, most notably, the launch of Goldmedal fans.

Key Differentiators

At Goldmedal, our focus has been on manufacturing products that are innovative, reliable, environment-friendly and made in India. We believe in sustainability and have adopted strategies to ensure that we cause minimal negative impact on the environment. Our factories, warehouses and offices function to control the company's carbon footprint, energy consumption, water usage and waste production. Goldmedal is proud to be a company that manufactures products in India contributing to the 'Make in India' initiative.

ET

“AIM TO INCREASE INSTALLED CAPACITY UP TO 1 GW”

GOLDI's Performance

The past year has been highly successful for the company not only in terms of module manufacturing but EPC as our natural extension which has been on a forefront to success with various projects under completion phase as well as new projects under pipeline. GOLDI Solar, being one of the top solar PV module manufacturers today in India, has garnered the best manufacturing practices which is helping us to offer our customers with world-class quality products, timely

We expand our presence across the globe and aspire to be one of the major players in the development of solar parks.

Bharat Bhut,

Director, Goldi Solar Pvt. Ltd



delivery and superior customer service support.

Future Roadmap

Focusing on quality has always been our motto. With rapid expansion plans, we aim to be major contributors in helping tackle climate change and have a substantial say in renewable energy. We foresee ourselves as a major international brand to be reckoned with. Very soon we also aim to increase our installed capacity up to 1 GW and expand our presence across the globe and aspire to be one of the major players in the development of solar parks. 

Short courses 1 or 2 days

“Overview to **Prevent Shock and Fire in Electrical Installation and Electrical Safety** in Low Voltage in Residential Buildings and Industrial Plants “as per Indian Standard (IS)”. Indian Standards are based on International Standards (IEC}, followed all over the world.

Electrical Shock and Fire: loss of life and billions of Rs. loss

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- Book for Electricians: On site guide as standards by Lecturer.
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HARTEK GROUP AIMS AT FIRMING UP ITS FOOTHOLD

 **ELECARAMA 2020**
Hall 3 Stall A12



Digital substations equipped with SCADA and other automation devices, smart grid technologies, gas-insulated substations, biogas plants and Smart Cities of the future will be our other focus areas.

Simarpreet Singh,
Director,
Hartek Group

How Hartek Group's business has scaled in last one year

The current financial year has been a great one for us. All our business verticals, including power systems, manufacturing and rooftop solar, have grown at an impressive pace. Our flagship company, Hartek Power, is fast approaching the 2-GW mark in connecting solar

projects to the grid, having commissioned a host of significant projects spread across Gujarat, Rajasthan, Karnataka and Uttar Pradesh. Involving substations of up to 220 KV, the major solar projects executed by the company in the past one year include a 130-MW project in Jodhpur district of Rajasthan, a 100-MW project in Bhadla



Hartek Solar's rooftop solar installations in Chandigarh locality

Continued on page 100



NEUTRALIZER EARTHING

...Don't forget your Brand Safety



NE - Backfill Chemical Compound



NE - Earth Pit Cover



NE - Chemical Earthing Electrode



NE - ESE Type Lightning Arrestor

OTHER PRODUCTS

- NE - GI Chemical Earthing Electrode
- NE - Copper Bonded Earthing Electrode
- NE - Pure Copper Earthing Electrode
- NE - Earth Pit Cover

- NE - Backfill Chemical Compound
- NE - ESE Type Lightning Arrestor
- NE - Conventional Lightning Arrestor



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80-kWp rooftop solar plant at Gurdwara Ishardham Nanaksar in Harike Pattan, Punjab

Solar Park, Rajasthan, another 100-MW project in Pavagada Solar Park, Karnataka, five projects ranging from 30-50 MW in Gujarat and a 40-MW project in Uttar Pradesh. Optimistic about bagging sizeable orders after the next rounds of auctions in coming months with projects to the tune of 500 MW already in its kitty, Hartek Power is expected to further improve upon its performance by the end of the current financial year.

Our rooftop solar division, Hartek Solar, has also grown at a remarkable pace, having achieved a portfolio of 25 MW. Our small-scale solar solutions in the form of customised plug-and-play kits with a unique remote sensing technology have gone a long way in giving a push to rooftop solar installations, particularly in the residential category. Hartek Solar has executed rooftop projects in more than 100 households in Chandigarh alone, and has another 200 residential projects in the pipeline.

Hartek Group's future roadmap

We are firming up our foothold by working on innovative small-scale solar solutions like solar trees and solar fencing to capitalise on emerging trends. We will also be focusing on energy storage solutions and charging stations infrastructure to build a truly sustainable ecosystem for future generations. Digital substations equipped with SCADA and other automation devices, smart grid technologies, gas-insulated substations, biogas plants and Smart Cities of the future will be our other focus areas.

We have already launched our Smart Cities business unit and have executed smart grid projects in the upcoming Smart Cities of Ludhiana, Jalandhar and Amritsar. These prestigious projects were awarded to us by the Punjab State Power Corporation Ltd for the supply, installation and commissioning of SCADA relays at 55 substations in the three cities. We will be targeting more Smart City tenders at the state and Central level in the power infrastructure space.

Be it upgrading existing conventional grids to automated grids or completing power augmentation of cities, we at the Hartek Group strive to offer



Mashobra project

Continued on page 102

HIGH QUALITY FOR YOUR MACHINERY



MGM brake motor main features

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- Very quick brake reaction time
- Frequent START/STOP cycle applications
- Manual brake release (as standard)
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VARVEL production lines

- RS-RT worm gearboxes: 28 to 150 mm centres.
One stage worm, helical/worm and double worm.
- RD helical gearboxes: 50 to 2300 Nm. Two and three stages.
- RN parallel shaft gearboxes: 180 to 3300 Nm. Two and three stages.
- RO-RV bevel/helical gearboxes: 180 to 3300 Nm. Three stages.
- RG precision planetary gearboxes: 10 to 230 Nm.
One and two stages.
- VR dry friction speed variators: IEC63 to IEC90
1 to 5 stepless speed range, 300 to 1500 rpm.
- VS planetary speed variators: IEC71 to IEC112
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Solar EPC project in Muktsar, Punjab

unmatched services to all our clients through our world-class execution skills. We will continue to contribute significantly to building a state-of-the-art T&D network based on smart grid applications like SCADA, which can go a long way in catering to efficient power supply. Sustainability being at the core of our strategies, we will continue to invest in sustainable technologies.

All fired up about adoption of renewable energy and sustainable power infrastructure, we envision the Hartek Group among the Fortune 500 companies—a global leader in EPC of power systems, rooftop solar and manufacturing. Our larger aim is to ensure that every household is well connected with reliable, sustainable and affordable electricity. Our entire focus is to work very closely with customers and provide them with the right technology solutions.

Key differentiators

Our diversified portfolio is one of our biggest strengths, but what has really clicked for us is our focused approach and integrated business model. While people view the Hartek Group as a diversified one with five business units, we see it as one core business model going for forward and backward integration to add value for the end consumer.

Apart from our execution and design capabilities, we owe our success to our unflinching commitment to

quality, timely execution of projects and unmatched services. What has enabled us to emerge as one of the fastest growing EPC companies in the Indian solar space is our unmatched power evacuation expertise and the immense value we create for key developers.

Collaboration is another core strategy of ours which has paid rich dividends. We have built up on the collaborative model of doing business through technical collaborations and licence agreements with global industry giants. For instance, we have tied up with Schneider Electric in manufacturing high-voltage electrical panels and other power distribution products. Our business model is based on collaborating with like-minded partners who are committed to problem-solving and creating a better infrastructure. Unlike other EPC companies, we have maintained a single-supplier system all these years, which has given us an edge. We also have a strong integrated bond with leading suppliers like Siemens, ABB, Havells and Mehru. Our tactical tie-ups with multi-nationals have been a game changer, enabling us to execute EPC projects in record time and helping us achieve unprecedented growth.

Hartek at ELECRAMA 2020

Participating in ELECRAMA for the fourth time, we will be primarily showcasing our services as a leading EPC company which offers unmatched quality and excels in timely execution. Our focus will be on clean energy and the substation projects completed by us. Known for our uncompromising quality standards and timely execution of projects, we have been able to create immense value in the transmission and distribution value chain, which has helped us bag sizeable orders from many big players.

In the last edition of ELECRAMA, we had showcased our newly introduced mobile testing van service, a first service of its kind operating Pan-India. Equipped with hi-tech gadgets and testing instruments, the van is just a phone call away to rectify faults and carry out repairs at power projects and substations. In this edition of ELECRAMA, we will again focus on our service capabilities and the new technologies that we are integrating.

ET

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HARTING: PARTNER FOR E-MOBILITY




 **ELECARAMA** 2020
Hall 7, Stall A1



As a pioneer for reliable, clean and environmentally friendly e-mobility solutions, HARTING Automotive offers tailor-made solutions and components for all relevant markets and

develops and produces charging equipment for electric and plug-in hybrid vehicles. In addition to the number of electrical charging points and a nationwide charging infrastructure, the acceptance and success of electric vehicles will crucially depend on easy to handle, cost-saving and time-saving charging technology.

HARTING offers shows which elements this type of automatic charging solution requires: robot-assisted guidance optimally brings the DC Combo 2 connector into the vehicle's charging socket. After the charging process, the robot pulls off the connector together with the cable and the vehicle is ready for use again after a short time. The provision of the high-power DC supply is optimally adapted to the charging assistant. The fleet operator benefits from the short charging time - and ultimately of course the customer as well, who receives the delivery. HARTING technology group can point on decades of experience in connector and connectivity solutions used in data, signals and power applications, and early recognition of increasing environmental awareness within society with respect to vehicle traffic and the resulting demands and opportunities.

HARTING manufactures charging cables assembly for e-mobility and actuators for various automotive applications. HARTING is a direct supplier to various of e-mobility solutions since 2017 to various automobile manufacturers. 

For more details, Christian.Bohne@HARTING.com

Breakthrough in e-mobility crucially depends on the duration of the charging process and user-friendly charging infrastructure. Long charge times and unwieldy, heavy-duty connectors deter car owners from switching to an e-vehicle. By using renewable energy, E-Mobility delivers maximum potential in saving CO₂ and fine dust emissions. Rapid charging technology with the DC charging plug (combo) is a prerequisite for ensuring that vehicles in future are supplied with facility to charge their vehicles in minutes. Likewise, automatic charging solutions will gain in importance since handling larger charging infrastructure systems is more difficult and the space required for charging in parking garages, on fleet parking lots or in garages barely exists. For electric vehicles operated by regional transport and logistics companies, a fast DC charger will become indispensable to meet delivery times and the fleet availability demanded in the future.



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HPL ASPIRES EXPANSION IN SOLAR AND LIGHTING INDUSTRY

How HPL's business has scaled in last one year

HPL Electric & Power Limited is one of India's leading electric equipment manufacturers with a formidable presence across five key verticals: Metering Solutions, Modular Switches, Switchgears, LED Lighting and Wires & Cables. Our backward (backend) integrated facilities have the capabilities of product design and development, component designing, tool manufacturing and commercial production. From energy meters to lighting to switchgears to wires & cables to LED products, HPL has successfully catered to consumers' needs. In switchgear segment, our performance during the first quarter was marked by double-digit revenue growth in the metering segment i.e. (+) 10 per cent YoY, and steady performance in switchgear revenue by 2 per cent year-over-year (YoY). In the second quarter, the metering business continued its growth momentum as revenues grew by 22 per cent quarter-on-quarter (QoQ) and in the lighting segment, we witnessed robust growth with revenues growing by 48 per cent QoQ.

In the coming quarters, we see these numbers to grow by a large-scale.

HPL's Future Roadmap

HPL has been working tremendously to grow in the electrical equipment industry and furthermore aspires to expand its wings in solar and lighting industry. Recently, we have introduced new range of solar products using the latest technology and design for best-in-class performance and durability. The new solar launches comprises of AC Combiner box in 800V AC for ground mount and rooftop solar PV application, AC Distribution box IN 1,000V AC for rooftop and ground mount solar PV application, LT panel in 800V AC for ground mount solar PV application, String Combiner box in 1,500V DC for ground mount solar PV application and String Monitoring box in 1,500V DC for ground mount solar PV application.

HPL has introduced seven wonders of LED lighting which comprises of latest technology and innovation catering to every household needs. To enhance the aesthetic of home décor, we have launched inverter

Continued on page 108

To deliver the best to our end-consumers, we undertake research and development to consistently upgrade our products and the technologies. In the coming years we seek to be the pioneer of Indian electrical equipment industry.

Gautam Seth,

Joint Managing Director,
HPL Electric & Power
Ltd.



Solutions that fuel progress



Robust electrical and automation systems are the backbone of economic growth and social progress. Your industrial unit must be safeguarded against inconvenient, unwanted breakdowns, while maintaining productivity and efficiency of a high order. This can be done through monitoring, modernisation and upgrade.

Larsen & Toubro offers a comprehensive modernisation and upgrade plan for your electrical and automation system. It includes monitoring and system study to improve power quality, foster better energy management, enhance system reliability and augment safety. L&T also implements the initiatives recommended, and can undertake retrofit and upgrade of critical equipment with minimum shutdown time and at optimum cost.

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Power Talk

Continued from page 106


lamp, remote controlled colour changing lamp and T lamp. To deliver the best to our end-consumers, we undertake research and development to consistently upgrade our products and the technologies. In the coming years, we seek to be the pioneer of Indian electrical equipment industry.

What HPL has done differently from competitors

HPL has always been dedicated to provide solutions and services to customers' delight. We are also committed to the environment public health and safety and outclasses in ensuring eco-friendly range with CE mark that most of the Indian players lack in. Apart from that, our manufacturing facilities and our products have been accredited with various national and international quality certifications. Further, all our manufacturing facilities have been accredited with management system certificates for compliance with ISO:9001 requirements by TUV SUD South Asia Pvt Ltd and the British Standards Institution, India.

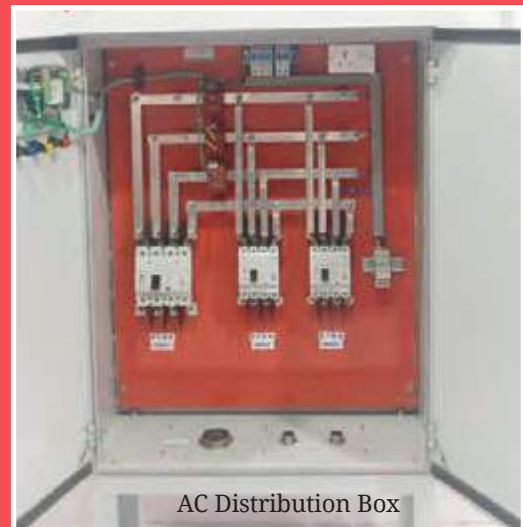
HPL at ELECRAMA 2020

HPL Electric & Power Ltd. has always been an active participant in the industry events and seminars and has represented itself across prestigious global events as well. ELECRAMA is the biggest showcase of the world of electricity and brings together the wide spectrum of solutions that channels the planet and we are delighted to be the board member of IEEMA and feel privileged in sharing space with industry stalwarts.

HPL will be showcasing its entire range and also inaugurating its new range of electrical equipment solutions in lighting, meters, switchgears, and switches at ELECRAMA 2020. 



AC Combiner Box



AC Distribution Box



LT Panel



String Combiner Box

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IEX PLANS EXPANSION IN 2020



As India's leading energy market platform, we envision to transform the future of energy through markets and technology.

Shruti Bhatia,
 Head-Corporate
 Communications and CSR,
 Indian Energy Exchange
 (IEX)

How IEX's business has scaled over the years

The Indian Energy Exchange (IEX) is uniquely positioned to deliver the government's vision to 'Power for All on 24x7'. Over the last eleven years of operations, the Exchange has successfully established a competitive power market in the country marked by transparency, efficiency, flexible customised procurement, payment security and counter-party risk management as its key hallmarks.

IEX's eco-system comprises over 6,500 participants including 50-plus distribution utilities, and more than 4,000 large commercial and industrial consumers, over 500 generating companies located across India. Presently, Exchange contributes 40 per cent of trade in the short-term power market. The volumes traded at IEX platform have grown at CAGR of 15 per cent over the last three years.

Electricity and Certificates are two key existing market segments on the Exchange.

That said, over the last one year our endeavour has been two-pronged - deepen the power market and expand into other areas of the energy basket with technology as the underpinning. In the electricity market segment, we are working proactively with market constituents as well as the policy makers and regulators to introduce long-duration contracts up to 365 days, cross border trade with neighbouring South Asian countries such as Bangladesh, Bhutan and Nepal to begin with, real time market comprising 48 auctions with each auction scheduled every 30 minutes, the green market as well as the ancillary market. We expect to introduce the new market products and segments in the fiscal year 2020. Further, to foster the

development of gas market in the country and unleash the competitive advantage that markets can bring to spur investors, the Exchange is also working to soon introduce the first ever gas exchange in India.

IEX's Future Roadmap

We are building our future roadmap with a common goal that is to make energy accessible, available and affordable. As India's leading energy market platform, we envision to transform the future of energy through markets and technology. The technology is at the heart of everything we do. We have been working relentlessly to deepen the energy markets through new market segments and products as well as expand the competitive advantage of markets into other areas of the energy basket, as already shared. The infusion of Analytics, Artificial Learning, Machine Learning, and Blockchain in our technology offerings will go a long way to make our value proposition even more robust with improved efficiency and security. Towards building and strengthening the organisation, talent acquisition, development and retention will be our key focus areas.

Key Differentiators

We are proud to be the ones who serve as a benchmark for competition in the power market in India. Today, the prices discovered on IEX serve as reference point for all long- and short-term contracts. It has been an exciting journey to create this unique platform, which is driven by the state-of-the-art technology and innovation providing multiple market products for the efficient management of the customer's power needs. Customer-centricity is the fulcrum of our operational excellence, and we work relentlessly to deliver unmatched experience to the market participants. Our value proposition including the transparent mechanism for price discovery is what differentiates IEX from its competition. 101



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WE DO NOT BELIEVE IN JUST SELLING: ALTANOVA

We build relationships, which most of the time leads us to successful business transactions.

Imteyaz Siddiqui,

Regional Area
Manager-South Asia &
GCC, ALTANOVA
Group, Italy



ALTANOVA in 2019

The last year has been very encouraging for us. We are continuously growing, and our presence in the market is becoming increasingly visible by every passing year. The year 2019, especially, has been very productive for us. We have won a few large tenders this year. We are truly thankful to all our customers for reposing their confidence in us and making us their preferential product and service provider.

The merger of ISA and TECHIMP in 2017 to form the ALTANOVA Group has also helped us in this growth process. With the acquisition of IntelliSAW Inc. (from Emerson Group) last month—a US-based company—we have now a much larger portfolio of products and services for our customers.

Future Roadmap

The future roadmap is very well planned. We want to continue with our growth story. We have a strong team of qualified and experienced

professionals, who are not only passionate about their work but also feel proud to be an integral part of the ALTANOVA team.

In addition to state-of-the-art testing instruments from ISA, we now also offer high-quality global monitoring solutions for all HV and EHV electrical assets including GIS, cables, rotating machines, and transformers from TECHIMP. The portfolio from IntelliSAW now provides us the opportunity to offer temperature and humidity sensors together with PD monitoring for MV electrical assets.

Key Differentiators

We take good care of our team and their families, who, in turn, take good care of our customers. We also have a robust network of dedicated sales partners who are working in close cooperation with end customers.

We connect with our customers as their technical partner. We do not believe in

just selling. Instead, we always try to understand the technical requirements of our customers, both current and future before suggesting any particular product or solution.

Furthermore, we along with our sales partners believe in positive sales, which means we put in all our efforts in promoting our products to prospective customers rather than telling anything negative about our competitors. The mantra of our team is to pamper our customers by providing them proactive support.

In a nutshell, we build relationships, which most of the time lead us to successful business transactions.

The portfolio from IntelliSAW now provides us the opportunity to offer temperature and humidity sensors together with PD monitoring for MV electrical assets.

ALTANOVA at ELECRAMA 2020

We are participating in ELECRAMA 2020, as we did in the last editions. We firmly believe that this exhibition is the right platform to showcase our capabilities, both as a product supplier and a service provider. ELECRAMA is also the right platform to meet almost all our customers every 2 years and get proper feedback about our products and after-sales support.

This time we have taken a bigger stall, as we have more products/accessories to display. We are eagerly waiting for January 18, 2020, as it would be full of excitement for all of us.



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HERBERT PAUL

KOTSONS: GROWING GLOBAL



Kotsons' Performance

Our business has scaled to newer height during the last one year. We have actually done a lot change in our modus of operandi during the last 1-2 years. We are now totally focusing on enhancement of export business and development of new value-added verticals. We have worked very strongly to come out from the conventional style of doing business in India.

We have added 8 new countries to our portfolio in the last year including customers from Latin America, Africa and Middle East. We have worked very closely to add new products in our basket such as 3D transformers, solar transformers and special purpose transformers.

Future Roadmap

In terms of the future plan of the company, we are looking at growing to various locations internationally. We are doing the market study right now and are in the advance stages to set up a couple of manufacturing plants globally.

We are also adding one more type of technology in our portfolio which will be ready for market launch in the next financial year. We have always invested in a lot of research and development in our products. We are also developing some special transformers for solar applications and electric vehicle charging stations.

Key Differentiators

Unlike the industry trend, we have shifted our

In terms of the future plan of the company, we are looking at growing to various locations internationally. We are doing the market study right now and are in the advance stages to set up a couple of manufacturing plants globally.

Pawan Kumar Jain,
Chairman, Kotsons Pvt Ltd




customer-base completely to either private customers or to export business. We are completely focusing on private utilities, PSUs, solar, retail, etc. Moreover, we at Kotsons, have always kept ourselves updated with time and technology. So, we proudly state ourselves as one of the most technologically advanced companies in the world. We are manufacturing all available technologies of transformers under one roof. Right from stacked core transformers to wound core technology, dry type transformers, 3D core transformers, foil windings, amorphous core energy efficient transformers, solar and special purpose transformers.

We also have one of the largest baskets of BIS approved transformers in India, including BEE 5-Star-rated transformers.

Kotsons at ELECRAMA 2020

We have always been a part of ELECRAMA and as everyone knows that ELECRAMA today has become one of the largest exhibitions in the world for power sector, so it cannot be missed. We are really looking forward to ELECRAMA 2020 as it has always given us enhancement in our presence in the market and in generating new business leads and customers.

Especially for us, we are very strongly looking forward to 600 foreign delegates visiting ELECRAMA in the Reverse Buyer Seller Meet (RBSM). 



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PROMISING BUT CHALLENGING FUTURE”



Future seems to be very promising as well as challenging. In 2020, we are further approaching for implementation of new version of ISO/IEC 17025 and testing facilities to meet the requirement of newly amended IS 335: 2018.

Narinder Kumar,
 Founder,
 Ktec Oil Laboratories

Ktec's Performance

Ktec Oil Laboratories, a division of Event Electric Pvt Ltd, came into existence in 2015 in Delhi NCR as a part of business diversification. The parent company Event Electric is in the field of transformer manufacturing since 2010 and serving defence as a major customer. Ktec got accreditation from NABL in the field of transformer oil testing in 2018.

India being one of the fastest growing economies of the world requires power for its industrial, commercial and infrastructural development and anything goes wrong anywhere with any transformer, a huge area will be affected. Therefore, it becomes important to monitor transformer health regularly.

Our testing facilities include dissolved gas analysis, BDV, Tan Delta, specific resistivity, density, pour point, furan content, interfacial tension, kinematic viscosity at 27-degree C, water content, flash point, sludge or sediment appearance and others and we are fully equipped to perform the same.

Along with client satisfaction and timely delivery of test reports with accurate and reliable results, it becomes the major factor that we are able to escalate our business from the initial stage. Other reasons for the huge success we are able to gain this year are: focused, active business representatives and marketing team, timely delivery of test reports, test results with high accuracy by analysts, and time to time training to each team member by quality and technical heads. Further, workflow system is designed in such a way that no external factor affects the employee and workflow of laboratory. Without outer disturbance/external factors analyst/team members works freely so that there will be no compromise with quality of work.

Future Roadmap

Being one of the fastest growing segments in the field of transformer oil testing, Ktec is anticipated to post growth in near future and to reach

each and every corner of India. Future seems to be very promising as well as challenging. In 2020, we are further approaching for implementation of new version of ISO/IEC 17025 and testing facilities to meet the requirement of newly amended IS 335: 2018.


In the coming year, we are working to reach our target of testing 15,000 samples yearly and also working for fully automising all the workflow of our laboratory like-scheduling, registration, job allocation, test report generation, billing, and tracking so that there will be maximum accuracy, least chance of error and also time taken for report generation will be minimised and real-time monitoring from job allocation to report generation will be available to the customer on our website and through mobile app.

Ester oil offers several advantages including biodegradability, higher flash point, higher thermal conductivity, lower calorific value and higher temperature stability. In near future, ester oil importance is going to be increased and reach

each industry. In upcoming years, our company is road mapping towards ester oil testing.

Key Differentiators

Today many government and private industries get benefitted with our transformer oil testing and solutions. Some of our prestigious clients include: Indian Railways, IOCL, HPCL, BPCL, NHPC, Aditya Birla Group, Lafarge Cement, Naini Tissue, Ultratech Cement, Toshiba JSW Power System, RSWM, and Siemens.

Among private labs, our laboratory is only one in North region in India having fully automatic Tan delta and resistivity test set. For having high accuracy, we organise monthly internal training, intermediate checks and internal calibration. Customer care/emergency service is available 24x7 for the customer queries and provide timely solutions to the customers. We not only provide testing services but also solutions to the problem of customers, make them understand the benefits of testing and get the least maintenance or breakdown or downtime cost of equipment or process. 



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“KUSAM-MECO INCREASED REVENUES BY OVER 20% FROM LAST YEAR”

KUSAM-MECO in 2019

KUSAM-MECO is a nearly 4-decade old company well-known for quality electronic test and measuring instruments. We try to provide the best services to the customers. We are an ISO certified company for after sales service. And to complement we have a well-trained sales team to provide efficient and satisfactory service to the customer. With such a wonderful amalgamation, business has been very good for our company. We have increased revenues by over 20 per cent from the last year. We have also added more products to our range to meet customers diversified requirements.

We have increased revenues by over 20 per cent from the last year. We have also added more products to our range to meet customers diversified requirements.

Chandmal Goliya,
Director, Kusam Electrical Industries Ltd



measuring instrument field in India which offers the largest range of high safety “UL” listed digital clamp meters which have surge protection from 6 KV to 12 KV depending upon the model. Besides, KUSAM-MECO has the largest range of gas detectors, instruments for HVAC applications, insulation resistance testers, earth resistance testers, power meters, maximum demand controllers, water quality meters, power transducers, transmitters, process calibrators etc. This makes us way ahead of our competitors who market low quality products.

KUSAM-MECO at ELECRAMA 2020


KUSAM-MECO has been participating in ELECRAMA exhibition since the inception of the exhibition. Depending the market situation and availability, we have been booking the stalls accordingly. This year we have been allotted 65 square metres. And we will try to make it as user friendly and informative as possible. We will display our latest range of products and our sales team will try the best to meet customers expectations from our company. 

Future Roadmap

With our very large range of products which meets the requirements of almost all industries, we will add more instruments in our range to meet special and customised demands of the customers, such as steel, cement, pharma and electric utilities companies. This will also add to our revenues significantly.

Key Differentiators

KUSAM-MECO is the only company in the test and

participating in ELECRAMA exhibition since the inception of the exhibition. Depending the market situation and availability, we have been booking the stalls accordingly. This year we have been allotted 65 square metres. And we will try to make it as user friendly and informative as possible. We will display our latest range of products and our sales team will try the best to meet customers expectations from our company. 

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PLAN TO HAVE TRADE PARTNERS IN EVERY MAJOR COUNTRY: KVTEK

KVTEK's Business in 2019

KVTEK in the last one year has shown significant improvement in their business and are expecting to increase their sales turnover by 50 per cent - 70 per cent as compared to the sales turnover of last financial year.

This year KVTEK has manufactured and successfully tested the world's largest Static Frequency Converter of 6 MVA specifically designed for testing large power transformers of 500 MVA rating. This will add growth to our business in the coming years.

Additionally, KVTEK is in the process of manufacturing fully-automated system for the voltage seasoning of vacuum interrupter bottles for Siemens. This is fully-customised system built to the Siemens specifications and is completely designed and manufactured by KVTEK indigenously. This will be the first such project in India which should help them secure more business in the coming years from other vacuum interrupter bottle manufacturers.

Due to unreliability and lack of quality of test equipment coming from China, most quality conscious customers have started shying away from Chinese equipment and KVTEK has been the major beneficiary of this development...

Anil Uppal,

CEO,

KVTEK Power Systems Pvt Ltd



The other significant step which KVTEK has taken this year is that now they have an inhouse NABL accredited calibration laboratory. This adds lot of depth to their business as they are able to supply all test equipment manufactured with NABL accredited calibration certificate which adds lot of value to their customers as this helps them to get their test labs NABL accredited.

Future Roadmap

KVTEK after establishing its footprint in Indian market is now focused on expanding business across the globe. Till date KVTEK has succeeded in exporting their test and measuring solutions to 17 countries and are now in the process of adding 5 more countries every year. KVTEK is working aggressively in making formal tie-ups with

trade partners in the selected countries who in turn will help KVTEK promote their products in their specific countries. Our plan is to have trade partners in every major country in the next decade so that we can cater to the requirements of entire world market in the field of HV test and measuring solutions.

KVTEK's current business of manufacturing HV test and measuring equipment for the electrical equipment manufacturers, often requires lot of customisation which requires a lot of R&D work for each project. This increases the turnaround time of each project significantly thus limits the growth options.

To overcome this challenge, KVTEK is also diversifying to cater to the Indian Railways and Metro Railways requirement of frequency converters. Railways is the single largest consumer of frequency converters; KVTEK will be investing lot of quality time in the coming years to make their static frequency converters suitable for Railways application and their specifications, especially, keeping in mind the converter has to go through harsh environmental conditions and vibrations.

This should open much bigger market for the KVTEK business and will add significantly to the growth to KVTEK business in coming years.

Key Differentiators

HV test and measuring equipment market is a very niche market with very limited number of customers but the main advantage of this business is that there is hardly any competition in it as this is a high technology business which requires lot of R&D time with a very limited customer base.

For the type of equipment manufactured by KVTEK, they do not have any competitor in India. The main competition is with manufacturers based out of China, Europe and the US. Historically, these test equipment were imported from Europe or the

US only as there was no other alternative and the products were really expensive. In late 90s or early 2000, there was sudden emergence of Chinese suppliers in this field and as a result of which European and the US suppliers practically lost their major share of business to them as they were unable to compete with them on price.

Due to unreliability and lack of quality of test equipment coming from China, most quality conscious customers have started shying away from Chinese equipment and KVTEK has been the major beneficiary of this development as KVTEK is able to provide these test equipment which are comparable with European or the US products in terms of quality and modernity and at the same time are priced much more competitively. The other main advantage for all customers especially within India is that no foreign supplier is able to meet the required level of after-sales service which KVTEK is able to provide being locally present.

KVTEK at ELECRAMA 2020

KVTEK is participating in ELECRAMA 2020 and their stall number A11 is located in Hall 3 and the size of stall is 96 sq. mtrs.

KVTEK has been regularly participating in ELECRAMA since 2012 and this participation has immensely helped them in creating the brand value and market both in India and abroad.

Considering the fact that ELECRAMA is single largest exhibition in Power sector, it helps in meeting all your past, present and future customers in a short span of 5 days.

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LANDIS+GYR SCALING NEW HEIGHTS IN METERING INDUSTRY

Landis+Gyr India in 2019

In the last one year, utilities have been exploring the use of smart meters for applications ranging from grid reliability to revenue protection or theft detection. IoT (Internet of Things) is redefining the power grid and the increasing demand for reliable power supply and real-time energy information by power users, will require real-time monitoring of power grids and efficient distribution by power companies.

We have been working very closely with different utilities to understand their pain areas and how Landis+Gyr can help them by providing customised and reliable solutions, wherein there is a convergence between the smart metering and distribution automation using a common communication backbone. This will not only help utilities in getting a better or faster ROI but will also help them building a flexible communication network which is scalable and reliable too.

During, the last one year, we have put more focus on delivering end-to-end Advanced Metering Infrastructure (AMI) solutions to the utilities which will enable them to add smarter pre-paid meters in their network as per the Power Ministry guidelines.

The future opportunities and challenges can only be met with flexible approach, effective planning, innovative ideas, futuristic vision and customised solutions and that is what Landis+Gyr is working on while moving ahead.

Ashish Tandon,

Director - Sales and Marketing,
Landis+Gyr India



Future Roadmap

Landis+Gyr is the number one smart metering solutions provider worldwide, serving over 3,500 utilities and energy retailers globally. Landis+Gyr's three growth platforms: Smart Metering, Grid Edge Intelligence and Smart Infrastructure help to maintain and sustainably grow our market leading position and help utilities to manage energy better.

Meter industry is gearing up towards fulfilling the Power Ministry's vision of replacing all the existing 240 million meters by smart prepaid meters in next three years. To support this vision, Landis+Gyr has all the inhouse capabilities in India along with a variety of customised operating and financial models designed which can take care of

different pain areas of utilities and put them on recovery path via use of smart prepaid meters.

The future opportunities and challenges can only be met with flexible approach, effective planning, innovative ideas, futuristic vision and customised solutions and that is what Landis+Gyr is working on while moving ahead.

Key Differentiators

Landis+Gyr's key strength comes from its robust, reliable and proven solutions which are scalable

and at the same time can be customised as per the customer requirement.

Scalability and security are the aspects where we have an edge over our competitors. Systematic deployment approach with local adaptability is an added advantage with Landis+Gyr.

We have successfully worldwide deployed fully secured, large-scale AMI networks where we have added millions of endpoints in a short span of time.

As the dynamics of metering is changing with a sole purpose to improve the health of the utilities by supporting applications which can bring down losses, improve billing and collection efficiency, and empower consumer to take informed decisions.

Landis+Gyr is hand-holding the utilities by working in depth with them not only to provide data but by leveraging the data as well. Slicing and dicing the data feed into respective consumption blocks is seamlessly integrated into the system therefore, instead of sitting on a mountain of data, utilities are deriving information which is needed for operational

and business intelligence. We have a process driven approach in deployment with checks and measures at each and every point of implementation and operation. This methodology is very successful in various geographies across the globe in diverse topology ranging from rural to urban areas, flat surfaces to hilly terrain, sparsely to hyper densely populated areas.

We offer the solutions which are specifically adapted to Indian conditions and already proven in other utilities.

Landis+Gyr at ELECRAMA 2020

At ELECRAMA 2020, we would be showcasing our systems and solutions, sharing our global experience which will help the utilities to think differently take decisions and move forward in their AMI or smart meter roll out journey. This would enable them to solve their current challenges, help them in preparing for future deployments and make the complex AMI scenario look simple. 18



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“OUR PRIORITY HAS ALWAYS BEEN SUPPORTING OEMs”

How MIDEI's business has scaled in past year

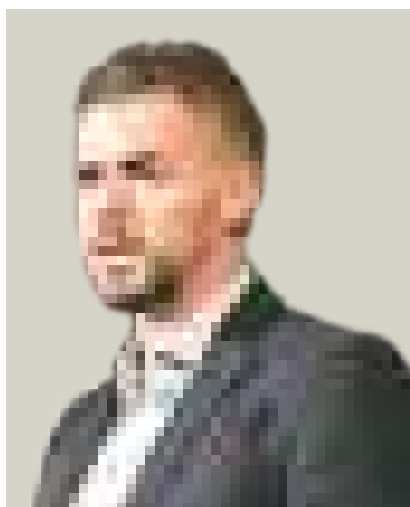
Past year has been one of global growth for MIDEI ester transformer fluids, with production facilities being set-up in South Africa and more importantly for your readers, in India. We have matched that with the expansion of our commercial team right across Asia-Pacific and an expanding regional network of partners and distributors. Closer to home, our experience of the Indian market, not just over this past year but for the past ten years since we've been active here, is that challenging transformer applications require a different approach to one another. This means you can't just have one fluid, so, we have a range of ester transformer fluids which are proven to meet a wide array of challenges.

This in turn demands a different approach than “just” being a materials supplier, so we go above and beyond that. Our reputation is not only

Our reputation is not only for fire safe, biodegradable transformer fluids, it's one of partnership, collaboration and above all, technical competency among a peer-reviewed global community.

Steve Jones,

MIDEI Business Development Director, APAC



for fire safe, biodegradable transformer fluids, it's one of partnership, collaboration and above all, technical competency among a peer-reviewed global community.

Our growth validates us in taking such an approach, which is what we feel the global market is asking for at scale. Also, despite having its own nuances and unique challenges, India is no different in that respect.

Our success with MIDEI in India is something we had the opportunity to explain at length over the summer in our home city of Manchester, UK at the 'India Roadshow', a series of seminars organised by the UK Department for International Trade. In promoting to other potential investors in India how best to do business here was a worthwhile and interesting

look back at how much MIDEI has grown.

Future Roadmap

It might not sound so glamorous, but it really is

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a case of “more of the same” for MIDEI, which will bring with it new adopters of ester technology, safer transformers and more reliable networks, which will particularly increase as more transformers move underground.

Our priority has always been supporting OEMs, utilities and commercial and industrial clients right across the country, educating them about the proven benefits of our technology. To that end, our collaborative approach to bring the best of our experience and competency to the market has not changed and, for obvious reasons, nor will it change.

There is still of course a portion of the market which still relies on the old-fashioned “L1” approach to procurement, and that really isn’t compatible with meeting the increased focus on safety and reliability which the market both expects and deserves.

More and more electrical engineers, reliability professionals and asset managers agree that the end-users still deferring to the old world of “L1” are being left behind by their peers. This is where the MIDEI team excels, matching superior technology with expertise that spans over 40 years.

Key Differentiators

Our industry does not change for the sake of it, which your readers will know. It wants proven, reliable technology and progress is, sometimes very correctly, slow to happen. As the first ester fluid in India, and in bringing a “new” technology to the local market back in 2009,

we had to work very closely with various bodies to standardise the application of esters in power and distribution transformers. In doing so, we have helped to create the foundations on which our industry uses these technologies.

With that approach, MIDEI has become the ester fluids of choice for engineers who demand safer, greener and more reliable transformers. We haven’t gotten

MIDEI has become the ester fluids of choice for engineers who demand safer, greener and more reliable transformers. We haven’t gotten there overnight, but by listening to and supporting the engineering community.

there overnight, but by listening to and supporting the engineering community.

The fruits of all that hard work are visible in a growing number of end users and utilities across India who are now specifying MIDEI for their transformers. In embracing our ester technology, they are reducing the risk of transformer fires, increasing the sustainability of the network and above all, improving safety.

I should also point out that this is true for large power transformers in space constrained urban substations, and for retrofilling distribution transformers in and around congested market areas.

MIDEI at ELECRAMA 2020

ELECRAMA is of course a very important event for the Indian market, which is why we are back again, showcasing the latest and greatest MIDEI installations. Our engagement and appeal are as strong as it’s ever been, all thanks to more end-users adopting our technology.

Our presence this year is a continuation of our commitment to the Indian market and, although we supply our full range of ester fluids, we also bring a lot of experience moving end users away from mineral oil and other hazardous dielectric technologies, such as mineral oil and those used in dry type and gas-insulated transformers. MIDEI has a wealth of expertise globally, spanning over 40 years and this experience runs right throughout our messaging for ELECRAMA. I would urge anybody interested in improving the safety and reliability of their transformer fleet, or reducing its risk, to head over to the MIDEI stand. We will be happy to explain not only how our technology works, but how our expertise can support substation decision-making, and to demonstrate where we have successfully helped others deliver MIDEI projects around the world.

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OPEN TO NEW IDEAS & INVESTMENTS FOR PRODUCT DEVELOPMENT: MITSUBISHI ELECTRIC



Mitsubishi Electric India plans to grow its business and share in the Indian market in the coming future.

Rajeev Sharma,
Head - Corporate
Services & Strategic
Planning,
Mitsubishi Electric
India

Mitsubishi Electric in 2019

Mitsubishi Electric is diligently working towards understanding Indian market needs and delivering products and solutions as per the Indian market standards. The year 2019 has been a prominent year for us. We have launched a new product in the market like MSY GR(T) series, a tropical inverter technology air-conditioner from Mitsubishi Electric. Also, Mitsubishi Electric is managing a double-digit growth in residential AC segment in 2019.

We have explored new business verticals in all our business units. In Factory Automation Systems, we are the leader in factory automation automotive solutions, we are breaking the cliché by entering new industries like steel, power, printing, paper, pharma etc. As a company, we

are diversifying our business and our business units are taking new leads in different domains. In Semiconductors & Devices, we are providing solutions mainly for traction, white goods, renewable energy etc.

We are strongly supporting Indian infrastructure through our transportation services by supplying rolling stock equipment to Metro Railways of many cities. We have wide products range including train control and management system (TCMS) propulsion system for Metro which includes traction motor, control equipment, auxiliary power supply.

Future Roadmap

Mitsubishi Electric primarily focuses on listening to its customers and understanding of growing market needs.


Mitsubishi Electric India plans to grow its business and share in the Indian market in the coming future. Also, Mitsubishi Electric India is open to new ideas and investments for product development and manufacturing in India for which we keep on doing market research and analysis and will do more investments depending on the business scenario in the future.

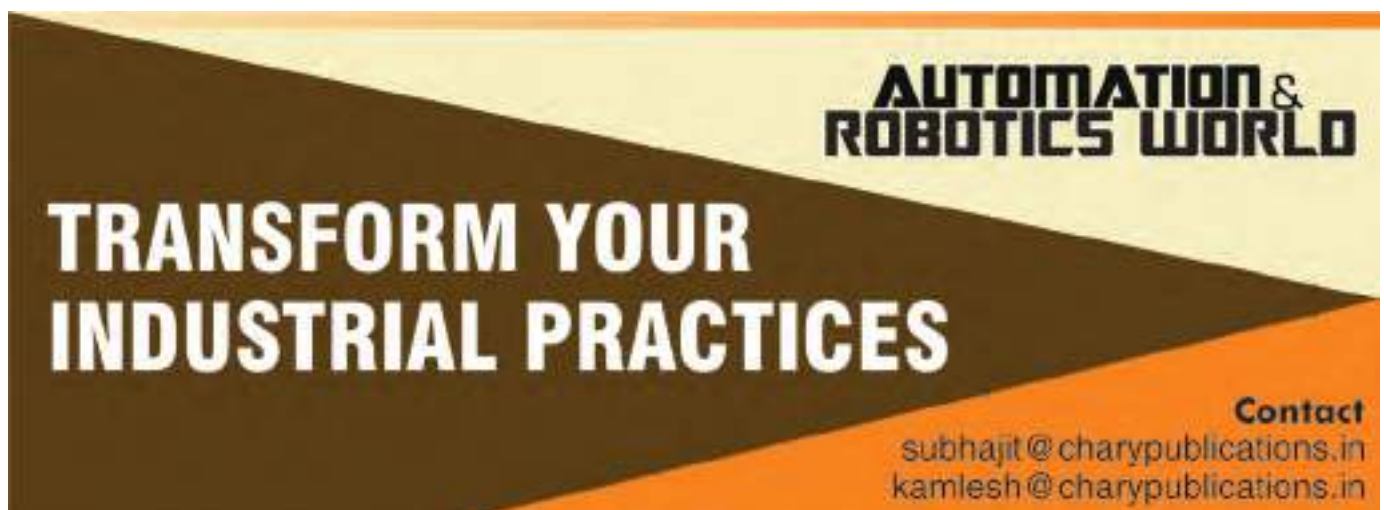
Key Differentiators

Mitsubishi Electric is a global leader in electric and electronic equipment for residential, commercial and industrial use. We consistently try to deliver reliability, quality and efficiency through our product and solutions. To make a strong presence and create a distinction from our competitors, we have applied our primary and secondary market research in the development of products like MSY GR(T) series, a tropical inverter technology air conditioner from Mitsubishi Electric. The air-conditioner comes with features like fast cooling, long air flow, dual barrier coating, micro particle catching filter, quiet operation. One of the significant features of the MSR GR (T) series of air-conditioner is high cooling performance with a guaranteed operating range up to 52-degree C, which suits the Indian needs to beat the heat in hot summers. The inputs on having such a product for the Indian market was from our dealer and business partners who are our eyes and ears in the market. We were able to deliver a product

as per their expectations and within the first year of its launch the product has become a success.

The company also launched a new J-Series transfer moulded power semiconductor module (T-PM) mainly for motor drive applications in electric and hybrid vehicles. It is known that automotive components must especially meet stringent safety standards, which creates demands for power semiconductor modules that provide greater reliability than modules for industrial equipment. The company's new module is expected to contribute to further compactness, weight reduction and reduced power consumption in inverters for electric and hybrid vehicles.

In Factory Automation Systems, we are delivering quality, efficiency and time-saving features through e-F@ctory which promises enhanced productivity. It makes full use of leading-edge control technologies and network technologies to 'visualise' production information, including quantitative and qualitative production data and equipment information. It links production equipment to higher manufacturing execution systems to allow production information to be incorporated into production plans and be utilised to ensure quality traceability. As a brand, Mitsubishi Electric doesn't just promote the cause of sustainability; it advocates this belief through its range of sustainable and energy-efficient product range. After all, it is important to put a sustained effort to achieve a better tomorrow. 



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NEXT GEN TO DEVELOP WORLD-CLASS SERVICE SET-UP

Next Gen's Performance in 2019

Vadodara-based Next Gen Equipments Pvt Ltd (NGEPL) offers complete range of high voltage testing and measuring equipment. For NGEPL, the business is going well as we got some good orders in last couple of years in spite of challenging economic environment. We managed to enter new market in India and neighbouring countries and also maintained the old customer base to their satisfaction. In the last 1-2 years, we managed to enter the State Electricity Boards and many government sectors due to our quality products and we are working very strongly to enter many new SEBs in India. We have also got a lot of success with the testing and calibration labs across India.

However, in the last six months, lots of projects are getting delayed due to one or other reason. We expect that government will take some important initiatives to make the things moving. We are very positive that with the

We are in the process of developing world-class service set-up for our products where customers' issues will get addressed in the least turnaround time (TAT) and everyone will enjoy the benefits of excellent service support of NEXTGEN.

Ather Salim,
Director, Next Gen Equipments



government initiatives and FDI taken in recent times, the market will bounce back. We are optimistic to have better growth in coming year.

Future Roadmap

As we all know that the economic environments are challenging not only in India but also at global level. However, having said that, there will be continuous inflow of funds by the government agencies and overseas make us optimistic about power sector. For the future, our focus is not only to retain our existing customers and principal companies but also to expand to the new area.

Our principals will be launching new products for Indian market in 2020. We are quite hopeful that our customers will enjoy these newly launched equipment

at a great comfort and support. Many of the RAYTECH units have become benchmarks in the transformer industry. We wish to promote some more new products which will become benchmarks for testing

requirement of customers. We are in the process of developing world-class service set-up for our products where customers' issues will get addressed in the least turnaround time (TAT) and everyone will enjoy the benefits of excellent service support of NEXTGEN.

Key Differentiators

Next Gen wishes to market quality products and work only with companies having quality products and better service support. Most of the customers has been facing a lot of issues with imported products due to lack of service support locally and high TAT. We at Next Gen on the other hand understand the

customers' service requirement as a major challenge, hence, our focus is to maintain very short TAT for our service support. Also, we are deliberately representing mostly European companies due to the quality and reliability of their products and have excellent service support to complement their products. We are also very focussed on a specific market segment and do not wish to do everything where we have to compromise on the quality and services of our products.

Next Gen at ELECRAMA 2020

We are participating in ELECRAMA 2020 and looking forward to meet our customers at our stall. We will be exhibiting

some very unique and innovative products and plans to launch couple of new products at ELECRAMA. Experts from our principal companies like RAYTECH AG, Switzerland, ETL Pruftechnik, Germany and EPRO Gallsbach GmbH, Austria will also be present at our stall and visitors can have a detailed discussion with the experts. We will have complete range of products on display and customers can have feel of these equipment features and operations at the stall. Also, we are participating in ELECRAMA as it's a platform where many new companies and customers are available at one location and we are open for discussion on future relationships. 




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3) Cable Tray Accessories	6) Coupler Plate And Hardware	9) C Channel or Z channel	12) GI Threaded Rod and Fastener	15) S.M.C Sintex Junction Boxes

NUMERIC AIMS TO GROW FASTER THAN THE MARKET

We believe that technology empowers the way we work, and we will adapt digitisation to solve the pain points both internally and externally.

Palash Nandy,
CEO, Numeric



How Numeric's business has scaled over the years

Numeric is a leading UPS manufacturer and a power quality solution provider in India established in the year 1984. While maintaining its leadership position in the single phase and line interactive products for 26 consecutive years, we have gained significant market share in the 3-phase and modular UPS, to be the third largest player in the 3-phase category. We have also won many projects in education, infrastructure, IT, ITeS, manufacturing and healthcare segments.

We strongly believe in need-based innovation, and that truly reflects in the products that we offer. This year (in 2019) Numeric launched a premium product in the single-phase segment called Daker DK Plus, which is an epitome of need based innovation and understanding our customers better. The UPS that can be used both in Rack and Tower mode has a rotatable display screen and offers upto 98 per cent efficiency making it a very compact, user-friendly UPS.

Besides the launch, we continuously upgrade our existing products to meet the ever-changing needs of the customers. We also introduced servo stabilisers with an all new look and with additional features. We have had range extensions in our existing 3-phase products with high efficiency and power availability.

For Numeric, digital transformation was one of the key focus areas this year. We believe that technology empowers the way we work, and we will adapt digitisation to solve the pain points both internally and externally. We are focussing on 3 main axes for our digital transformation program – Employee Experience, Customer Experience and Operational Excellence. We will continue to harness the power of technology for efficient functioning both internally and ease the customer touch points with the brand.

As a testimony to all these efforts, we have been bestowed as the leader in line interactive and single-phase products for the 27th consecutive year.

Future Roadmap

Going ahead, we intend to grow faster than the market growth in order to consolidate our market share. We intend to do this by continuously bringing to the market state-of-the-art technology and couple that with world class service through our wide service network.

Numeric's biggest strength has been its ability to always be at the cutting edge of UPS technology. This ability was further strengthened when Numeric became a part of the Legrand group which gave us access to the global expertise of Legrand combined with our local knowledge of customers and applications.

At Numeric, we constantly listen to our customer's needs and are focussed in solving their need with an efficient and effective solution. We have some exciting line up of products for the future as well, which we are sure will address the pressing demands of the industries.

We plan to continue to design new products in this segment and engage with all stake holders like specifiers, system integrators, installers, distributors, end users etc. Our growth is powered by innovation, design and user-friendliness in our products, which are the very cornerstones of our brand philosophy. We believe in driving growth, gaining customer-confidence and market share through these parameters at each step.


4 key Differentiators

- In terms of products, we have a wide range of



Daker DK Plus-Rack Tower Convertible UPS
by Numeric

offerings from 600 VA to 33 MW. This means that we have solutions for all market segments and all applications.

- Our products have the best-in-class energy efficiency. This is critical in today's environment.
- Innovations to solve customers' pain points. This is a real differentiator in all our products.
- Massive service infrastructure – 255 service centres, 1,200 people, of which 900 field technicians. This translates into maximum uptime for our customers no matter wherever they are situated in India. 

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OMICRON - STAYING AHEAD OF THE PACK

Serving our customer with the best solutions and offering the best customer experience has been our core philosophy. This belief coupled with actively sharing knowledge has been our way of life.

Manish Kumar Gupta,
Regional Manager
- South Asia,
OMICRON Energy
Solutions Pvt Ltd



OMICRON in 2019

While the general business sentiment in India falls to the lowest level during last 3 years, we are confident of opportunities the power sector in India continue to offer for now and years to come. India needs more power and at a fast pace to meet the energy needs of high economic growth.

Therefore, while our sentiments are upbeat but customers are cautious in their investments, our business still fared much better than expected.

Future Roadmap

Serving our customer with the best solutions and offering the best customer experience has been our core philosophy. This belief coupled with actively sharing knowledge has been our way of life.

While we shall continue to passionately pursue this philosophy, we also recently realigned our business strategy to the needs of today.

Our future roadmap focuses on extraordinary support to our customers; reconnecting with our key accounts; entering into strategic partnerships with various stakeholders; pursuing opportunities with new market

segments; etc. amongst many others.

Key Differentiators

OMICRON's philosophy and our commitment to passionately and wholeheartedly adhere to it make us different to our competition.

Founder of OMICRON Rainer Aberer said: "Create an environment with no artificial limits where a team of excellent members can reach an excellent performance and enjoy working (having fun) together at the same time. This team should get its recognition for providing the best solutions to the customers."

To elaborate it further, it is important that we continue to innovate solutions, which create value for our customers; we not only fulfil but exceed customer expectations; we share knowledge and act in a fair and sustainable manner.

This way, we stay ahead of the pack, as the saying goes.

OMICRON at ELEC RAMA 2020

We are participating in ELEC RAMA and are very excited to showcase our newly launched products, i.e. 'StationScout' for smart



MONTESTO 200



StationScout

testing for Automation, Control and SCADA Communication for Smart Grids; and 'MONTESTO 200' which is portable, on-line partial discharge measurement and temporary monitoring system for high voltage substation assets. We are looking forward to welcoming all customers to our booth. ^(B)

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“WE WILL ALWAYS BE READY WITH NEW TECHNOLOGY”

Pepperl+Fuchs is a leading developer and manufacturer of explosion protection products for the global automation market. What's your take on the recent business scenario in India?

Overall industrial business scenario in India could be rated as 'below normal'. However, since Process Automation Division of Pepperl+Fuchs focus on hazardous area applications using explosion protection products and solutions, we have not felt the heat so far since most of the requirements are of mandatory type for various type of oil and gas or petrochemical customers. Of course, major projects and big investments are not seen this year and there has been bad cash – flow situations in recent months with SMEs due to delayed payments from customers and GST returns.

What are the new product segments you have added during the past couple of years?

Pepperl+Fuchs management has taken a strategic decision in 2015 to start global manufacturing centre in Chennai for specialised explosion

We are the only company with right products and right engineering background and technology, besides manufacturing and assembly plants for catering all hazardous area applications of industrial customers in India.

Dr Thampy Mathew,
Managing Director,
Pepperl+Fuchs (India) Pvt Ltd



protection junction boxes using aluminium, stainless steel besides cast iron and GRP for all types of applications in hazardous areas. Availability of raw materials and qualified and less expensive manpower in abundance has made Chennai the competence centre for electrical products and solutions by middle of 2019. More and more products are getting added to the portfolio of parts production assembly of Chennai facility besides electrical and automation solutions to customers in India and Middle East.

Pepperl+Fuchs also did strategic acquisition of German company “Ecom” pioneers in mobile phones and tablets for hazardous area working with Android or Windows for various mobility applications

including push-to-talk, integration with DCS/SAP etc. This product range calls for wide application in maintenance of hazardous area plants besides directly adds to the latest Industry 4.0 perspective.

What's your future plans in terms of business expansion?

Pepperl+Fuchs work with a vision to be the

best global supplier of high-quality products and solutions in factory automation and process automation markets have so far achieved our mission with innovation of technology, highly cost-effective production and logistic centres besides market reach and customer support. We will always be ready with new technology products much before customers start embracing them. At the moment, we have both our divisions working towards developing full-fledged solutions for IIoT/Industry 4.0 applications as required by our customers.

What's on the cards for India's electrical equipment industry in 2020?

We already have achieved required infrastructure and knowhow for manufacturing products required for electrical industries. More and more new applications being targeted using our strong engineering background like developing complex solutions in start-up panels, power distribution panels, and skid panels with focus on hazardous area usage.

Where will the growth come from?

From all the above – from standard products and simple solutions to

complex solutions. We are the only company with right products and right engineering background and technology, besides manufacturing and assembly plants for catering all hazardous area applications of industrial customers in India.

How are you gearing up for the future opportunities and challenges?

Opportunities are mostly created by regulations and technology changes – challenges to develop products and applications are our key strength and hence, we always look forward to such opportunities to increase our market share in India. E



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POLYCAB AIMS TO INCREASE ITS MARKET SHARE

How Polycab's business has scaled in 2019

In first half of FY20, Polycab has done well to stand tall against the prevailing economic conditions to achieve a 20 per cent y-o-y revenue growth and 28 per cent y-o-y growth in EBITDA. Going forward, I expect the latest announcement of corporate tax rate cut will take some time to translate into real benefits with demand picking up only by fourth quarter of FY20. This year demand is likely to be driven by infrastructure projects.

Future Roadmap

Talking about the future, we will continue to work on enhancing and strengthening our leadership position in wires and cables by increasing our geographical penetration and providing customised solutions to customer's problems. Our strategy is to expand our market share by targeting key growth sectors such as mining, oil

Our strategy is to expand our market share by targeting key growth sectors such as mining, oil and gas, shipping, power, renewables, infrastructure, construction, automotive, telecommunication.

Shashi Amin,

President and SBU Head - Cables, Polycab India Limited



and gas, shipping, power, renewables, infrastructure, construction, automotive, telecommunication. We are continuously working on increasing the coverage of channel finance for our distributors and also rationalising our inventory levels to optimally meet our customer requirements and thereby reducing the financing cost.

In 2014, we started on the path of diversification when we entered the FMEG (fast moving electrical goods) segment with Polycab line of fans, lighting, switches, solar products, conduits and accessories. To increase our brand recognition and buzz, we have recently launched new experience centres to help users experience our wide range of products.

Key Differentiators


We, at Polycab, take pride in being the largest

manufacturer of wires and cables in India in terms of revenue from the wires and cables segment. Our extensive range of wires and cables well supported by our FMEG products such as electric fans, LED lighting and luminaires, switches and switchgear, solar products and conduits etc. makes us one of the most sought-after electrical brands in India. Our biggest competitive advantage is our strong and unrivalled distribution network across India comprising of over 3,400 dealers or distributors and more than 1,00,000 retail outlets which enable us to roll out new products more quickly. We also have the largest production capacity of wires and cables with high degree of backward integration for copper rods, aluminium rods, various grades of PVC, rubber, XLPE compounds, GI wire or strip. We have a 50:50 joint venture with Trafigura to set up the Ryker plant for producing copper rods with annual capacity of approximately 2.58 lacs MT. Another key to our success lies in product innovation, quality and availability of materials which is enabled by a strong R&D facility for PVC compounds and polymers and inventory level. Our central quality and test laboratory located at Halol is accredited by NABL. We are also the only company to ensure ready availability of MTS items because we stock a large no. of SKUs of wires and cables compared to any of our competitors.

Polycab at ELECRAMA 2020

ELECRAMA, being the largest electrical exhibition, provides us with an opportunity to exhibit our wide range of products to the target customers and specifiers. The entire electrical industry ecosystem come together to explore the latest innovations, trends and opportunities in the industry. ELECRAMA is visited by the most of the decision makers of power utilities, government organisations, electrical equipment manufacturers, EPC contractors, consultants and other specifiers which make a compelling case of having

our presence so as to establish a connect with these people all under one roof. Interaction with these decision makers helps us in understanding the current technology, customer requirements and also the future trends in the industry and therefore, we have been part of ELECRAMA for many of its previous editions.

In the coming edition of ELECRAMA, we will display our diverse range of wires and cables which includes power cables, control cables, instrumentation cables, rubber cables, solar cables, building wires, green wires, flexible cables, communication cables, welding cables, submersible flat and round cables, overhead conductors, and other specialty cables. Further, we will also display our FMEG line of products which include fans, lighting, switches, switchgear, pumps, solar, conduits etc. 



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PRIME MEIDEN AIMS TO BE AMONG TOP 5

We will be focusing on large power transformers and have target to become one of the top five transformer manufacturers in India.

M. Vijayakumaran,
Sr. Transformer
Expert, Prime Meiden



How Prime Meiden's business has scaled over the years

Prime Meiden Ltd (PML), an Indo-Japanese joint venture company, is one of the leading players in the field of power transformer having a state-of-the-art factory located in Naidupeta, district Nellore, Andhra Pradesh. It is a green factory equipped with all modern facilities for manufacturing and testing power transformers up to 500 MVA, 400 kV. We have supplied transformer of 315 MVA 400/220/33 kV to APSEB and transformer is in operation. Meidensha acquired major share in 1917 and the management is in their control. The productivity has improved significantly and there is continuous improvement. Current year our turnover will be around 3,000 MVA.

Future Roadmap

Being a SEZ unit, we are focusing mainly on exports. We have business with companies in Japan, Malaysia, Vietnam, Philippines, Africa, Europe etc. In domestic business, we are concentrating on Indian Railways. We will be focusing on large power transformers and have target to become one of the top five transformer manufacturers in India.

Key Differentiators

We are taking all actions to ensure the same quality as



100 MVA, 220/55 kV Scott connected transformer for DFCC project (without cooler)

Japanese standard for our products. We welcome short circuit test as a test for quality and we have many transformers SC tested satisfactorily in CPRI. Incidentally, 100 MVA 220/55KV Scot connected transformer, which is the biggest Scott transformer manufactured in India we have, SC tested successfully in CPRI.

Japanese endowed course

N.K.B.R. Institute of Science & Technology, Vidyanagar has accepted PML's Engineering course. Our experts are giving lecture classes and also factory visits are conducted for batch of 60 pre-final Electrical and Mechanical students every year. Lecture subjects are power generation, T&D, transformer technology, safety in manufacturing, quality in manufacturing, Japanese culture and communication.

With Japanese Engineers, the course assists the students to understand electrical industry closely and choose the career suitably. EI



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- VARIABLE TRANSFORMERS
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ANY KIND OF STEP UP & STEP DOWN TRANSFORMERS FOR LT/HT SUPPLY
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RISHABH EYES ACQUISITIONS, NEW PRODUCT DEVELOPMENT

 **ELECHEMA** 2020
we are all about electricity
Hall 5, Stall E10



Rishabh foresees the technology advancement like solar inverters and EV charging before they are taken up by our competitors.

Narendra Goliya,
Chairman,
Rishabh Instruments

Rishabh's Business in 2019

Rishabh budgets grow between 20-25 per cent year-on-year. This growth comes from existing products in new markets and new customers and new products. We have kept this growth during last one year. Besides, we will introduce range of new multi-meters, high voltage insulation testers and solar inverters. Focus of the company is on innovation, new product developments and international acquisitions. Rishabh will be happy to announce one such acquisition in the coming months.

Future Roadmap

The company's future lies in innovation and product basket expansion. We have started cam switch, solar inverters and resin cast CTs in the last

few years. Power quality multi-meters with higher bandwidth and with Bluetooth have been some of the recent innovations in our product basket. With the grid becoming stable and lot of agriculture load being diverted to solar generation, grid has to deliver good quality power to the consumers. Hence, measurement of power quality and improvement in power quality is a focus area for our company.

Compact CTs which deliver lower VA are required because electrical measurement instruments require much lower VA burden than conventional products. Hence, focus will be on CTs with transducer, compact CTs, CTs with 100 million/10 volts, 3-phase CTs to lead the market requirements.

Key Differentiators

Our company has always been leading in innovation by giving new products, innovative, safe, and reliable and do much more things than competitors' products of conventional products. There is no other Indian company which has as many products as Rishabh has with UL listing and meeting CAT3 600 volts requirements for use in industrial information.

Our DIY (do it yourself) market has multi-meters and insulation testers which can be used by students. At Rishabh, meeting the relevant specifications is a starting point we try to achieve much more than meeting the standards published by BIS or IEC. We lead in changing technologies for e.g. Modbus to Ethernet to BACnet to Profinet. We lead in making products universally so that with the auxiliary, input and output can be programmed by the customers or the distributors at their end.

Rishabh foresees the technology advancement like solar inverters and EV charging before they are taken up by our competitors.

Rishabh at ELECRAMA 2020

The main purpose is to introduce the new technological innovations and to reach out to our worldwide customers. Introduction of technological innovations has a common aim, that is to bring more safety, accuracy, user friendliness, energy efficiency, cost saving, and optimum utilisation of the available resources for the customers. Rishabh also focuses to bring these dimensions in picture through introduction of the new products with cutting edge technology.

Just to put a case in the picture is the various losses occurring at different points across the industry due to the inaccurate and inefficient means of measurement. Rishabh would be happy to provide a solution by the way of introducing our Power Quality Analyser which will not only minimise the

Focus of the company is on innovation, new product developments and international acquisitions. Rishabh will be happy to announce one such acquisition in the coming months.

problems faced by the customers on account of power and energy related parameters (especially with power electronic devices polluting the networks in an increased manner) but also would help in the national cause of conserving the electricity. Eventually, would contribute to vision of "Greener Tomorrow". India has a goal to provide cleaner and greener energy in the remotest areas of the country, but we also have to ensure clean energy to the advanced medical and electronic devices that do not harm the networks. So, controlling harmonics, swells and dips becomes a priority area for the electricity users of tomorrow.


So, one needs mini- and micro-measurement devices both for cost and space optimisation. Connection between devices has to be quick and positive with no chances of CT secondary opening and we are developing products to meet these requirements. We wish to provide this awareness to the users, which is also a purpose to be a part of this exhibition.

In the field of technology, we have introduced the unique solution of NABL-accredited EMI-EMC facility at our Nasik location. This state-of-the-art facility has been built with a philosophy to provide complete testing solution not only for the Rishabh products but even for the customers and vendors all across the globe. We will keep special screen at the ELECRAMA which will run a video showcasing the strengths of our EMI-EMC test facility.

Last but not the least, Rishabh has a basket of products both existing for many years and new introduced in the last couple of years. It is not possible to demonstrate all the products to all the customers and various departments. At ELECRAMA, people come with a view to understand products and their applications in various fields. Utilities and Railways are a big consumer of Rishabh products and this is opportunity to connect with the management people to demonstrate existing and new products.

■

THE POWER OF TWO

 **ELECARAMA 2020**
Hall 11, Stall F3



With L&T's E&A division, India will become one of the key innovations and manufacturing hubs for Schneider Electric, globally.

Anil Chaudhry,
Zone President &
Managing Director,
Schneider Electric India

Schneider Electric expects to complete the acquisition of Larsen & Toubro's Electrical & Automation business soon. In an interview with **Subhajt Roy**, Anil Chaudhry, Zone President & Managing Director, Schneider Electric India explains that the combined business will create significant synergies and efficiencies by leveraging the complementary businesses of Schneider and L&T E&A business. Excerpts:

Mr Chaudhry, congratulations to you and your team on opening the second smart factory in India. Tell us more on the concept of 'smart factory' and how it will benefit your customers.

Schneider Electric has launched several smart factories around the globe in countries including Mexico, China, France, USA, Indonesia

and the Philippines. Our smart factories in India demonstrate the company's EcoStruxure architecture and related suite of offerings that drive process automation, increases operational efficiency and reduces costs in the industrial environment. With the presence of two smart factories in India, Schneider Electric further strengthens its contribution to the Industry 4.0 agenda in India by providing customers with a showcase of the benefits of industrial digital transformation, enhanced performance, increased reliability and safety, and remote monitoring and preventive maintenance.

The Bengaluru Smart Factory demonstrates how the digitisation of industrial environments using EcoStruxure can optimise the processes for both production and end to end supply chain

operation and take energy efficiency to a whole new level. Our Smart Factory Program has been recognised by the World Economic Forum's network of manufacturing lighthouses, which aims to create a learning platform through the world's best manufacturers who are embedding the technologies of the Fourth Industrial Revolution into modern production. Schneider Electric is committed to developing as many smart factories by 2020, globally, and the Bengaluru Smart Factory, which manufactures IT products and drives that are delivered to customers across the globe, is one of our key smart facilities in this region.

What's the commitment of Schneider Electric India to the group?

We are the third largest country in terms of revenues for Schneider Electric, at par with France. Also, post integration of Larsen & Toubro's Electrical & Automation (E&A) business, we are set to become one of the key innovations and manufacturing hub for India as well as for global markets.

Schneider Electric India is well-positioned to serve the fast-growing Indian energy management and industrial automation industry as well as the global markets.

Earlier you said that Schneider Electric is committed to "India for Globe". What are your India-specific expansion plans?

Having two smart factories

located in India in itself reinforces our commitment to the Indian government's 'Make in India' program which is designed to facilitate investment, foster innovation, enhance skills development and build best-in-class manufacturing infrastructure in the country. India is one of the key markets for Schneider Electric where we have been witnessing robust growth.

We already have 23 manufacturing units across the country, making a wide range of energy efficient products. Half of our production in India is exported to global markets. Also, we heavily invested in R&D in India with a significant part of products developed especially for India under our India for India initiative.

How will acquisition of L&T's E&A business consolidate your portfolio and reach?


With L&T's E&A division, India will become one of the key innovations and manufacturing hubs for Schneider Electric, globally. Further, this merger will contribute to making India green, digital, and reinforce its role as a centre for R&D and manufacturing for Schneider Electric.

The combined business will create significant synergies and efficiencies by leveraging the complementary businesses of Schneider and L&T E&A business, including:

- Wide range of products and technologically superior solutions to the Indian

Schneider Electric is committed to developing as many smart factories by 2020, globally, and the Bengaluru Smart Factory, which manufactures IT products and drives that are delivered to customers across the globe, is one of our key smart facilities in this region.

consumers across portfolios and price points.

- Widespread network of distributors/channel partners and extensive geographical reach across India, enabling Schneider access to consumers in tier 2 and tier 3 cities and semi-urban and rural areas across India, where Schneider Electric currently has a limited presence.
- Enhanced manufacturing footprint in India which will result in greater domestic production, reduced dependence on imports and increased employment opportunities.
- Developing India as the "fourth" hub for Schneider globally (the other three being US, France and China) to cater to the growing Indian market as well as develop India as global markets. 

“FOCUS ON MAINTAINING TOP-LINE, CUTTING COSTS”

How SCOPE's business has scaled in last one year

We have been witnessing overall slowdown in India and power sector is not exception to this. For last one year, we are focusing more on maintaining our top-line and cost reduction by improving operational efficiency. As compared to the other companies who are in similar business like us, SCOPE is doing good.

Future Roadmap

Test and measurement (T&M) is our focus area. We are working in advanced technologies such as Artificial Intelligence (AI) and Machine Learning (ML) and will be shortly bringing these technologies in T&M products. We are increasing the product portfolio of our T&M business and we hope this would lead to capture more market share.

Our roadmap for all our verticals is clear and we are making growth in all our ventures. We introduced our SCADA and in order to meet customer requirement we got it certified from the International body DNV.GL (KEMA). We are

For last one year, we are focusing more on maintaining our top-line and cost reduction by improving operational efficiency.

Sanjay Kulkarni,
Chairman, SCOPE T&M



also going ahead with our foreign partner for relays. This enables to offer more customised solutions to the customers.

Our services venture under the banner of ISSPL is focusing more on executing projects in SAS, relay retrofitting, PMUs and RTUs and O&M contracts. We are cashing in on opportunity in these areas from the industries which are facing the slowdown. To enhance the growth of ISSPL, we are now providing earthing solutions to the industries. This product has potential to redefine earthing standards in India.

Key Differentiators

SCOPE always believes in developing products and solutions, by keeping in mind, “innovation with value proposition” to customer. We have developed IoT-based solutions for distribution companies to give quick visibility of their feeders and transformers, improving their quality of supply and reducing losses. This will not only help utilities but also other industries to maintain the availability of feeders, quality of power, reduces losses and save money. Our IoT-based solutions are cost-

effective as compared to the available conventional RTUs and FRTUs based solutions.

ISSPL, our service company, is now O&M service provider to the utilities. I can proudly say that we were able to gain the customers trust by following the best practices in O&M following good documentations by using IT in recording and maintaining the T&M data of critical assets up to 765 kV substations. This in turn helps our customers to maintain their critical assets such as transformers, circuit breakers, CTs, PTs, LAs and protection relays.


SCOPE at ELECRAMA 2020

We are participant and exhibitor at ELECRAMA 2020. We will showcase new products with respect to earthing solutions, IoT solutions, protection and automation solutions.

We would be displaying our SCADA Action.NET software, relays, protection testing equipment etc.

We would be also displaying our primary injection test set (PRIMA) and hi-potential test equipment (hi-pot).

We are regularly participating in ELECRAMA and we are proud to get associated with IEEMA. It is a good platform to get visibility and branding to your company products and solutions. ELECRAMA now provides an opportunity to meet the potential customers through their change-X-change program. We will be utilising this opportunity during the exhibition. SCOPE was largely benefitted for its international business through this program in the last edition, expecting better opportunity this time.

SCOPE has been participating to showcase their products and solutions, seek feedbacks from their customers to add and/or improve the features of our products and solutions. We are committed to offer innovative products and solutions with value propositions to our customers. 



SURYA SYSTEMS PRODUCTS



Capacitor 	Detuning Reactor 	Thyristor Switch 	MV Vacuum Contactor 	MV APFC Panel 	Original MC4 Solar Connector  <div style="position: absolute; right: 0; top: 0;">  </div>
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SECURE: EMPOWERING END-USERS TO MANAGE AND SAVE ENERGY

How Secure's business has scaled during last one year

Secure is an Indian multinational and a privately owned business with operations in India, UK, Australia, Sweden, and the Middle East. For Secure, during last one year, business has grown in different segments with key emphasise on value-added services offerings.

Future Roadmap

We are focusing to align our products with the vision of 24x7 quality power for all and also with the need of distribution utilities and end consumer. The changing landscape of utilities would see a transformation into more and more focus on helping the consumer get better facilities, good quality and reliable products. We see services as a key differentiator to improve the customer experience.

We are focusing to align our products with the vision of 24x7 quality power for all and also with the need of distribution utilities and end consumer.

Sunil Singhvi,
CEO, Secure Meters Limited



Key Differentiators

Our diversified product portfolio has been designed to solve customers' problems – be it end-to-end smart prepayment metering system, effective subsidy management system, grid metering or power quality metering solutions. We have launched new innovative products catering to various field applications empowering end-users to manage and save energy.

Secure at ELECRAMA 2020

ELECRAMA is an excellent platform for exhibiting our technical capabilities to global clients, regulators, utility officials, business partners etc. It gives us a great networking opportunity to share and learn from global best practices. We look forward for having a constructive exchange of ideas from all parts of the world. 



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POWERING UP THE TRANSMISSION INFRA

We are undertaking massive revamps of transmission lines across various states and transforming power delivery networks.

Manish Agarwal,
CEO - Solutions
Business,
Sterlite Power

How Sterlite Power's business has scaled during last one year

Sterlite Power is a leading global developer of power transmission infrastructure with projects of over 13,315 circuit kms and 23,885 MVA in India and Brazil. With an industry-leading portfolio of power conductors, EHV cables and OPGW, Sterlite Power also offers solutions for upgrading, uprating and strengthening existing networks. In Solutions Business, I can say that we have oriented ourselves to be a leading, differentiated solutions provider in the transmission industry. We are undertaking massive revamps of transmission lines across various states and transforming power delivery networks. Our uprate/upgrade projects in Kerala are helping the state government to transform traditional energy delivery networks with the use of cutting-edge technologies like MCMV towers, alternate construction methods- Micropiles, aerial technologies for stringing etc. We are enhancing the transmission capacity in these corridors in many cases by 14 times, in compressed timelines, without taking up any additional space or new infrastructure. We were the first company in India to herald in 'Live Line' reconductoring

in Bangalore – we doubled the transmission capacity on a 66 kV transmission line connecting to electronic city, by replacing existing conductor with HPC – without taking a power shutdown, as is usually required. We worked on energised lines with 'specialised techniques' to deliver this project by avoiding any disruption to power supply to nearby areas. Recently, we installed the longest span with an HPC across a river crossing – for the Purnia-Bihar Shariff 400kV double-circuit transmission line. A specialised ultra-low sag composite core conductor was developed for this project. This will revolutionise the way river crossings are done in transmission projects across the country.

Our specialised EPC arm pioneered robotics technology for installation of OPGW on high-voltage power transmission lines under energised (live-line) conditions. Our solutions on capacity enhancements, congestion relieving, fiberisation, smarter underground networks on FIPC etc, help our customers to address their network congestion issues through the framework of time, cost and capital.

Future Roadmap

Our core purpose is central to all our endeavours, which is 'empowering humanity by addressing the toughest challenges of energy delivery'. Given that our core purpose is at the heart of our strategy, we will keep going after the toughest projects. We will have to have the best talent, and this means investing in our people and their development, investing in R&D, partnering with leading technology providers at a faster pace and also with our customers so that the right policy environment is created.

Key Differentiators

Our specialised EPC picks up projects which have the toughest challenges. In our products segment, our focus on working directly with top utilities in India and also the best in Europe, Middle East and LATAM. In the underground transmission network segment, Sterlite Power is increasingly co-creating technology intensive solutions at EHV levels. We will continue to invest in the best talent – R&D and

innovations. Other than this, we are hugely focussed on the social impact that we create through our work. These will always remain our differentiators.

Sterlite Power at ELECRAMA 2020

ELECRAMA is a prestigious event to be associated with and we look forward to our participation. It is the flagship showcase of the Indian electrical and power sector ecosystem. We have been consistently participating for many years. In fact, in 2018, we were the 1st runner up amongst exhibitors. We have also presented a few thought leadership addresses at this important forum in the past. Consistent with our theme 'Reimagining Energy Future', we plan to showcase our global technology partnerships and will be launching a few capabilities and new products that have been developed inhouse. Our showcase will also consist of global technology systems integration solutions, power systems simulation capabilities, alternative construction techniques and next gen products and technologies. ^(B)



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STURDY VOLT AIMS TO BECOME LEADING TRANSFORMER COMPONENTS MANUFACTURER

Sturdy Volt's Recent Performance

Sturdy Volt is a budding company based in Hyderabad established in the year 2016, focused on providing the best quality components to transformer manufacturers.

At the veritable heart of the transformer manufacturers' requirements, backed by 4 years of R&D with all the existing gaps tended to impeccably, Sturdy Volt prides itself in developing quality OLTC (on-load tap changer) product which is light in weight, compact and can be used for both oil-cooled and dry type (cast resin) transformers up to 33 kV class, the first of its kind in the world.

Future Roadmap

Manufacturing quality products and providing customer satisfaction by meeting the exacting needs of the customers is our top priority. (We aim) to become the leading transformer components manufacturer by

With one of the advanced and world-class manufacturing facilities as its backbone, Sturdy Volt specialises in providing faster delivery in an economical way – from manufacturing 30 units per day to overnight delivery.

Harsha Vardhan Reddy M,
CEO, Sturdy Volt



delivering quality driven components. Our single-line production unit and skilled workforce drive us towards achieving best results. We continuously work towards improvement and innovation of our products.

Key Differentiators

A customer-friendly company whose efforts are strengthened by the presence of competent and skilled staff members, Sturdy Volt has the competency to provide exceptional commissioning and servicing expertise that's best in the realm.

The products are developed perpetually based on the customer requirements using the technological trends. With one of the advanced and world-class manufacturing facilities as its backbone,


Sturdy Volt specialises in providing faster delivery in an economical way – from manufacturing 30 units per day to overnight delivery. Endowed with

in-house 3D design facility, automated casting process and in-process testing, Sturdy Volt encourages a work culture that strives for continuous improvement at all times.

Sturdy Volt at ELECRAMA 2020

Sturdy Volt Pvt Ltd will be for the first time presenting its on load tap changers upto 33 kV, 17 position linear, 17 position non-linear and 9 position linear that are



first of its kind in the world as a result of 4 years of rigorous R&D, precision machinery, accurate testing and inhouse manufacturing. Patent for the same has been applied and is under progress. We also manufacture other transformer components such as marshalling box, RTCC panels and cast resin coils (upto 33 kV). We would like to take this opportunity to invite you to come over to have a look at our products that are crafted to the transformer manufacturers' requirements. 



NATIONAL INDUSTRIES

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 <p>PERFORATED CABLE TRAYS</p> <p>Width: From 50 mm to 1200 mm</p> <p>Height: From 50 mm to 150 mm</p> <p>Thickness: From 1.2 mm to 3mm</p> <p>Length: From 2500 mm / 3000 mm</p> <p><small>Material: Mild Steel/ Aluminum/ Stainless Steel/ Galvanized Sheet. Finish: Painted/ Epoxy Coated/ H.D. Galvanized/Anodized/Powder Coated/Electro Plated</small></p>	<p>RASEWAY/CABLE DUCT/TRUNKING</p> <p>Width: From 50 mm to 1000 mm</p> <p>Height: From 25 mm to 150 mm Inside Bend 15 mm</p> <p>Thickness: From 1.2 mm to 3 mm</p> <p>Length: From 2500 mm / 3000 mm</p> <p>Material: Mild Steel/ Aluminum/ Stainless Steel/ Galvanized Sheet.</p> <p>Finish: Painted/ Epoxy Coated/ H.D. Galvanized/ Anodized/Powder Coated/Electro Plated</p> 
<p>LADDER TYPE CABLE TRAYS:</p>  <p>Width: From 50 mm to 1000 mm</p> <p>Height: From 50 mm to 150 mm</p> <p>Thickness: From 1.2 mm to 3mm</p> <p>Length: From 2500 mm / 3000 mm</p> <p>Side Bend: From 10mm to 35 mm</p> <p>Rung Width: From 20 mm to 80 mm</p> <p>Rung Height: From 50 mm to 200 mm</p>	<p>CABLE SUPPORT SYSTEMS</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>C Channel</p> </div> <div style="text-align: center;">  <p>Z Channel</p> </div> </div> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Coupler Plates</p> </div> <div style="text-align: center;">  <p>C Clamp</p> </div> </div> <div style="text-align: center;">  <p>C Clamp Base Strip</p> </div> <p><small>Codes & Standards: Complying with the specifications of NEC (National Electric Codes) & IS (Indian Standards) (National Electric Manufacturers' Association) Material & Finish: Steel as per IS: 1079</small></p>

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Factory 2: J-884-885, Sitapura Industrial Area Phases 3, Jaipur-302022

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EXPORT MARKET WILL BE OUR PRIME FOCUS FOR 2020: SUPREME

Apart from consolidating our position in our core areas we would more focus on railway electrification, aerial fibre optics, ERS solution, monopole structures, high mast poles and smart poles in the future year.

Harish Agarwal,
CEO, Supreme & Co.



Supreme in 2019

Supreme & Co. Pvt Ltd has evolved in the last 48 years from a nut and bolt manufacturing unit to a major player in the transmission and distribution sector, manufacturing most of the hardware and accessories right from LV (low voltage) up to 1,200 kV.

Year 2019 was a good year, especially for our exports and innovative solutions due to pick up in demand for DDUGJY (Deendayal Upadhyaya Gram Jyoti Yojana) and IPDS (Integrated Power Development Scheme) projects. There was significant demand from intra-state transmission sector. Growth in reconductoring business created demand for more innovative ERS (emergency restoration system) based bypass solutions. The availability of wide range of anchoring solutions with Supreme enabled the erection of ERS structures in all kinds of soil. The cost of such provisional tower is around one third of ERS solutions currently being imported.

Future Roadmap

Apart from consolidating our

position in our core areas we would more focus on Railways electrification, aerial fibre optics, ERS solution, monopole structures, high mast poles and smart poles in the future year.

The countries of South Asian Association for Regional Cooperation (SAARC) continue to be pictured as having low per capita energy consumption, inadequate infrastructure, inaccessible and costly energy availability. There is focus on increasing the power connectivity in this region. The development of transmission system in these regions will get a balance between capacity and requirement in an efficient manner. Also, the private investments in Bangladesh are offering a new market opportunity. The growth is also seen in multilateral funding from agencies such as AAIB (The Arab-African International Bank) and EXIM bank. Also, in Afghanistan, the shift is majorly towards power generation with renewables. Referring these developments in the SAARC nations, export market will be our prime focus for the year ahead.

Key Differentiators

We have not concentrated ourselves in manufacturing only transmission towers and electrical hardware but we have also been working for the last couple of years on a product which will make a big impact in the transmission line sector. We planned on developing a solution which will help in reducing the outage time of transmission line. This led to the development of ERS (emergency restoration system) towers, an indigenous product of Supreme. We have developed ERS that is used in case of any line reconductoring or re-routing. It is a temporary structure designed to bypass the existing transmission towers of any voltage in any terrain. They will be used until the main line is reconducted or restored. The entire structure can then be disassembled and reused. There are enormous benefits of ERS since such modular and light weight and can be erected in any kind of soil. Unlike the old restoration techniques, the line is restored and charged within few hours by using our ERS and thus, prevent a huge financial loss of the utilities. Our emergency restoration technique is a unique solution to cope up with the emergencies caused by the natural calamities as well as for line uprating. Supreme's ERS tower can be erected in all catastrophic conditions.

We had to face a lot of challenges recently during execution of a project of Uttar Pradesh Power Transmission Corporation Ltd. to bypass a 132-


kV line from Vaishali to Sahibabad which was a hindrance for the completion of 400 kV line. It was quite challenging as the line route had flyover, river and highway crossing. Three ERS towers were installed without any disruption to the highway traffic. Restoration to evacuate 580 MW power was completed within four days with a line shutdown of only four hours by using ERS.

We would more focus on Railways electrification, aerial fibre optics, ERS solution, monopole structures, high mast poles and smart poles in the future year.

As we all know that extremely severe cyclonic storm 'Fani' made a landfall in Puri on Odisha coast on 3rd May, 2019 (Friday morning) - triggering heavy rainfall accompanied with gusty wind at speed above 175 kmph. The storm lashed out its fury over the coastal district of Puri and other adjoining district with severe disaster. As per the official sources besides other major infrastructure, the entire power installations in and around Puri district got devastated in the cyclonic storm, which damaged 75 towers of 220 kV and 25 towers of 132 kV.

India's first indigenously developed steel-based ERS tower by us was used to substitute the wrecked 132 kV towers between Lilo and Puri-Samkuha. This enables charging between Puri Grid and Samkuha Grid to transfer bulk load of 70 MW.

Supreme at ELECRAMA 2020

We are participating in ELECRAMA 2020. The purpose of exhibiting in ELECRAMA 2020 is displaying our offering, expertise and innovative products to our customers at one common and recognised platform where all power or energy sector entities gather together. Proposed RBSM (Reverse Buyer Seller Meet) and other parallel events will also further increase fruitfulness of ELECRAMA for players like us. No other event packs in as much value as ELECRAMA does. Apart from our extremely diversified range of products in electrical T&D, Railways electrification and telecommunications, we shall be displaying our innovations like ERS solutions, inter-phase spacers, integrated line arrester cum suspension insulator for covered conductor system, ADSS and Figure8 Fittings, monopole type structures and smart poles. ELECRAMA is an integral part of our market building strategy and we achieved a fair share of success with ELECRAMA over the years by forging new relationships, developing new markets, generating leads for new customers, new partners and new resources. 

SYSKA HINTS AT BRIGHT 2020 FOR ELECTRICAL INDUSTRY

Syska in 2019

We continue to chase and achieve a growth rate of at least 25 to 30 per cent YoY through the introduction of technologically advanced products across different segments at prices which create a strong value proposition for our target customers. This year, we have seen impressive growth during the festive season with Syska's sales on e-commerce platforms touching 125 per cent across all our product categories. Some of the most successful categories have been personal care and LED lighting. The introduction of smart lighting solutions in 2017 has been a game changer with our sales growth touching a high of 300 per cent this year. Also, thanks to the growing consumption from millennials and Gen Z customers, there is a healthy upsurge in the demand of personal grooming products and mobile accessories.

Future Roadmap

The FMEG (Fast Moving Electrical Goods) products category is witnessing a surge of IoT technology that brings more convenience and

We expect the electrical industry to perform even better in FY'20 owing to increasing demand, with the FMEG industry growing at a healthy pace of more than 13 per cent CAGR.

Rajesh Uttamchandani,
Director, Syska Group



comfort to customers. This will help in gradually shifting the functional value proposition from mere energy saving to the aspirational and functional proposition of connectivity (app and voice assistants). We are expecting steady growth as consumers are becoming more aware about environmental sustainability. Additionally, we expect the electrical industry to perform even better in FY'20 owing to increasing demand, with the FMEG industry growing at a healthy pace of more than 13 per cent CAGR.

Key Differentiators

We at Syska believe in sustainability and promotion of a sustainable environment

by offering eco-friendly and energy-efficient lighting solutions. We offer a range of eco-friendly LED lights which consume up to 70 per cent less power. They provide excellent intensity, uniform light distribution, high efficiency, and strong ROI. Syska LED lights are completely free of toxic components like mercury, lead and glass and are also unbreakable. Additionally, we provide a 2-year warranty as

compared to other companies and offer these products at a competitive price.

Also, Syska supports the initiatives taken by the Government of India, whether it is Digital India, Make in India or its smart cities mission. We believe in the same philosophy and through our smart home product range we aim to help convert simple homes into smarter ones. As an endeavour towards providing the best customer experience through innovative product solutions, Syska has also proactively introduced Wi-Fi enabled home appliances which can be voice controlled.

Syska has successfully brought about a retail revolution in the otherwise institutional category. Also, at Syska, it is not only about sales and growth in numbers, but more importantly about making an impact and a difference to the lives of our customers.

As a thought leader brand, Syska is known to address the fundamental need of educating customers about the very benefit of LED adoption. Our brand uses a strategic mix of TV, OOH, digital etc. to create the desired equity and convey the proposition for both offline and online customers. It is only because of these sustained marketing efforts that Syska has successfully brought about a retail revolution in the otherwise institutional category. Also, at Syska, it is not only about sales and growth in numbers, but more importantly about making an impact and a difference to the lives of our customers. 

WE CONTROL POWER



We manufacture and supply MCC, PCC and PLC Panels, Soft Starter, Test Bench

We also manufacture Deep Drawn Metal Components and Sheet Metal Press Parts.



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“OUR GEOGRAPHIC EXPANSIONS WILL BE A BIG FOCUS”

 **ELECARAMA** 2020
Hall 9, Stall C10



Our roadmap for next year includes bringing more maturity to our existing practice areas and elevating the standard of professionalism and expert services to the best in the industry.

KK Kelaiya,
Co-founder and Head,
System Protection
Electrical Engineers and
Consultants

System Protection in 2019

The last year at System Protection has been very exciting. Strategically, we set business goals in the last year to expand both – horizontally and vertically – meaning, to increase our depth of expertise in certain areas and expanding the geographies we serve. Both have worked out very well and have demonstrated the strong foundations of the business we have built over the last 20 years.

Today, we serve over 500 clients in 3 different continents around the world. At the same time, our most valuable clients have stayed with us for more than 15 years.

We have also built new expertise and vertical focus in diagnostic testing, a service area that our entire client base has shared great feedback on.

Our investments in training, engineering and human capital in the last few years have put us in the perfect position to capitalise on the opportunity that Industry 4.0 brings around the world.

Future Roadmap

It is important to understand that our industry – subset of electrical protection, has grown very organically. The barrier to entry is very low since an individual can simply borrow or rent a test kit and start providing services. But as the industries scale and the projects grow large, you don't just need a qualified service partner, you need a dependable service partner who is extremely professional in his approach and can help you mitigate the risk. At the core of running any business, is to mitigate risks in an organised manner.

With this in mind, our roadmap for next year includes bringing more maturity to our existing practice areas and elevating the standard of professionalism and expert services to the best in the industry. We will do this with an inclusive approach for the entire industry through training, education, thought-leadership, and stakeholder management. The shift from

a reactive mindset to a proactive mindset within our industry is crucial, so we can prevent disasters and mitigate risks in an efficient manner. This will improve the productiveness of the industries we work with, and at the same time, establish a win-win equation for all.

Our research and exploration around the world have also shown that there are several markets similar to India where the need for professionalism and expert services is very high, for example, Africa. These markets are going through industrial transitions India has already been through and need assistance in their transformation process. We see this as a big opportunity for growth globally. We have already established ourselves as a leader in the domestic markets and our methods are scalable to new geographies with minimal changes. This means, we can deliver greater benefits to the new markets in a shorter span of time and thus, accelerating their transformation process. Our geographic expansions will be a big focus in the next year and decade for us.

Key Differentiators


Our biggest differentiator has been working with our clients as “Partners” and not just as “Service Providers”. It’s easy to say but hard to practice. For example, our overall goal is to be continuously educating our clients. We do it not just when equipment fails or when a fatal incident occurs, but also before it happens. When we find signals of potential failure, we share it immediately with clients without waiting for further deterioration. Sometimes, it requires additional monitoring, which we are happy to work with our clients on it. Our own internal success metrics is to assess how self-sufficient our clients have become to take care of their own needs. This is an unusual approach for business growth, but we strongly believe that becoming self-sufficient in proactive monitoring for safety is of paramount importance in any business.

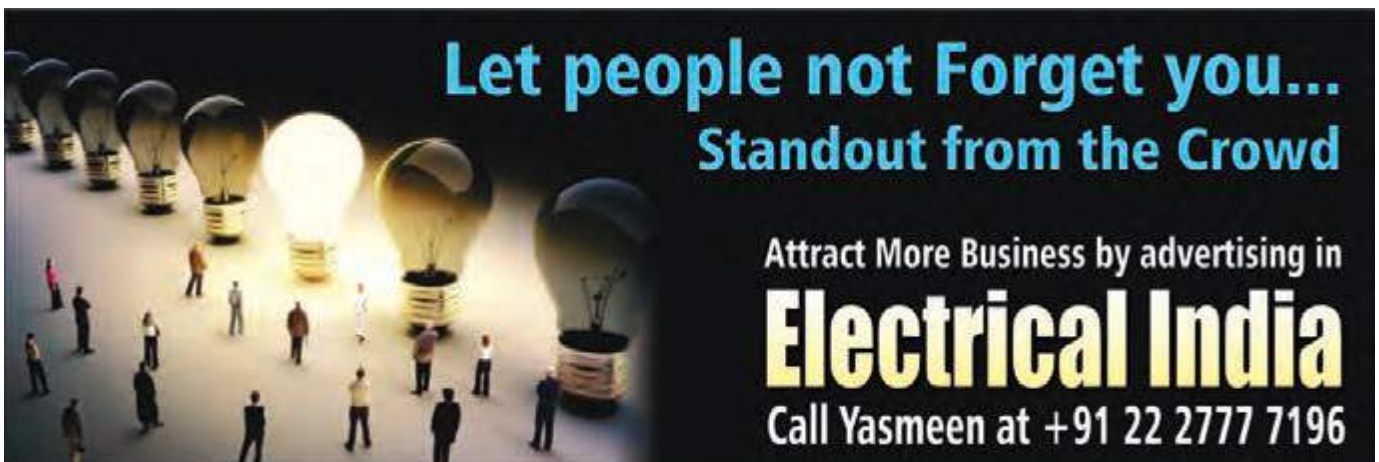
Our large client base and diverse range of projects give us the benefit of compounding our knowledge from the ground. We distill the insights and learnings

through engineering case studies which we share with a wide audience in the industry – irrespective whether they are our clients or not. Our ethos in running this business is to work to win the clients’ trust before we work to win their contracts.

System Protection at ELECRAMA 2020

We participate in several industry events globally throughout the year, but ELECRAMA by far is the most important for us on the calendar. Over the years, it has become the destination for all the stakeholders and decision-makers to gather and learn from each other. We play a small part in this ecosystem by our continued efforts in education and sharing our case studies.

At ELECRAMA, our intent is to engage with the best in the industry and showcase our work with our clients. If you stop by our stall, we will spend a good amount of time with you to understand your needs and share our work that has created an impact for the industry at large. 



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“TATA POWER WILL LEAD THE WAY IN POWER SECTOR”

Tata Power in 2019

We have performed well in our key growth areas of renewable generation, transmission and distribution along with new value-added services such as rooftop solar, EV charging, home automation and micro grids in rural areas. We have witnessed a robust performance both in terms of revenue and profitability.

Our standalone revenue for the quarter-end (September 2019) stood at Rs 1,813 crore. PAT stood at Rs 155 crore in Q2 FY19 due to favourable tariff order in Mumbai licensed area in the previous year.

We introduced various future-ready technological deployments for our customers. The QR Code for easy billing was just one of the many technological advancements we made. We also installed electric vehicle charging infrastructure in Mumbai. This reaffirmed our position of being a tech-forward integrated power company. It also underscores our commitment to renewable energy.

Many of our initiatives will pan out in the next five years among the B2C businesses, wherein we will be directly interacting with consumers, providing them value-added services which were never heard of in the power sector.

Praveer Sinha,
CEO & MD, Tata Power



Future Roadmap

Tata Power is coming up with various business services and solutions in terms of home automation, EV charging, smart metering and Smart City solutions. This is what will keep us busy in the next few quarters.

Again, this will be a unique area for us. This is because of the company's understanding of the sector, the way in which convergence of IT and electrical technology has taken place and how digitalisation in power sector can provide better services to the consumers.

Going forward, there are going to be significant transformations in the power sector and I am sure Tata Power will lead the way in the power sector in years to come.

Key Differentiators

Many of our initiatives will pan out in the next five years among the B2C businesses, wherein we will be directly interacting with consumers, providing them value-added services which were never heard of in the power sector.

ET

MTE SETTING NEW STANDARDS IN PORTABLE TESTING



Fig 1: genX product range – PWS 2.3 genX, CheckMeter 2.3 genX and Hydrocal 1004 genX

The MTE group, one of the global leaders in the field of meter testing, earned its reputation through high quality and innovative solutions. MTE's all-embracing product range contains power sources, comparators, reference and working standards for meter testing in different accuracy classes as well as sophisticated and customised meter test systems. MTE's product line includes both stationary and portable meter test equipment as well as transformer monitoring systems.

Since 1996, the name MTE has been synonymous with innovation, accuracy and quality in manufacturing Test equipment and systems for the measurement and certification of electricity meters as well as Transformer monitoring systems.

MTE offers a broad range of high precision test and monitoring systems for customers such as utilities, meter test laboratories, industries, meter and transformer manufacturers. More than 2,000 meter test systems, 20,000 portable test devices and 5,000 online DGA units globally provided are evidence for excellence, experience and satisfied customers.

MTE is celebrating its 20th anniversary and on this occasion, it launched next product generation "genX" for setting new standards in portable testing. The PWS2.3 genX and the checkmeter 2.3 genX. Also, in the field of transformer monitoring, MTE is driven

ELECRAMA 2020
Hall 2, Stall B1




Fig 2: K2006 Comparator

by innovation with its latest technologies and introduced HYDROCAL 1004 genX and HYDROCAL 1009 as new multi-gas online DGA devices.

MTE has marketing, sales and service network of more than 90 exclusive distributor companies worldwide and 3 fully owned subsidiaries in England, India and China.

MTE offers highly accurate portable reference meters and Portable test systems. K2006 comparator has the highest accuracy class of 0.01, especially suitable for use in metrological institutes and high precision measuring laboratories. This equipment has the highest accuracy range among all competitor products in the market.

Latest developments at MTE

- Complete series of on-site portable test equipment genX, showing the CheckMeter 2.3 genX, PWS 2.3 genX, PTS 2.3 genX, PTS 3.3 genX, PPS 3.3 genX
- Automatic meter test systems for high volume meter production and calibration
- Permanent online monitoring of the transformer condition
- Extending transformer life time due to improved preventative maintenance and faster reaction time in case of failures
- Easy and fast mounting on the operating transformer (HYDROCAL 100x and Offshore versions). 



Preeti Mor,

Engineer-Technical Services Dept,
MTE India Pvt Ltd

TESTO INDIA OPTIMISTIC ABOUT FUTURE GROWTH

We intend to offer solutions that are relevant, precise, easy to use and support environment health, air quality, power optimisation and human comfort.

Parag Yelegaonkar,
Business Development
Manager, Testo India



Testo India in 2019

The year was good as we could enhance our reach, increase our market penetration in terms of customer base and new contacts, and successfully target different and new segments of the industry. A lot of new applications were attended where testo products proved out to be the customers' choice. Testo focused a lot on the electrical and power sector this year with our products playing important role in the troubleshooting and thermal inspection applications in renewable energy segment like solar and wind power plants. The year also marked the launch of some cool and technologically advanced products for applications.

Testo India's Future Roadmap

India being an emerging market provides a lot of areas that requires testing and measurement (T&M) of parameters and carry out troubleshooting and maintenance. Testo India has grown exponentially so far and the prime reason is our innovative products and German technology. Our manufacturing unit is in Germany where a great share is invested for R&D purpose

to produce premium quality products. We analyse the application areas, requirement of customers and difficulties in the measurement process and accordingly come up with the intuitive products. This gives us an additional advantage to pitch our products which are not only cost effective but are very relevant as well. In the recent years to come, we are confident to maintain our legacy and to ensure latest technology and constant service in the market, we plan to launch several new products and extend our arms to all possible regions, industries and applications. We intend to offer solutions that are relevant, precise, easy to use and support environment health, air quality, power optimisation and human comfort. We now provide complete solution, from hardware to sensors to software, for a couple of applications and work to improve continually. We feel that our technologically advanced products and continuous efforts will help us grow in the future.

Key Differentiators

Testo being a market leader in T&M sector, has always strived to develop and provide solutions that makes the work simpler, better and reliable. The latest



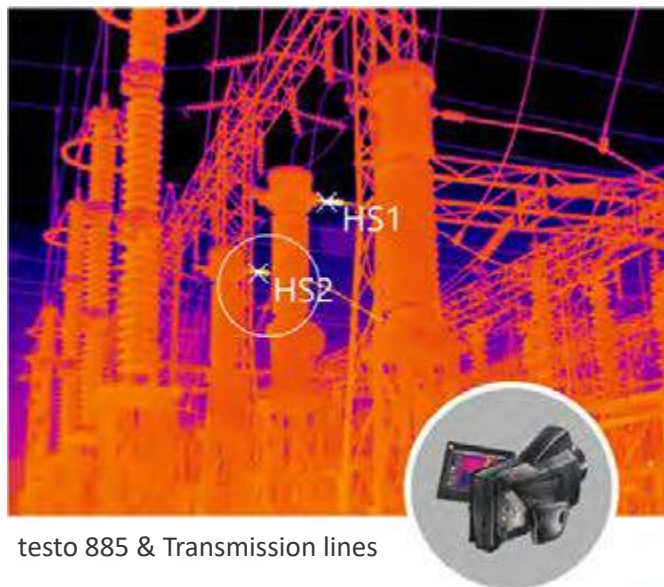
testo smart instruments

trends and advancements from the digitisation of the working system are calling for solutions that are intuitive and smart. Testo realised the changing approach at the very beginning and has brought transformational change in T&M industry with an entirely new range of smart measuring products for multiple applications. Testo is one of the first T&M companies who moved from analog measuring techniques to digital to smart instruments. Our Wi-Fi data loggers and other IEQ measuring instruments proved out to be revolutionary solution with just one versatile instrument and multiple range of wired and Bluetooth probes.

Considering our latest and most advanced solutions for instance, our Electrical Instruments are very distinct and unique in their features. They are excellent instruments to inspect the electrical components and circuit failure threats. Along with that they ensure longevity and efficiency of various power electronic components that control and regulate the flow of electrical energy. Our new range of Thermal Imagers with smartphone integration designed to deliver networked thermography are mostly used for predictive and preventive maintenance. These electrical and thermal imagers are one of its kind and are useful for troubleshooting in power sector also.



testo clamp meter application



testo 885 & Transmission lines

Apart from what the product delivers, Testo also has a NABL accredited service and calibration LAB that takes care of the after sales support locally from Pune. This facility is highly cost effective as it delivers international standards very conveniently.

Testo India at ELECRAMA 2020

ELECRAMA has continued to be a major event of electrical industry that brings technology, solutions, product and knowledge-sharing all under one roof. Testo India is participating in ELECRAMA 2020 and the reputation that ELECRAMA carries, we hope that the trend continues and we get good response this time. The main highlight would be the new and unique set of electrical measuring instruments that are so relatively advanced that the unique Clamp meters – testo 770 and Multi meters – testo 760 are intuitive, can measure several parameters in a single component.

Another important highlight of the event is our wide range of thermal imagers. Testo India provides testo 885 and testo 890 high end thermal imagers that, can be used to conduct thermal inspections in transmission lines up to 765kV voltage level, using a super telephoto lens with correspondingly high resolution, conveniently from the ground. Testo 868 and testo 872 are the best entry level thermal cameras for application in electrical cabinets, solar panels, circuits etc. We invite all the customers to come to our stall and witness the latest T&M measurement solutions and products for Electrical and other related segments.



MOTWANE: ENABLING DIGITAL TRANSFORMATION WITH SMART, CONNECTED PRODUCTS

We will be launching Motware in Dec 2019 which combines our 7-decade long expertise in electrical test and measurement.

Ameya Gondhalekar,
Head - Marketing,
The Motwane
Manufacturing Co.



Motwane in 2019

2019 was a great year for Motwane as we made great progress in getting new products to markets. Our Oil BDV and Oil tan delta resistivity kits are on par with global leaders in terms of quality, aesthetics and specifications. Our connected test and measurement (T&M) portfolio has also progressed at rapid pace with most of our testing kits getting IoT-enabled. Motware, our specialised test data software, has also been accepted positively by large EPCs and O&M contractors due to the tremendous value it brings for them in terms of data integrity, insights and analytics.

We are very optimistic about the growth path for 2020 especially from the export. We have set up an office in Dubai to cater to the Middle East market and look forward to closer interaction and collaboration with customers and partners

Future Roadmap

We will be launching Motware in Dec 2019 which combines our 7-decade long expertise in electrical T&M. Our R&D in IoT- and SaaS-based services

has given us the ability to bring together these diverse elements which are going to be extremely relevant for our customers. Motware consists of IoT-based transformer monitoring solutions which are modular in nature and can be customised as per our customers' needs.

Along with monitoring, it also provides real time analytics combining the various parameters into meaningful insights, thereby, helping us increase the lifespan of the valuable assets. We are also launching our connected testing kits, which send data to the Motware App, thereby, converting testing into a complete paperless activity. Lastly, Motware also organises all test data, including historical ones to provide meaningful insights and one click reporting and dash boarding abilities to our clients. Motware also has hundreds of in-built test templates and reports which can enable true digital transformation for our clients.

Key Differentiators

With our vast experience in the T&M domain, we have developed a range of products

and services in LV, MV, motor testing, cable and metal testing. However, there is a large demand for transformer and oil testing equipment range, where we have provided many unique features which will make us global leaders in the coming years not only at the feature level but at the technology and accuracy specifications, where we are leading the world market. All these products are IoT-enabled and connected to our Cloud platform Motware which facilitates the user with remote monitoring, trend analysis at highly economical prices. In India, we are the first manufacturer to develop and commercialise this range of connected products.

There is a large demand for transformer and oil testing equipment range, where we have provided many unique features which will make us global leaders in the coming years not only at the feature level but at the technology and accuracy specifications.

Motwane at ELECRAMA 2020

ELECRAMA has always been the biggest platform to bring together thought leaders across the world and introduce them to technology and innovation in India. Motwane Manufacturing has always been at the forefront in developing products and services which keep pushing the boundaries of excellence and engineering through indigenous R&D capabilities. Our purpose in exhibiting at ELECRAMA 2020 is to showcase Motwane's next generation of connected test and measurement portfolio which is a seamless integration of hardware, software and analytics.



Testing & Calibration Laboratory

NABL Accredited & BIS Recognized for Power & Distribution Transformers

High Precision Calibrator Calibration

Transformer Testing Lightning Impulse Testing

Transformer Test

Routine Test <ul style="list-style-type: none"> • Measurement of Winding Resistance • Measurement of Voltage Ratio & Check of Phase Displacement • Measurement of Short Circuit Impedance • Measurement of No-Load Loss and Current • Measurement of Insulation Resistance • Induced over Voltage Withstand Test • Separate Source Voltage Withstand Test • Pressure & Vacuum Test • Oil Leakage Test Type Test <ul style="list-style-type: none"> • Lightning Impulse Test • Temperature - Rise Test • Pressure & Vacuum Test Special Tests <ul style="list-style-type: none"> • Determination of Sound Level • No Load Current at 112.5% Voltage • BDV & Moisture Content in Oil • Paint Adhesion Test 	Other Test <ul style="list-style-type: none"> • Harmonics of No Load Current • Permissible Flux Density and Over Flxing • Zero Phase Sequence Impedance Test As per CBIP <ul style="list-style-type: none"> • Magnetic Balance Test at Low Voltage • Magnetizing Current at Low Voltage • Unbalanced Current Lightening Impulse Test on <ul style="list-style-type: none"> • Insulator • Bushing • Current Transformer • Potential Transformer
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NABL Accreditations

- Calibrators Like Fluke 5520A/9100 & 8 ½ DMM
- Energy & Power Meter Using Class 0.01COM 3003 Zera, Germany
- CT/PT & High Voltage Calibration
- High Voltage upto 200kV AC
- Meggar, Insulation Tester upto 10 T / 10kV.
- Metering Unit for Open Access Connection, ABT Meter
- Pressure Dead Weight Tester Calibration
- Flow Meter upto 3500 M³/h (on-line)
- RF Calibration: Oscilloscope, Function Generator, Spectrum Analyser etc.
- Other Electro-technical, Mechanical, Flow & Thermal Calibration.




C and I Calibrations Pvt. Ltd.

Works: J-448, Sitapura Industrial Area, Jaipur - 302022, Rajasthan, India.
 Transformer Lab: J-396, Sitapura Industrial Area, Jaipur - 302022, Rajasthan, India.
 H.O.: H-13(R), Electronic Complex Road No. 1, I.P.I.A. Kota - 324005, Rajasthan, India.
 Phone: 0141-2771849, Mobile: +91 8003098301 / 8002098302
 Email: info@cicpl@gmail.com
 Website: www.cicpl.in



"WE ARE NOT INDULGING IN PRICE WAR"

 **ELECARAMA** 2020
we are all about electricity
Hall 15, Stall N1



Our main focus is to improve bottom line. So, we are very selective as far as order booking is concerned.

Jitendra Mamtora,
Chairman, Transformers
& Rectifiers (India) Ltd.

How T&R's business has scaled during last one year

Transformers & Rectifiers (India) Ltd, popularly known as T&R, could strengthen its market share in Railways, renewable energy and export business during the last one-year. Business from Railways is expected to remain high at least for next 5 years as the Government of India has target to achieve 100 per cent electrification. The government has also put ambitious target of 175 GW by the year 2022 from renewable sector. So, a lot of projects are expected to step up in near future. We have added manufacturing of OIP (oil impregnated paper) bushings up to 220 kV class. Response from market is very good and our bushings are approved by various customers including utilities. Current year is good for us as we have orders in hand worth Rs 1,200 crore. We are also expecting big orders from African countries. We are well placed in few export tenders and orders are expected soon.

T&R's Future Roadmap

T&R is looking forward to further penetrate into industrial sector and increase business share. We are enjoying good marketing share of power transformers in renewable sector. We are working to develop Inverter Duty Transformers (IDT) with better efficiency, reliability and competitive prices. We are working on to put in place exclusive manufacturing and testing lines for IDT. NTPC has planned to invest Rs 50,000 crore in solar power sector in next 1-2 years. Also, under long-term plan, T&R will come up with dry type transformers. Same time, we are working on diversification to add more products like GIS in our supply range. Presently, we are in all type of oil filled transformers except Generator Transformers (GT) in 400 kV and 765 kV class. We had technical tie-up for manufacturing of GT and expected to make breakthrough soon.

Key Differentiators

Firstly, T&R is very selective

while booking order regarding realisation of payment. Secondly, we keep close watch on progress of project so that equipment should not get stuck after manufacturing. We elaborate strategy before quoting any big tender regarding available manufacturing slots, cash flow, tie-up with suppliers etc. It is imperative to mention that recently we have refused order worth Rs 350 crore from a utility because discounts were being asked despite being at L1 position. Our main focus is to improve on bottom line. So, we are very selective as far as order booking is concerned. We are not indulging in price war.

Quality of our transformers is unbeatable, prompt after-sales service is provided as and when required. We always strive for improvement. Our customers get value for their investments. It gives edge to us with respect to competitors.

Quality of our transformers is unbeatable, prompt after-sales service is provided as and when required. We always strive for improvement. Our customers get value for their investments. It gives edge to us with respect to competitors.

T&R at ELECRAMA 2020

T&R is a regular participant in ELECRAMA. It has become a big platform to meet customers as well suppliers. We are expecting good delegates from overseas and look forward to increase our footprint mainly in export market. Hope to get some good suppliers also specifically for special accessories of transformers as these items are overpriced and have longer delivery period. T&R's business mantra is "Power of WE".

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TRANSFORMER
 OIL TESTING

A DIVISION OF EVENT ELECTRIC (P) LTD.
 CIN No.: U31900HR2012PTC046486

Tests on Transformer Oil & their Significance

<ul style="list-style-type: none"> • Break Down Voltage (BDV) Indicates conductive present in the oil such as particle, free water. • Moisture Content Indicates the total dissolved water in the oil. • Interfacial Tension (IFT) Indicates the presence of sludge and excessive polar contaminants from the cellulosic materials. • Neutralization Number (Acidity) Indicates the acid contents in the oil. • Dielectric Dissipation Factor (Tan Delta) Indicates the presence of soluble varnish, resins and other polar contaminants and Ageing of Oil. • Resistivity (Specific Resistance) Indicates the fitness of the oil. • Flash Point Indicates the presence of lower hydro-carbons. 	<ul style="list-style-type: none"> • Sludge / Sediments Indicates deposition of fibrous particles, dust, contaminants etc. • Dissolved Gas Analysis (DGA) (a) Methane (b) Ethane (c) Ethylene (d) Acetylene (e) Carbon Dioxide (f) Carbon Mono-oxide (g) Hydrogen (h) Total gas contents Monitors internal condition of the transformer. • Furan Analysis Periodical evaluation of Furan compounds in transformer oil help to know the condition of solid insulation. • Kinematic Viscosity Indicates heat removal efficiency of oil. • Pour Point Indicates freezing points of oil. • Density Indicates heat dissipation characteristic.
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 &
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 A breakthrough in energy conservation


 CAPACITY :
30 TO 100 KVA


 CAPACITY :
150 TO 3000 KVA


AN ISO 9001:2008 CERTIFIED COMPANY

GENERAL TREND OF VOLTAGE DURING DAY TIME

340V-400V	400V-440V	340V-400V	400V-430V	400V-470V	400V-450V
09:00 HRS. - 12:00 HRS.	12:00 HRS. - 14:00 HRS. <small>Lunch Hours</small>	14:00 HRS. - 18:00 HRS.	18:00 HRS. - 22:00 HRS. <small>Peak Hours Restriction</small>	22:00 HRS. - 05:00 HRS.	05:00 HRS. - 09:00 HRS.

NOTE : We can provide you the computerized printout of voltage variation at your premises by installing the Data Loggers



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 E-mail : jemc@jindalelectric.com Website : www.jindalelectric.com

UCL STEPPING INTO 400KV EHV MARKET SEGMENT

 **ELECARAMA** 2020
Hall 12, Stall F1



Our ambition is to increase the market volume on the turnkey business in EHV underground power cable segment.

Amitava Bose,
Chief Operating Officer,
Universal Cables Ltd.

Established in 1962, Universal Cables Limited (UCL) is one of the leaders in the Indian cable industry with a comprehensive product range. The cable division has a very wide range of product including Low Voltage, Medium Voltage and Extra High Voltage XLPE power cables upto 500 kV grade, PVC and rubber insulated power cables up to 11 kV grade, control and instrumentation cables upto 1.1 kV for any number of cores/pairs and speciality rubber cables for trailing/flexible standards to suit to customer requirements. To meet the growing demand of Extra High Voltage (EHV) cables (220 kV and above), UCL has already ventured into this market segment. Its cables and capacitors are known by the brand name "UNISTAR".

the current financial year, the turnover has increased over 25 per cent in comparison to the first half of the preceding year.

UCL's Future Roadmap

UCL is stepping into the 400kV EHV market segment. Our ambition is to increase the market volume on the turnkey business in EHV underground power cable segment.

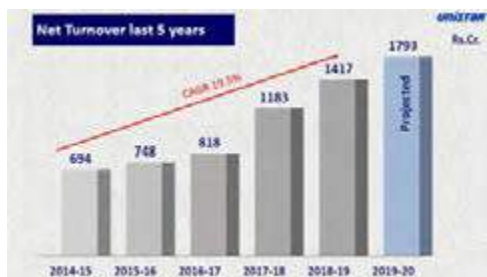
Key Differentiators

Since inception, UCL has been a leader in the high voltage power cable segment and it has been the first company to accomplish the type test for 400kV cable class which is the highest voltage system for underground power transmission in India.

UCL at ELECARAMA 2020

UCL has been regularly participating in ELECARAMA exhibitions. This year ELECARAMA 2020, UCL would participate and display our complete array of cables and power capacitors including new developments.

BI



How UCL's business has scaled during last one year

UCL is consistently increasing its business volume. The table here depicts year-on-year growth. In the first half of

GUIDE TO PREVENT SHOCK & FIRE IN ELECTRICAL INSTALLATION

Step-by-step guide on how to prevent shock and fire in low voltage electrical installation in residential building and industrial plants as per Indian Standards, Electrical Wiring Code IS732:2019 and Earthing Code IS3043:2018.

There are many literatures/reports available on how to prevent shock and fire in low voltage electrical installation. Sometimes, overload of information may lead to confusion. Here, an attempt has been made to eradicate any confusion by providing simplified, precise information as per IS standards which is similar to IEC standard.

Problem: Electric Shock

Electrical shock and major fire accidents in India is a regular phenomenon in India and most of these are caused from electrical installation of building.

Main reasons for accidents

High risk location due to water, outdoor, ground, rough area, touch earthed metal, water pipes.

Solutions

- Install ELCB (earth leakage circuit breaker) 30mA for all lights, sockets, bathroom and outdoor electrical circuits.
- Prefer RCBO 30mA: Miniature circuit breaker (MCB) for overcurrent and for shock ELCB 30mA. MCB+ELCB 30mA, combined in one is device called Residual Current breaker with Overload protection (RCBO).

Cost to use AFDD: Prefer, flat, 3 sockets circuits of 10 circuits: RCBO Nr. 10 + AFDD 3 Nr. Panel cost = Rs. 40,000.

Shock Protection: Lights, sockets, bathroom, outdoor ALL circuits to install ELCB 30mA or RCBO 30mA			
Sl	Location	Device	Comment
1	Old and new building, 1 & 2 bedrooms.	2 (Nr.) ELCB 30mA, Rs. 5000	Prefer each RCBO 30mA. 6 circuits: Rs. 12,000
2	Outdoor: High risk shock location. Maximum shock accident happens.	ELCB or RCBO 30mA	Prefer RCBO each circuit. Widely used in Europe.
3	Bathroom: High Risk shock location. No water heater, no sockets, no light switch	ELCB or RCBO 30mA	Only light weather proof, IP54
4	All high rise and commercial building	RCBO 30mA	Widely used in Europe

Fire Protection, Solution Main cause: Cable earth fault, arc, no correct breaker to protect cable overload, cable derating			
Sl	Item	Device	Comment
1	Mandatory, combustion materials, showroom textile, plywood, paper and etc.	300mA ELCB in electric DB as main	Cost Rs. 2,500. Recommended AFDD.
2	Arc Fault Detection Device (AFDD), prevent fire due to ARC. Not in Indian Standard. Cost: USA, Rs. 2000. Europe, Rs. 8000 each	In USA, 2000, By Law, widely used. Europe, Recommend, 2012.	IEC, Recommend, Prestige, High Rise Bldg. Sockets and etc.
3	IEC recommend, install at main electrical Panel	300mA ELCB, 1s delay	As per risk factor
4	ELCB, RCBO 30mA for shock protection but additional protection against fire due to earth fault.		


In one: (MCB+ELCB 30mA) = (RCBO) = Isolation, Overcurrent, Short Circuit+Electric Shock, additional protect fire

(MCB+ELCB 30mA+AFDD) = (RCBOA) = Isolation, Overcurrent, Short Circuit+Electric Shock+Fire Protection from Arc

Electricians Training and Education as per Standard: This is most Important. How to do it?

- Standard on site guide book for electricians to do work in residential building, as in UK? **No**
- Any electrical Installation course as IS standard for electricians in ITI, training schools, colleges etc? **No**
- Electricians to pass examinations and license to work, as in UK? **No**

Conclusion

- Shock: Mandatory, ELCB 30mA or RCBO 30mA each circuit, Rs. 1,000, saves loss of life.
- Fire: Mandatory in Risk items, ELCB 300mA, Rs. 5,000. save life and billions of rupees loss. 

Note: This is a brief guideline. All are advised to take professional advice for any electrical work.

For more details, contact: gajariaa@hotmail.com

UTTAM (BHARAT) EXPECTS TO GROW SUBSTANTIALLY IN COMING YEAR

Uttam (Bharat) Electricals in 2018-19

The year 2018-19 has been a successful year for us with a 37 per cent jump in the YoY turnover. With favourable demographics, India remains one of the most promising markets globally for the power and distribution industry. With an increase in global demand, we are aggressively working on technological and capacity expansions in a few targeted segments to maintain our industrial edge. With our strong sales and marketing team, we are certain to expand our geographies in domestic market. As renewable energy and sustainability acquiring an important position, the company is gearing up to focus more on solar energy. For this, we are developing aluminium-wound transformers up to 7.5 MVA to keep an eye on solar clientele. With the advent of new technology, progression of new energy efficiency level and strict quality checks, we expect to grow substantially in the coming year.

Future Roadmap

The distribution industry is an extremely robust

With huge potentiality in power and distribution market, we will continue to invest in building a strong technology capacity for a substantial growth in near future.

Atul Agrawal,
Managing Director,
Uttam (Bharat)
Electricals Pvt. Ltd.



industry in terms of operations and maintenance. With increase in demand, the load on the distribution transformers (DTs) are also increasing. Seeing the current industry scenario, we have already established a unit for manufacturing PCC poles which is in synergy of our current business. The need for a continuous power and electricity pan India has led to improvements in infrastructure segment by governments funding various programmes. Seeing the current momentum, we are exploring to diversify in other electrical products like CT/PT, solar invertors, panels etc. We have also developed our first prototype of 315 KVA 11/0.433 kV EEL-2 transformers in amorphous core construction. With

huge potentiality in power and distribution market, we will continue to invest in building a strong technology capacity for a substantial growth in near future.

Key Differentiators


With a humble beginning in 1983, we have established ourselves as a product known for quality

and service which led us to blossom into one of the top companies in transformer industry in India. The sheer dedication and determination have helped us to open four manufacturing units which have an annual capacity of more than 20,000 transformers or 1,500 MVA. Our modern manufacturing techniques ensure quality product for our customer. We understand our customer needs, so we have robust built design to withstand electric impulses, thermal and dynamic stress. We also customise design according to specific customer needs. Our Computer Aided Design (CAD) software system provides trouble-free performance.

The shot blasting of our transformer makes the paint life long lasting. All the raw material used in the production has an inspection system. 75 per cent of our customer comes from references which mean we have maintained trust and integrity in the market. One of our greatest USP is that we have a prompt after sales service net worth that makes us to stand apart from our competitor.

Uttam (Bharat) at ELECRAMA 2020

ELECRAMA is considered as India's largest confluence of innovative technologies and global players in the electricity sector. Spread across 1,10,000 sq. ft. with a footfall of 3,50,000 this exhibition has scaled up so much in last 25 years that as on today it is considered as one of the most important platforms for the electrical industry players to showcase their solutions and products. ELECRAMA brings together host of new players, innovative technologies, fresh business opportunities and global leaders at one single place. The stature of ELECRAMA is such that if you are not exhibiting in ELECRAMA possibly you are not player in the market.

The first time we exhibited was in 2016 and the results were phenomenal. We were able to build a relationship with our prospective customers and since then we have become a regular exhibitor at ELECRAMA. This year also we are participating in ELECRAMA 2020 and we look forward to exhibiting with a bang and hope to achieve the results in this journey. 



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VEDANTA'S STRIDES IN ELECTRICAL INDUSTRY

Being cheaper and lighter, aluminium has major applications for electrical industry. Vedanta ranks among the biggest producers of aluminium wire rods in the world. In an interview with **Subhajt Roy**, Ajay Kapur, CEO, Aluminium & Power Business, Vedanta Ltd. informs that his company is gearing up for newer applications and opportunities by developing new alloys for the electrical market.

Could you discuss the impact of aluminium in today's electrical industry?

Aluminium is the most abundant metal on earth's crust. Due to its superior properties and versatile applications it has found usages in many critical applications across diverse sectors. One of the major aluminium consuming sectors is the electrical transmission and distribution segment.

For years, aluminium has been used effectively and safely in electrical applications. With a superior weight to conductivity ratio as compared to copper and cheaper cost, aluminium is the most preferred material for electricity transmission and distribution.

In 1882, during the laying down of first electrical transmission network, aluminium was considered a precious metal and more valuable than both gold and silver. Hence, copper which was already being used

With the vision of being aligned to India's growth curve in the electrical industry, Vedanta has already taken major steps.

Ajay Kapur,
CEO, Aluminium & Power
Business, Vedanta Ltd.



by mankind was a practical choice. However, today, aluminium is the material of choice as well as a LEED-favoured material for construction and operation of high-performance green buildings. Moreover, its properties of infinite recyclability at minimal energy and ability to retain all properties after recycling, catapulted it to the most favoured metal for electrical usages.

About 9 million tonnes of aluminium wire rods are being consumed worldwide for producing about 4.3 million tonnes of wire and cables, fulfilling the electricity needs of the world population.

Why is aluminium preferred for electricity transmission?

With an undeniable advantage of being cheaper and lighter, aluminium has major applications for electrical industry.

Aluminium has a conductance of 61 per cent as that of other good conductors but is two times lighter for the same current carrying capacity. Due to this, aluminium finds favour in large size cables and cables for overhead power distribution for high voltage power lines over long distances.

Moreover, the comparably light weight of aluminium wires also reduces the load onto grid pylons and increases the distance of spans between



Trends that will drive aluminium consumption in power sector

- **Rapid urbanisation & industrialisation:** Increasing population is set to drive per capita consumption due to rising trends of using newer appliances, cooking with electricity as well as higher manufacturing activities of energy intensive industries.
- **Adequate last mile connectivity with 24x7 power supply:** Outages remain a frequent problem and with current supply being unreliable, rural electrification will translate to increased demand only by ensuring 100 per cent household electrification for 24 hours.
- **Rise of electric mobility:** EVs are expected to boost electricity demands in next 5-10 years exponential with consumer sentiment to reduce CO2 emissions.
- **Cross border grid interconnection:** With an opportunity to sell surplus power, the India-Sri Lanka HVDC Grid Interconnection is a proposed project to link the national grids of India and Sri Lanka. Similar projects expected to boost electricity demand.

them, thus, reducing expenses and shortening construction time. When current passes through aluminium wires, they heat up and their surface becomes covered with an oxide film. This film serves as an excellent insulator protecting the wires against external effects.

Additionally, it is highly ductile, non-magnetic with a life span of about 40 years.

Considering the aspect of 100 per cent electricity transmission across India, how do you see the opportunities for aluminium?

India being the 3rd largest producer and consumer of electricity in the world, we see an immense opportunity in the next few years for aluminium in the electrical segment. India is currently the largest consumer of aluminium based wires and cables ex-China with an annual consumption of 1.2 million tonnes of aluminium wire rods.

With our per capita consumption of aluminium in the electrical sector at 0.9 kgs, which is well below world average at 1.3 kgs or that of developed countries like USA and China at 2.5 kgs and 3.2 kgs respectively, we have multiple opportunities to tap the future growth in this segment.

Few trends that will increase electricity consumption and in turn require higher aluminium consumption are: Rapid urbanisation and industrialisation; adequate last mile connectivity with 24x7 power supply; rise of electric mobility; and cross border grid interconnection.

Also, the current government is highly focussed on achieving 100 per cent household electrification along with the vision to be aligned to one of the sustainable development goals as “ensure access to affordable, reliable, sustainable and modern energy for all”. Even though this has been majorly accomplished through two flagship programs by the government i.e. Saubhagya Scheme and Deendayal Upadhyaya Gram Jyoti Yojana, we are still to cover some distance to achieve 100 per cent household electrification for 24 hours. Last mile connectivity with regular power supply is expected to increase adoption of electricity by manifold in the country.

Another ambitious programme, the Integrated Power Development Scheme (IPDS), was rolled out to overhaul power supply systems at the city level.

What are your plans for the aluminium business?

Vedanta Ltd. is the largest producer of aluminium wire



rods in the world with a capacity of 620 kilo tonnes. With current supplies of EC (electrical conductor) grade wire rod to majority of the Indian electrical segment players, we are also focussing on development of alloy rods for niche segments and are well poised to meet the needs of our domestic and global customers.

Vedanta currently is the largest wire rod supplier in India and has an international presence for its wire rod supplies in Asia and North America.

We are the largest producers of primary aluminium at 1.9 million tonnes per annum as on FY19. Our world-class R&D facility continually explores newer applications of aluminium through new alloys and innovations in value-added products. Some of these alloys, such as the primary foundry alloy, we launched earlier this year are being produced for the first time in India.

Talking about the growth of power sector, according to you, what's on the cards for India's power sector in 2020?

Power is the most crucial component propelling a nation's growth and development. With a convenient mix of conventional and renewable sources of energy, India has a surplus power generation capacity. Moreover, 6 per cent of the capacity is through renewable power plants, which though is at a nascent stage now, is set to rapidly grow to about 30 per cent by 2030 and is crucial for our otherwise thermal power dependent nation.

The major focus areas will be to decrease energy deficit, improve transmission of power and focus on adoption of renewable energy sources.

Where will the growth come from?

Major growth propellers for power sector will be by increasing and improving the raw material supply base through coal linkages, allocation of coal blocks through e-auctions and high FDI inflows for renewable energy, increasing the power transmission network, improving last mile connectivity through power distribution reforms and strengthening of the system, policies to incentivise grid and non-grid connections respectively and adoption of emerging technologies in renewable and non-conventional energy.

How are you gearing up for the future opportunities and challenges?

With the vision of being aligned to India's growth curve in the electrical industry, Vedanta has already taken major steps. Raising of awareness among state electricity boards about importance of using primary aluminium for electric wires for better end-performance and reduced transmission losses remains to be our priority.

Our R&D facilities are gearing up for newer applications and opportunities by developing new alloys like T4 rods for the electrical market.

Moreover, we are also monitoring as well as working with government institutions to restrict imports of wire rods, particularly those of inferior quality, which can be domestically available at a superior quality to the industry. This will ensure that the industry gets high quality products economically and will boost the government's 'Make in India' initiative.

■



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VIKRAM SOLAR TARGETS OVER 500 CUSTOMER TOUCH POINTS BY 2020-END

Vikram Solar in 2019

2019 has been a trying year for solar. In 2019, the solar industry witnessed slog by tender cancellations, PPA renegotiations, the impact of changing foreign trade policies, reduced funding, and lack of budgetary focus. Sources of finance for both the solar manufacturing industry and solar deployment industry were hard to find, FDI reduced considerably and availability of domestic finance at viable cost was rare.

However, we did not lose a step in such a scenario. We penetrated into competitive international markets, enhanced manufacturing capacity to 1.1 GW, introduced new innovative products for domestic and international markets, increased market presence and commissioned nearly 230 MW (cumulative capacity) of solar projects in India in 2019.

We believe that with the Government of India continuing to focus on Indian solar growth through policies, introducing new projects, and accessing new markets (through International Solar Alliance), a progressive, opportunity laden and bright future is possible. However, we would be remiss if did not mention the need for policy support to improve manufacturing scale,

We are certain that with global demand for solar growth, the opportunities to claim a larger share in the market will grow.

Devendra Verma,
Head of Channel Sales,
Vikram Solar Limited.



exports, solar adoption, and financing solutions in India.

Future Roadmap

We are certain that with global demand for solar growth, the opportunities to claim a larger share in the market will grow. To claim those opportunities, we are constantly improving our quality and joining hands with leading testing facilities to have our products internationally acclaimed. We continue to source best-in-class equipment from all around the world to deliver the finest product quality.

To offer innovative products to our conservative clientele, we continue to launch solar

panels with new or upgraded technology. This year we have launched bifacial, half-cell technology, high power 400 Wp module and integrated smart modules, increasing our efforts at bringing forth customer-specific products for different markets.

Our highly competent research and development team constantly work on improving our product portfolio and launching new products to serve our customers better. Our R&D team conducts collaborative research programmes with leading laboratories like National Solar Energy Institute (INES), France and University

of New South Wales (UNSW), Australia.

To satisfy demand, we have built one of India's best-in-class production facilities with a total annual production capacity of 1.1 GW. And to simplify challenges in logistics and reach clients with ease, we started building up a robust distribution network. We experimented with 10 distributors in phase one, within limited geography. Now we have over 30 distributors covering all major parts of the country. The growth that we have seen through the distribution network is phenomenal and highly encouraging. By the end of 2020, we would have the widest network of distribution, with over 500 touch points selling Vikram Solar panels. The distribution network ensures ready stocks for immediate dispatches, and after-sales support through our efficient technical team. Our regional warehousing capability, provides an infrastructure to feed large volumes of orders.

With transcontinental presence, we are growing our relevance every day to contribute to global solarisation.

What Vikram Solar has done differently from its competitors

We focus on innovation, quality and performance. We believe our drive to provide the best products and tailor-made services to clients have separated us from the rest. In line with the company's focus on adopting pioneering and innovative technologies, our manufacturing facility has the finest machinery and equipment imported from the United States, Switzerland, Germany and Japan. Our products are designed to the highest standards of quality, reliability and performance.

In 2014, we introduced PERC technology-based modules. We focus on manufacturing

Now we have over 30 distributors covering all major parts of the country. The growth that we have seen through the distribution network is phenomenal and highly encouraging.

high-efficiency poly-crystalline and mono-crystalline silicon PV modules. A few of our polycrystalline modules are-ELDORA Grand Ultima Silver (72 cell) and ELDORA Ultima Silver (60 cell).

In 2017, we introduced our line of mono-crystalline module with higher energy generation capacity called 'SOMERA'.

Vikram Solar monocrystalline modules are:

Somera Series - 72 Mono Cells

- SOMERA Grand Ultima Silver 1500V Series
- SOMERA Grand 1500V Series

Somera Series - 60 Mono Cells

- SOMERA Ultima Silver 1500V Series
- SOMERA Ultima All Black Series
- SOMERA Prime 1500V Series

In 2018, we launched two products. A new range of modules with half-cell technology that increases module output by about 15 Wp per module as compared to standard PV modules. The technology also boasts efficiency up of 19.56 per cent. We have also introduced TIGO Integrated Smart Module - Solivo.

And this year, we launched new products in India (high-efficiency multi bus bar half-cell modules) and the US markets (first bifacial PV modules along with half-cell module series in the US), upholding the commitment of providing innovative and better-quality products to our clients.

Besides providing modules, we offer comprehensive EPC services ranging from conceptualisation, execution, commissioning and acquisition of developed sites. We also offer O&M solutions providing preventive and corrective maintenance services for solar plants. And the customer-centric business process that we bring to the table has helped us to become a favourite in the domestic and a well-recognised brand in the international solar industry.



ELECARAMA 2020
Hall 12, Stall D7

WAGO AIMS TO BE THE BACKBONE OF SMART CONNECTED WORLD



Watch out for our new products lined up for launch in India in 2020 that will enhance our product portfolio.

Alok Kishore,
Chief Executive Officer,
WAGO India

WAGO India in 2019

Despite the slowdown in economy, continued patronage of our customers has enabled us to achieve our business goal in last year. We thank our customers, channel partners and solution integrators for their efforts in sailing through not so positive market outlook. Continuing with our commitment towards making our product more and more relevant to customer applications, we had launched the all new switched mode power supply Pro2 with industry leading efficiency of 96 per cent. We also introduced new rail-mount terminal blocks with levers and push buttons that are simpler to use and significantly reduce wiring and maintenance time.

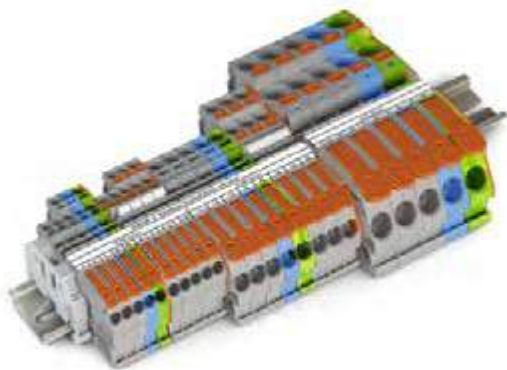
WAGO India's Future Roadmap

WAGO products are designed for complex application

requirements and we will carry on with our focus on developing and delivering the quality our customer can rely on. We are well-known in the market for quality range of terminal blocks and our core spring pressure connection technology. Last few years have shown an encouraging acceptance of our interface and automation control products by our customers.

Increasing footprints in industries such as process, power and energy, railways and others have opened doors for us to introduce our state-of-the-art line of automation control systems suitable for connected customer applications enabling IIoT. Watch out for our new products lined up for launch in India in 2020 that will enhance our product portfolio.

We are making good progress in setting up our new production facility in Vadodara



and the same will be operational in 2020. We will produce products to cater to domestic demands and global exports as well. The new plant will allow us to enhance our product portfolio for Indian market and become more competitive.

While a lot depends on the global and Indian economy outlook, we are

confident of our market strategy to continue the growth momentum.


Key Differentiators

Actually speaking, we have just stuck to our core values and principles of customer centricity. We

strive to make things easy for our customers whether it is the product design, procurement process or communication channels. In a world of increasing complexities, keeping it simple creates a differentiation for us. Each employee of WAGO, including shop floor, administration, sales and the management constantly work towards finding a better way to operate and delivering the optimum value to the customer. We also believe in asking questions, listening to the customer challenges and acting accordingly to turn our customers into partners. This always helped us to gain stakeholder confidence and continued patronage of our customers. We aim to become the backbone of a smart connected world.

WAGO at ELECRAMA 2020

ELECRAMA is an admired brand in itself that connects global technology providers and users at one place in a big way. We are happy to participate in yet another edition of ELECRAMA. The exhibition provides an opportunity for us to showcase the range of our technology portfolio. On the other hand, this platform also serves our customers and other visitors to experience newer solutions hands-on and find relevance to their future technology landscape.

As stated before, we are showcasing the two new additions to our portfolio – The all-new power supply PRO2 and terminal blocks with lever & push-button. There will be other interesting products and solutions on display that are relevant across industries. We hope that visitors will have a positive experience at the booth. 

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DELTA: ENCOURAGING TECHNOLOGY ADOPTION

Delta in 2019

Delta Electronics India has a legacy of operating in India with market leadership in telecom power solutions, renewable energy solutions (solar inverters), and display solutions. It is also a leading provider of industrial automation solutions, communication & information solutions, EV charging solutions, smart meter connectivity solutions, smart city solutions, rail transportation solutions, energy storage solutions, DC fans & blowers, and components. This year in industrial automation, continuing the same legacy of commitment and deliverance, we have been ranked 3 in the supply of AC motor drives.

Another milestone to our achievements is in renewable energy solutions, where we have continued to grow into the large solar farm sector with the installations of quite a few 3-MW solar inverter solutions in various projects across India. For EV charging solutions this year, we have significant tie-ups with premium automobile manufacturers like MG Motors for Hector and Hyundai for Kona.

We believe that our focus is not only to achieve positive growth in business but also evolve the market for the faster adoption of growing technology.

Niranjan S Nayak,

Business Head,
Delta Electronics India



Our partnership with MG Motors is to install AC chargers in private vehicle parking locations such as homes and offices, enabling its customers to charge EVs at their convenience. With Hyundai Kona, AC chargers are being given with car on the purchase so the consumer can charge as per their ease. We believe a true market leader is not the one who only delivers but also assist the growth factors that will encourage the faster adoption of the technology.

Future Roadmap

Delta Electronics India, while sustaining the market leadership in Telecom Power Solutions, Renewable Energy Solutions (Solar Inverters), and Display

Solutions, going forward, the primary focus will be on Smart City Solutions, EV Charging Solutions, Rail Transportation Solutions, Energy Storage Solutions & Microgrid Solutions.

We are working towards bringing our deep industry expertise and engineering capabilities in India to fulfil the highly demanding needs of the industry across business categories.

To take an example, if one draws a blueprint of Smart City, it would not have any dimension or aspect of a Smart City infrastructure where Delta Electronics India is not contributing. Our Smart Solutions for Smart Cities will be one of the primary focus areas for us this year. Furthermore, with the successful execution of our products and technology in smart cities like Smart City Ahmedabad, Smart City Jaipur, and Smart Bhopal, to name a few, we will continue our endeavour to strengthen the smart city infrastructure with our diversified portfolio of solutions offerings.

Another example would be our EV Charging Infrastructure solutions, where we are leading with our customised portfolio of product and solution offerings in the market. We have already supplied over 700 EV Chargers and going ahead, our focus is to collaborate with more OEMs and automobile giants to offer our assistance in EV charging solutions. We trust that in the initial few years, there will be a minimum 50 per cent growth at least, and the market will evolve in three years. And, Delta with its expertise in the global market is there to support its cutting-edge technology and portfolio of energy-efficient products and solutions.

We are constantly enhancing our R&D facilities to develop market-leading Technologies in Energy & Transportation Infrastructure Solutions. As said, our R&D team is working to ensure that with each passing day, we are leading to provide more progressive technology and solutions that are sustainable in nature. Our manufacturing plant in Hosur is our testament of dedication, where we are developing products based on our continuous innovations to provide the technology and solutions that can be adapted to serve the industry better. However, as we believe the market is growing and ensuring Delta is there with its full potential, we have scaled up further to meet the additional demand with our upcoming new plant in Krishnagiri. Our manufacturing facilities reinforce Delta's commitment to support government's, "Make in India" initiative. For us, the primary focus is to keep innovating products and solutions that meet the growing demand of the market and showcase the DNA of our belief of 'Powering Green India'.

Key Differentiators

India is growing as an economy, and Delta, as a

leading power and energy management company, believes that everyone is a contributor to this growth. What makes us different is our approach to be abreast of the latest technology and trend to deliver products and solutions that are sustainable in nature. We believe that our focus is not only to achieve positive growth in business but also evolve the market for the faster adoption of growing technology.

Taking the same belief ahead, recently, Delta Electronics India launched the E-Mobility Tech Experience Center aimed at strengthening the electric vehicle charging infrastructure of the country with a vision to support the government's E-Mobility Mission. It has been developed to support all types of ratings and configurations and be an enabler when it comes to an understanding of the ecosystem of EV Charging Solutions. India is a booming market for electric vehicles, but to support this progress, it is necessary to have enough EV stations to encourage more inclination towards the purchase of electric cars.

With deep industry expertise and engineering capabilities, the E-Mobility Tech Experience Center will comprise a live demonstration, knowledge sharing, global technology adoption methodology, technology innovation, charging process simulation, and integration with multiple hardware, software, and cloud servers. Thus, the vision is to make the end solution concrete so the consumer, while purchasing an electric vehicle, is assured about charging the car.

Delta at ELECRAMA 2020

Delta will exhibit its diversified and integrated portfolio of cutting-edge technology and energy-efficient products and solutions. At ELECRAMA we will focus on showcasing our various business expertise and expansive range of:

- Displays & monitoring solutions
- EV charging solutions
- Renewable energy solutions
- Smart meter connectivity solutions
- Communication & information solutions
- Industrial automation solutions
- Smart city solutions
- Rail transport solutions
- Building automation solutions
- Energy storage solutions.



GROWTH OF SOLAR ROOFTOP IN INDIA

The next revolution in renewable will be in the storage segment and by 2022 storage is slated to be the enabler for the next 100 GW of renewable in India.



At a time when the world is facing global warming and the burden on natural resources is increasing. Now, the world is switching towards cleaner form of energies. Renewable solar rooftop is one of them. Most developed economies of the world have started their solar programmes by targeting household rooftops. Solar power has reached grid parity and is the cheapest source of distributed power across the world. The centre has been upward revising renewable targets every few years. Major research agencies have also deeply underestimated the renewable capacity addition over the last 10 years. India has still not realised its potential for renewable energy addition fully and has reached

around 10% installed capacity with renewable in November 2019.

Solar as a technology is ideally adapted to the distributed concept. Many countries have used large-scale solar installations in an effort to quickly achieve scale and simultaneously push down costs. In India, this focus on large utility-scale solar seems to have become an unintended obstruction in the development of the rooftop segment. There are different stakeholders in the solar sector such as consumers, system integrators, suppliers and financing institutions.

Government has taken many steps to popularise the solar rooftop installation in commercial as well as in domestic households. Some

policies and changes, like the recent notification on making the AC capacity of a solar power plant as the primary capacity metric is helping to boost the industry. The renewable voice is growing louder among all stakeholders. DISCOMs have become the additional advantage of using their distribution transformer capacities more efficiently by enabling small scale distributed power producers. DISCOMs have become an active player in helping to deploy distributed solar. India has one of the highest power transmission and distribution loss metrics in the world. Distributed generation solves this issue with the common point of generation and consumption.



Today, India also needs to move from a power producer to a raw material producer. The manufacturing capacity of all solar system components has not grown and India is a laggard in this matter. Though many improvements have been done over the last 2-3 years. Many state governments have also taken a short-sighted view and are facing a “buyer’s remorse” in a falling CAPEX market.

Now, unsubsidised solar has reached grid parity or dare and have become a no brainer for industries to adopt as a long-term low risk investment with a cushion against rising electricity costs. Capital subsidies are no longer needed in the industry and the subsidies, if any, should be higher in the value chain like manufacturing.

But there are many challenges which are still there in the market and need to be solved. Uneven and constantly changing state policies have created confusion in a market which is already technologically unclear in a consumer mind leading to a rampant decision paralysis. System integrators have to bear

the brunt of this since their sales lead cycled and business development costs skyrocket. A single centrally controlled policy needs to be implemented. Insufficient land or roof area is another issue which every consumer face.

Improvement in the plant efficiencies over the last 10 years have been significant in ensuring that the kWh generated per square feet keep improving. Solar power plants installation companies have come a long way today with 400 Wp becoming the new normal now. This is direct 4x jump on the land use efficiency in 10 years. With commercially viable bi-facial technologies around the corner, this number will jump to 500 Wp within 12-18 months. A higher Wp per square foot has an added advantage of reduced Balance of System costs, which will push the industry and will help to grow the market in different sectors.

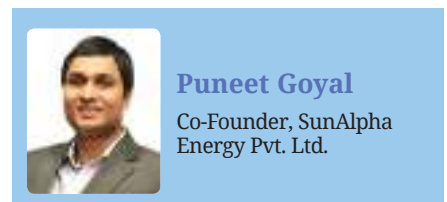
Many measures which still need to be taken to support the renewable solar rooftop plants in India. Emerging technologies like storage have to be adopted early in India and manufacturing for



the same has to be started early. The next revolution in renewable will be in the storage segment and by 2022 storage is slated to be the enabler for the next 100 GW of renewable in India. Distributed generation and storage will change the way people depend on the grid for their everyday power needs. Energy independence will become a new norm. It is the result that even common people are also acknowledging rooftop solar power energies.

India’s young and energetic population will adapt to and digest this new technology in no time. Recent studies by international research agencies have declared India to be the cheapest solar markets of the world. The transition from a cool to prudent technology has been great till now. It is the time to make this from prudent to dependable over the next 5 years. So that country will fully dependent upon the renewable solar energy and lead towards a better future.

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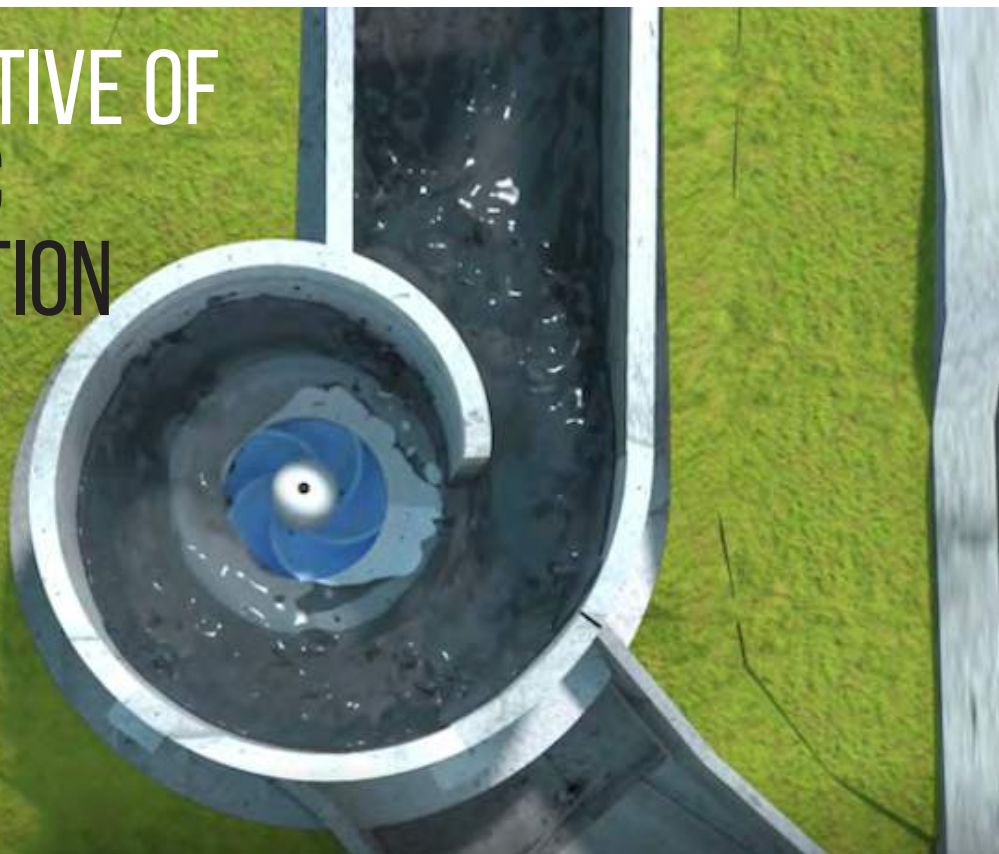


Puneet Goyal
Co-Founder, SunAlpha
Energy Pvt. Ltd.

Image courtesy: Author

A NEW PERSPECTIVE OF HYDRO ELECTRIC POWER GENERATION

This article aims to review the current status of small hydro power development across the world and develop scenarios of growth. It also discusses about the various turbines used in small hydroelectric plants from the virtue of efficiency improvement while maintaining the cost of production within the constricted range.



Hydropower is one of the oldest sources of energy for producing electrical energy. It plays a vital role in India's sustainable development, energy security and reliability. It is eco-friendly and non-polluting source of power. There is no need auxiliary power supply to run the power plant. The hydro power plant is capable of handling the peak load demand in a very short run time. The peak load factor of hydro power plant is around 50 per cent while in case of solar and wind it is around 16-20 per cent. The technical viability of hydro power projects depends on geology, topography and accessibility to project area. Hydro power plant contributes approximately 50 per cent of energy production in 66 countries and 90 per cent of energy production in 24 countries. The comparative overview of solar, hydro and wind power produced energy consumption is shown in figure 1.

Renewables will have the fastest growth in the electricity sector, providing almost 30 per cent of power demand in 2023, up from 24 per cent in 2017. Hydropower remains the largest renewable source, meeting 16 per

cent of global electricity demand by 2023, followed by wind (6 per cent), solar PV (4 per cent), and bioenergy (3 per cent). In 2018, hydroelectricity shared 7 per cent of the total U.S utility scaled electricity generation and 41 per cent of the total energy generation from renewable sources in United States. The share of hydroelectricity has decreased in few years because electricity generation from other renewable sources has increased. The share of renewables in meeting global energy demand is expected to grow by one-fifth in the next five years to reach 12.4 per cent in 2023. The usage of hydroelectric power in commercial sector is shown in figure 2.

There is a steep increase in consumption of hydroelectric power with approximately 0.4 trillion Btu in 2014 to 2.25 trillion Btu in 2018. However, the large-scale plant sizes are becoming smaller and modifications are made to make plant more compatible with various site characteristics. The contribution of hydroelectric power in industrial sector is shown in figure 3.

There is a substantial decrease in hydroelectric power consumption industrial sector right from 35 trillion Btu

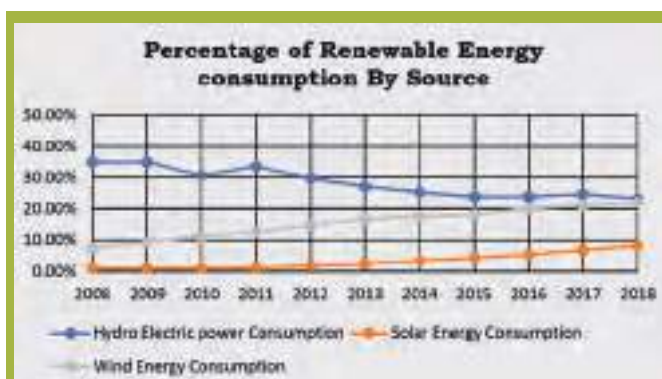


Fig. 1: Comparative overview of renewable energy consumption by source (source: US energy information administration)

in 2013 to less than 15 trillion Btu in 2014 and since after that it continued to remain constant in subsequent years. The contribution of hydroelectric power in power sector is shown in figure 4.

Hydro power projects up to 25 MW are classified as Small Hydro Power (SHP) projects. Small hydro power plants are relatively easier to design. It eliminates the need of construction of dams, deforestation land evacuation and resettlement. These projects are capable to meet the power requirement of remote and isolated areas. There is no generation cost and inflation involved in small hydro power plants. The extensive use of these power plants can substantially reduce the usage of fossil fuels thereby reducing the carbon footprints from the ecosystem. SHP projects can be further classified into mini, micro, Pico and family hydro power projects as shown in Table 1.

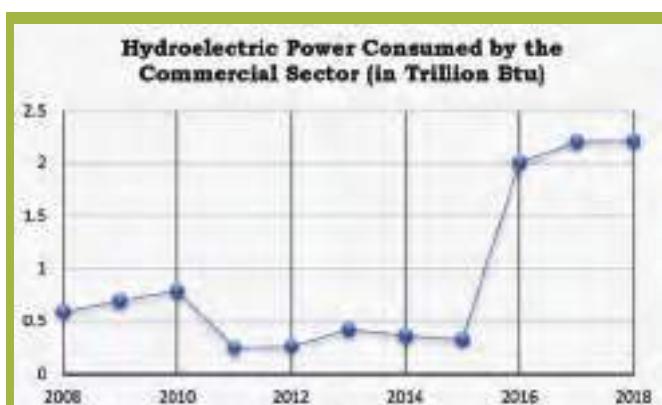


Fig. 2: Hydro-electric Power Consumption by Commercial Sector (source: US energy information administration)

The MNRE (Ministry of New and Renewable Energy) has been constantly providing the support and subsidy

by conducting the following activities in order to develop the SHP sector:

- Detailed project report preparation and perspective plan for states.
- Capital subsidy to state sector projects.

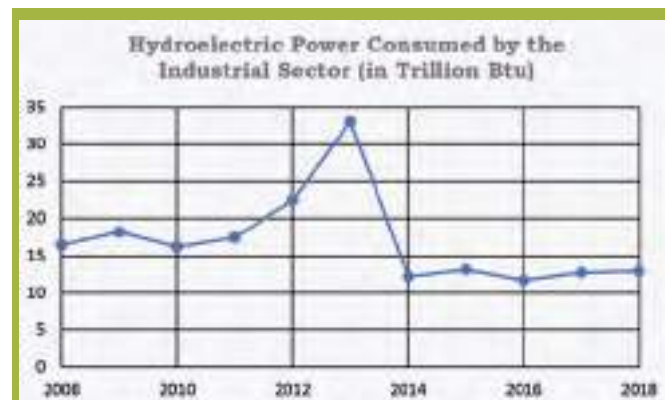


Fig. 3: Hydro-electric Power Consumption by Industrial Sector (source: US energy information administration)

- Subsidy for commercial projects.
- Renovation of old SHP projects.
- Research and development for improving the efficiency by setting up turbine laboratories.

Despite significant hydropower potential, till now, only 30 per cent of India's total economically

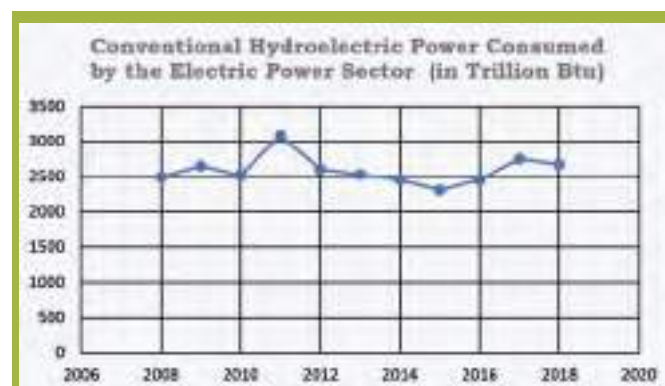


Fig. 4: Hydro-electric power consumption by electric power sector (source: US energy information administration)

feasible hydropower potential has been used. Several hydropower projects with a cumulative capacity of about 13,363 MW are stranded at various stages of project development, resulting in significant time and cost overruns. The major reasons for slippage in hydro capacity additions as a percentage of total observed instances is shown in figure 5.

Turbines for micro hydro power plant

The main component of any micro hydro project is the turbine that is capable of generating electricity by rotating the shaft. Several power plants nowadays are using the large turbines for low power production. It can result increased cost of production and the erection of turbine will be cumbersome. This inquisition study

Table 1: Classification of Small Hydro Power Projects

S. No.	Type of SHP	Capacity	Operating mode
1	Mini(MH)	101-2000 kW	They are grid connected power plants.
2	Micro	< 100 kW	They are partially grid connected power projects.
3	Pico	< 5 kW	They are basically operated in island mode.
4	Family (FH)	< 1 kW	Confined for single household and clusters

shifted the focus of researches on development of small turbines suitable for the power capacity up to 100 kW. Table 2. Gives the detailed review about the manufacturers of the turbines in India.

Although there is a huge development in the design of small hydro power plant, the plant has certain drawbacks. All the turbine manufactures produce turbine of capacity in the range between 5 and 100 kW and one manufacture from Haryana generates a high-powered turbine of 20000 kW and these turbines are used for micro hydro projects. It proves that no special turbines for micro hydro projects. The reason for the

non-availability of low rated turbines is mainly because of the ample existence of waterfalls and major portion of India except the south region. If the production of low rated turbines are enhanced, the scarcity of power in many regions can be fulfilled to a great extent.

Table 2: Turbine manufacturers in India

S. No.	Manufacturing Company	Output power (kW)	Operating Mode
1	Silver Boat Technologies, Chennai	1–100	It can be used for both grid and off grid conditions
2	Ytek Controls, Dehradun	5–200	It can only be used in off grid conditions
3	Vaigunth Enertek Pvt. Ltd, Chennai	10–200	It can only be used in off grid and automated mode
4	Centre for Energy Initiatives, Bangalore	5–100	It can be used for both grid and off grid conditions
5	Flowmore Ltd, Haryana	Up to 20000	-

Conclusion

To meet the substantial increase in demand of the access to electricity and the accountability for environmental concerns led to exploitation of renewable energy sources. Industrial based research and development has been carried out to further improve the efficiency, reliability and reduce cost of equipment. The development in hydro power plants are mainly concerned for rural electrification. The article also highlights the availability of turbines with the manufacturers in India. The salient feature that can be drawn is that efforts can be made to enhance the efficiency of the turbine used for micro hydro resources.

21

Major Reasons for slippage in Hydro capacity additions

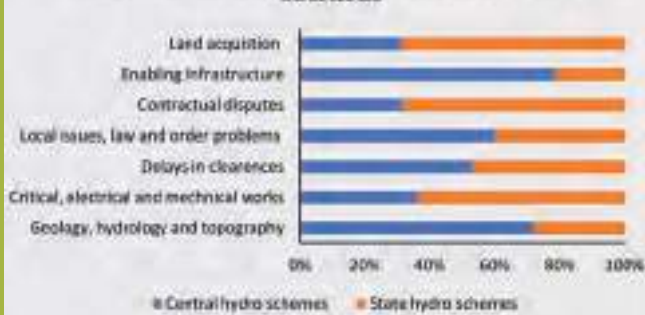


Fig. 5 Reasons for slippage in hydro capacity additions as a percentage of total observed instances in state and central hydro schemes.



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Safety of Li-ion Cells

Safety is the important aspect for Li-ion cells/batteries. Even a single battery fire could turn the public opinion against Li-ion cells and the damage will be more in case of space systems.



The success of Li-ion cells/batteries in 1990s was not an overnight achievement, but a result of intensive research and contribution by many great scientists and engineers. Various efforts were put to improve the performance of Li-ion cells/batteries chemistry and achieved certain significant progress also.

Due to global shortage of fossil fuel resources, the hybrid and electric vehicles attract the attention of the governments and so the leading automobile manufactures. More

recently, secondary batteries have received renewed interest as a power source for electric and hybrid electric vehicles. The biggest challenges here are to develop more powerful and cost-effective energy storage system.

In the immediate future Li-ion batteries offer the greatest potential in this regard because of their high energy and high-power density. The development of Li-ion batteries has made a revolution in the energystorage systems. The high-performance Li-ion batteries have replaced the alkaline batteries in various fields, including

the space systems. The induction of Li-ion batteries in the ISS during 2016 is a great push for the Li-ion batteries. ISRO also introduced Li-ion batteries in the Launch Vehicles and Satellites.

To meet the incurring demand for energy storage, particularly from increasingly popular electric-vehicle, intensified research is required to develop next generation Li-ion cells/batteries with dramatically improved performances, including improved specific energy and volumetric energy density, cyclability, charging



Charred Battery Box of Dreamliner

Aluminium foil and copper foil are used as the current collectors in positive electrode and negative electrode respectively. A tri-layer polymeric film is used as separator.

Working Principle of Cell

During charging of the cell, Li^+ ions from positive electrode move towards negative electrode and gets intercalated in graphite. During discharge, the Li^+ ions de-intercalated from graphite and moves back to the positive electrode. The movement of ions inside the cell is accompanied with movement of electrons outside the cell through circuit, which can be sensed as

rate, stability, long life and improved safety.

Further Li-ion batteries will also be employed to buffer the intermittent & fluctuating green energy supply from renewable resources, such as solar and wind, to smooth the difference between energy supply and demand.

Another important aspect of Li-ion batteries is related to battery safety. The safety of automobile systems and passengers depend on the safe performance of the Li-ion cells. Due to their inherent property of the Li-ion cell/battery the safety hazards associated with the cells/batteries are high. The recent fire on Boeing 787 Dream Liner associated with Li-ion batteries, TESLA car accidents etc once again emphasis the importance of the batteries safety.

Lithium-ion Cells

Lithium-ion cell employs intercalation of Li-ion in its electrodes. It uses generally LiCoO_2 in the positive electrode and Graphite in the negative electrode as active materials.

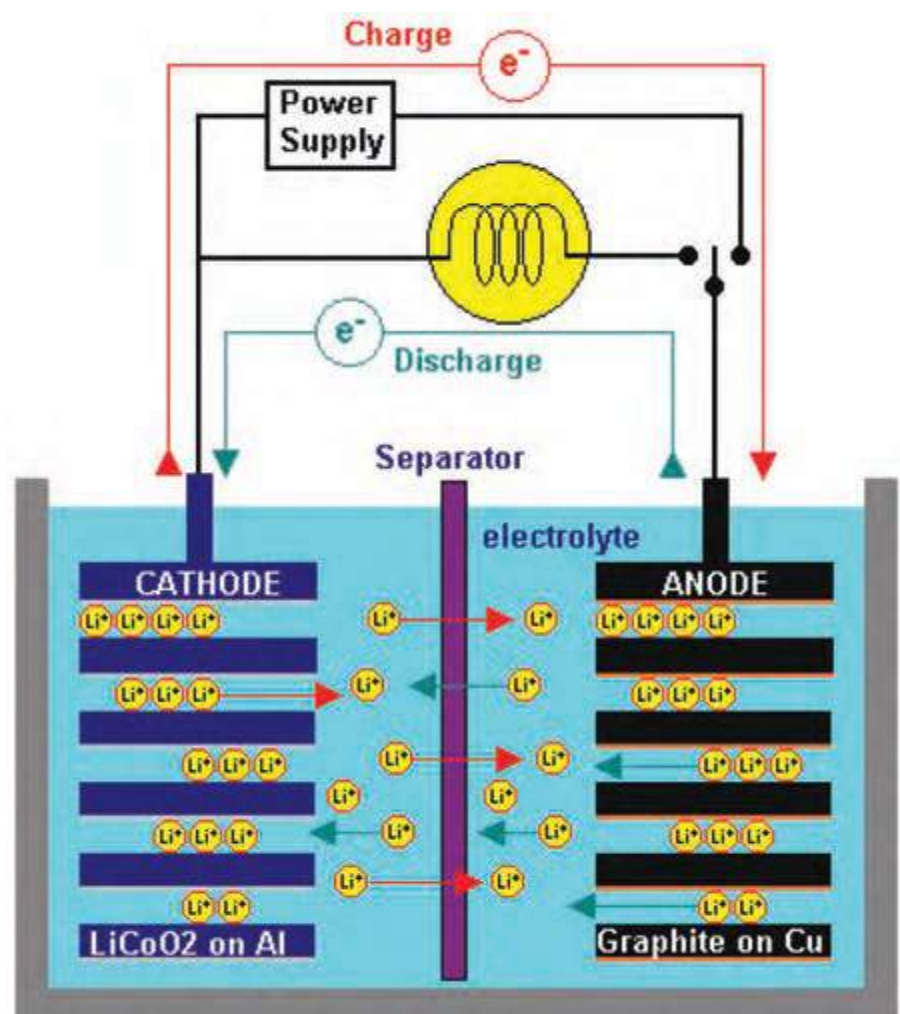


Figure 1: Movement of Li^+ ions and electrons during charging/ discharging



Cylindrical



Prismatic



Elliptic Cylindrical



Pouch Cells

electric current. This reaction is represented in Figure 1.

Positive Electrode

It is made by coating the slurry prepared with positive active material Lithium Cobalt Oxide (LiCoO_2) and additives onto the aluminium current collector. Aluminium is selected

as the current collector because of its electrochemical stability in the operating potential window of positive electrode. The additives are used to increase the conductivity of the active material and to increase the bonding with current collector. Provisions are either inbuilt or

attached to the current collectors during electrode preparation process to connect it with external circuit for current carrying purpose.

Negative Electrode

Negative electrode is also made similar to positive electrode but the materials are different. Graphite is the negative

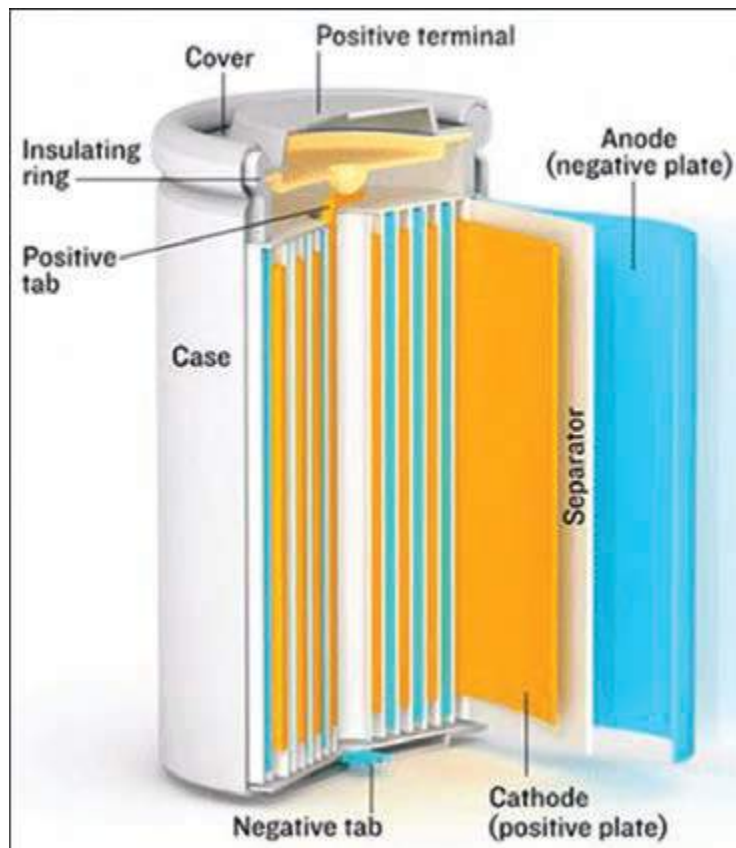


Figure 2: Wound Stack

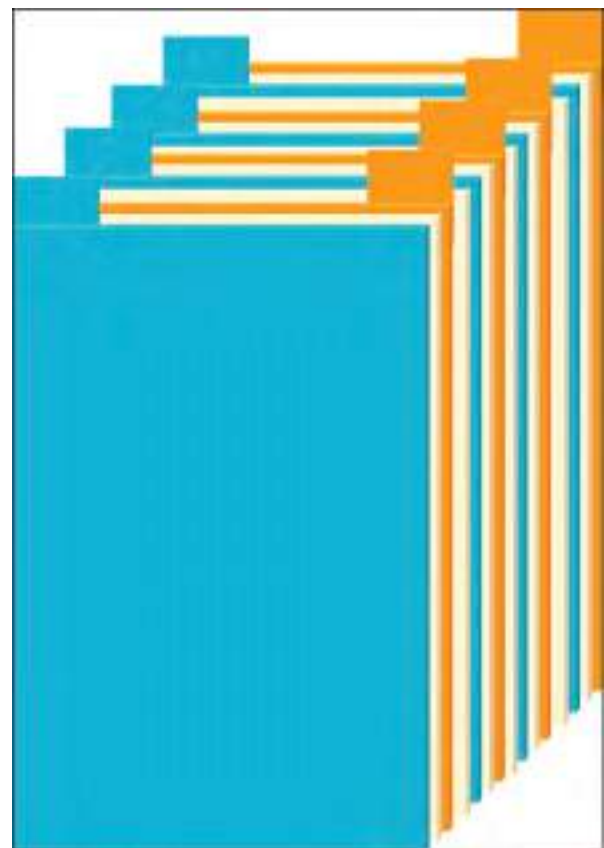


Figure 3: Arranged stack

active material and Copper is used as the current collector. Copper is selected as the current collector because of its electrochemical stability in the operating potential window of negative electrode. Since Graphite is conductive by itself, no additive is added to improve conductivity. The additive is used in the negative electrode only to improve bonding with current collector.

Separator

Separators (20 μ m) are used to electrically isolate positive and negative electrode inside the cell. The separator allows only ion movements through it. Tri-layer PP-PE-PP is used as separator. Separator also acts as a safety device through shutdown mechanism.

Electrolyte

A lithium-salt dissolved in pure or mixed organic carbonates is used as the electrolyte.

Cell Construction

Li-ion cell is generally available in the following four forms, as cylindrical, prismatic, elliptical cylindrical, pouch.

The electrode stack is made by arranging the positive and negative electrodes interlaced with separator either by spirally winding them over a mandrel or by arranging one over the other (Figures 2 & 3).

Advantages of Li-ion cell

- Li-ion batteries are design flexible. They can be formed into a wide variety of shapes and sizes, so as to efficiently fit the available space in the devices they power.
- Li-ion batteries do not suffer from memory effect, in contrast to Ni-cad batteries.
- The high single cell voltage (4.2V) would reduce the number of cells required in a battery module or

pack with a set of output voltage and reduce the number of associated Hardware, which can enhance the reliability.

- The self-discharge rate is very low in Li-ion batteries. A typical fig is <5% per month which compare very favourable to 20 – 30% of Ni based batteries.
- Li-ion cells are compact, so the light weight design minimizes the overall battery mass, so that more of the mission payload can be utilized for scientific instrumentation.

Due to the above advantages Li-ion technology has become the premier choice for the satellites and Launch Vehicles and deep inter planetary missions.

Disadvantage of Li-ion Cells

- Degrades at high temperature
- Capacity loss (Ah) or thermal runaway when overcharged.
- Venting and possible thermal runaway when crushed.
- Need for protective cell management circuits for battery

Safety of Batteries

Safety is the important aspect for Li-ion cells/batteries. Even a single battery fire could turn the public opinion against Li-ion cells and the damage will be more in case of space systems. Li-ion batteries are dangerous under some conditions and pose safety hazards since they contain flammable electrolyte. One of the major failure modes is Thermal Runaway.

Thermal runaway is a positive feedback loop whereby chemical reactions triggered in the cell exacerbate heat release, potentially ending with fire.

In principle, the cell failures may not be absolutely eliminated but their occurrence can be significantly reduced and the severity of such events should be mitigated and their impact limited. In addition to the selection of cell materials (both active & passive) the cell design greatly impacts the battery safety providing the opportunity for the installation of cell-level protection devices.

Commercial Li-ion cells are equipped with the two internal safety devices namely Rupture Disc and PTC (Positive Temperature Coefficient) resistor to prevent over pressure and overheating. When the internal pressure is increased above a specified limit the Rupture Disc bursts and allows the pressure to decrease. Similarly, when the current increases due to an external short the temperature also increases rapidly. This will allow the PTC to act immediately by increasing the resistance and so decreasing the current flow. Thus, it prevents the Thermal Runaway of the cell.

Li-ion Cell Safety Features

- The Li-ion cells should be manufactured in a strictly controlled environment, with manufacturing process controls, including 100 per cent raw material selection, screening and chemical analysis of the raw materials and annual configuration /production line audits.
- Li-ion cells are susceptible for internal contamination by metal particle during manufacturing. Under some circumstances these particles could pierce the separator (20micron) causing a dangerous short circuit. This will cause Thermal Runaway ending

with explosion sometimes. So controlled environment is a must for Li-ion cell production.

- All cells manufactured are to be acceptance tested 100 per cent.
- Cell venting (burst disc) provision is incorporated, by which the rupture disc will open before the burst pressure of the cell case.
- The separator between the positive and negative electrodes will act as thermal safety barrier. Separator uses the tri-layer material (PP/PE/PP). As the temperature approaches the melting point of the polymer 135deg centigrade for polyethylene and 1650C for polypropylene, porosity is lost. The PE layer will melt and shutdown the cell and PP layer will maintain the integrity.
- The PTC (Positive Thermal Coefficient) resistor is a current limiting device which will act and limit the current flow. If the external short is applied then by nature the resistance of PTC device will increase and limit the current flow through the cell. If the external short is continued for more time it may damage the PTC permanently.
- Internal individual cell fusing can be provided. This will fuse the link such that the external current path is open. But the fused link may raise the internal temperature and can lead to negative results.
- The selection of electrode material also plays a role in the safety of the cells. So thermally stable active material like NMC, NCA type is better for cathode material.
- Dendrite growth also should be avoided at the electrodes. This will again dictate the selection of

electrode material. Recently it was proposed that a graphite based nano structured Lithium metal anode for lithium metal batteries to inhibit dendrite growth and improves electrochemistry performance.

- The electrolyte should be stable after the intercalation of ions.
- Protection tape should be used on the weakpoints such as aluminium and Nickel tab locations, so that it should not touch the cell case (similar to 18650 cell where cell case is negative electrode).
- Elliptic cylindrical construction allows for better thermal management and packing efficiency when compared to cylindrical cells.

Li-ion Battery

As the individual cell of Li-ion can produce 4.2V (Maximum) number cells are connected in series to achieve the required battery voltage. The series connection is called a string. In case the current delivered by one string of cells is not sufficient then the strings have to be connected in parallel.

Once the number of strings connected in parallel increased and also in a string the number of cells increased to achieve the battery voltage and current requirement the problem starts with charging/discharging cycle of the battery. The cells get charged depending upon the internal resistance and the capacity of the cell. As each cell is getting different voltage during charging and discharging the cells in a string and in a battery to be matched and selected. The matching is based on cell parameters obtained by testing like Ah capacity, internal resistance etc. Cell matching is critical in achieving

optimum battery performance, life and safety. This is particularly important when parallel strings of cells are used in large cell array to ensure optimal current sharing between strings. Also, cell matching becomes more important as the cell current in the battery increases.

Even though the matched cells are used the behaviour of cell may vary as the number of cycles of charge & discharge is increased. This will cause the cell unbalance and end with various hazardous behaviours. The problem of unbalance with the Li-ion battery has to be controlled for achieving better performance. This is done by the cell balancing electronics.

Further depending on the duration of the mission and number of charge/discharge cycles, cell voltage within a battery can diverge from each other cells and need to be balanced for the optimum battery performance.

Cell Balancing Electronics

Cell balancing electronics is an essential element for the long term, safe and optimum performance of Lithium-ion batteries. Li-ion battery is now the most commonly used technology in the space applications that include all earth observation satellites, planetary probes, space transportation systems etc. Li-ion batteries have many advantages over other traditional battery technologies. As the cells are sensitive to overcharge and over discharge they need to be carefully managed with regards to charge and discharge operations. The cell management system function includes

- Balancing – optimizes battery life and available energy
- By-pass – Removes the weak or failed cells or modules from the serial circuit

- Disposal functions (discharges) – passivates the battery modules at the end of the mission even after by-pass operated


Factors Affecting Safety and Handling

Attention must be given to the design and use of Lithium-ion cells and batteries to ensure safe and reliable operations.

As with most battery systems precautions must be taken to avoid physical and electrical (over charging/over discharging) abuse. If the Li-ion batteries are not used properly they will become potential safety hazards. Inappropriate handling or application of the Li-ion cells can result in reduced cell life and performance, electrolyte leakage, high cell temperature rise and even the possibility of smoke generation and fire.

Battery Safety Precautions

Proper care should be taken in Thermal Management of the cell to avoid Thermal Runaway (TR). Also the design of battery system should be in such that Thermal Runaway event is completely contained within the battery and to have no impact to other spacecraft/Launch Vehicle systems. Make sure vented effluent remains below explosive limits in the bay and would be acceptable to safety.

Make sure the housing ventilation, flame and heat suppression features work to prevent flame and contain significant heat from leaving the battery housing with satisfactory pressure management. Make sure the combined internal battery features for cell thermal management, physical separation, effective venting, electrical isolation and structural support work to preclude a single cell Thermal Runaway side wall failure from directly impinging flame on to the adjacent cell and that single cell TR will not thermally propagate to remaining cells in the battery. 



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effective operations. Residential houses and villas, commercial malls, hospitals, offices, and different types of industries accommodate different electric devices. Substantial power input to these diversified power-based fixtures ensures effective normal function with longer qualified durability.

In spite of the appropriate power supply from the transmission lines, often, uncertainties may arise. Voltage spikes, surges, transients, sags, harmonic interferences, wave distortions, and other such power issues are major concerns for everyone nowadays. Standard and reliable power-conditioning and power-saving products facilitate perfect power quality and avoid the issues.

Importance of Power-Conditioning and Power-Saving Devices

The significance of different power-conditioning and power-saving devices is outstanding. Spectacular functions and responsibilities of such marvellous power-based devices help adequate power usage and, thereby, save power and the environment. It's our responsibility to seek power-saving means and be

Imagine our life without electricity, how would it be? Most tricky and troublesome, right? We inculcate many electric applications to ensure our daily activities to happen in a smooth continuous flow. With advanced technological assistance, it's now possible to maintain the adequate power supply to diversified electric applications through spectacular power-based tools – power-conditioning and power-saving products.

What are the Power-Conditioning and Power-Saving Products?

A wide range of products including

transformers, stabilisers, power conditioners, control panels and UPS come under the power-conditioning and power-saving products. The main functions of these power devices include:

- Enabling good quality power supply to electric equipment
- Controlling voltage fluctuations to avoid the equipment damages
- Saving the power and reduced maintenance costs.

Why use them?

May the appliances, machinery, and equipment be simple, sophisticated, or sensitive; it is mandatory to consider better maintenance for

an inspiration to the next generation – we need to let them enjoy the manifold power resources to meet the substantial power demands.

Adding splendid cutting-edge technologies to traditional electric applications has escalated the trend of power solutions globally. Several scientific methodologies, principles, and strategies have been used to develop special products to enhance power quality and enable effective utilisation. Had there been no such esteemed equipment, there would be destruction, damages, and loss concerning for power everywhere in houses and industries as well.

Change in power voltages is one of the primary issues showing devastating effects – specific voltage regulators like transformers and stabilisers pursue stipulating voltage conditions sufficient for specific functions.

Transformers

Transformers play an important role in power voltage dealings. With distinctive capabilities of voltage regulation, alteration, and maintenance, they are the most preferable devices for diversified sectors. The main duty of a transformer is to transfer the electrical energy from one circuit to the other or from the circuit to the end-use equipment. The primary and

secondary coils of the transformers enable to increase or decrease of the power voltage – however, the frequency remains unchanged.

Assorted transformer varieties designed these days satisfactorily reach the expectations of diversified applications.

Power and distribution transformers with different capacities are the ultimate means of power voltage regulation and alteration. They desirably satisfy the needs of power generation stations, traditional electric utility companies, distribution company (DISCOM) substations, and other industries. Step-up and step-down designated power transformers preferable for customised applications are manufactured nowadays with smart specifications.

Currently, upon the raise of eco-friendly strategies, solar and wind power plants have come up. Simultaneously, the latest developments have occurred with the design of new power transformer models suitable for such power generation plants.

It is important to ensure substantial power conditions for the end consumers at houses, offices, or industries. Distribution transformers that are generally step-down transformers help the ultimate customers to get substantial power voltage for the varied load conditions. They decrease the voltage levels from the transmission lines and offer respective voltage conditions to the concerned applications. So, they give appropriate power voltage conditions.

Though liquid-immersed transformers are prominent earlier, nowadays, eco-friendly considerations have become prominent. This trend gave rise to the blooming dry-type



Ultra Isolation Transformer

transformers for various industrial applications. These pollution-free transformers also have minimum maintenance and comparatively lesser investment costs.

Parallel to effective performance through voltage regulation, safety is also important. It is the most crucial prospect related to electricity dealings. When testing any instruments or during unexpected voltage imbalances, generally, many devices get damaged. There will be a risk for the instruments as well as the personnel dealing with them. So, ensuring safety is power-conditioning equipment called isolation transformers.

Isolation transformers and ultra-isolation transformers, the outstanding solutions for safety and security, have become the primary requisite in sensitive computer installations, medical instrumentation, digital communication telemetry systems, CNC machines, and scientific equipment.

They adopt special galvanic isolation techniques to separate the current supply from the load. They cherish 100 per cent safety. Unearthed equipment, wiring disconnections, etc. that disrupt the equipment function will no longer be creating issues with the



Power Transformer

Technology

installation of perfectly suitable isolation transformers.

Furthermore, many other transformer models including autotransformers, instrument transformers, etc. play a significant role in voltage regulation. Therefore, transformers are considered the best power-conditioning equipment used in many fields.

Stabilisers

Fluctuated voltage conditions that disturb the appliance activity are not uncommon in houses, industries, theatres, computer labs, and many other applications. Sudden onset or prolonged voltage variations have to be primarily put off. High voltage or low voltage levels generally have a huge negative impact. Different types of appliances will be badly affected – the internal parts may be damaged temporarily or permanently.

Having the utmost care upfront will help to save the equipment from such disruptions. Data losses, operational losses, less productivity, etc. will be evident with such defected equipment. This will be problematic for many businesses and industries – with decreased productivity, the sales and their market position will be declined.

To keep a checkmate to this chain of problems, it's ultimately essential to use power-conditioning and power-saving products.



Static Stabiliser

Stabilisers of different kinds ensure stabilised continuous output voltage managing unexpected voltage imbalances and fluctuations. Servo stabilisers that work based on servo motor effective control such fluctuations. Based on the rise or dip in the voltage levels from the main source, the servo motor of the stabilisers move in a clockwise or anti-clockwise direction and this movement regulates the voltage level through certain important components of the stabiliser.

While there are many three-phase and single-phase power applications, customised three-phase servo stabilisers and single-phase servo stabilisers are preferable for avoiding the effects of voltage alterations. To ensure their effective performance, they generally need lubricant oils (oil-cooled servo stabilisers) for cooling purposes – still, there are even some models that are air-cooled.

However, considering the environmental safety, minimal maintenance, and investments, today, there is flair of latest advancements. Static stabilisers – the characteristic IGBT-based stabiliser supplies provide sparkling voltage stabilisation solutions. They are not at all associated with any smoke, dust, or toxic gases that are usually seen with oil-cooled servo stabilisers.

Power-Conditioners

While transformers and stabilisers majorly deal with the voltage regulation, yet, other important electricity aspects like frequency changes, harmonic defects, waveform distortions, etc. have to be encountered too. Several telecommunication equipment, visual devices, audio signals, and other such issues do interrupt significant



Residential servo stabiliser

dealings. Power conditioners, by filtering such unwanted deviations, assure good quality power supply.

Another important considerate – power-factor – alters the characteristic function of different industrial equipment. Several control panel systems, power conditioners, and stabilisers help to reduce the power factor to assure quality current output to the concerned equipment.

With increased power factor, the government issues power penalties to industrial owners for over power consumption. Financial risks, operational defects, and power wastage are important issues that are not to be neglected. Challenging the power-factor concerns, specific devices are designed to assure perfect power-conditioning and power-saving.

Power Enhancers

These devices are intended to

improve the quality of the electrical supply. Even under outages, there won't be any problem when these are used. Surge suppressors and voltage regulators are some of the important power enhancers.

Power Synthesisers

There is certain power-conditioning equipment that not only improves the current supplies from the main sources but also generate electricity sufficient for the required operations. Motors, generators and uninterruptible power supply systems are the supreme products that splendidly produce electricity with enhanced quality.

Among them, UPS systems are most significantly used in all ways.

UPS


Power cuts are always common

everywhere. Many significant devices and machinery need continuous power supply without which certain vital operations get affected. So, it is a challenge to save, store the power, and resume its appropriate usage during power cuts.

Uninterrupted power supply systems are capable to store the AC power in a battery and use it as and when required. Thereby, there is an absolute chance to save power and enable appropriate and timely usage. Also, extensive safety is associated with absolute power voltage supply by using an isolation transformer in UPS.

Eventually, it's a mandatory option for one and all to consider the importance of this power-conditioning and power-saving equipment. By using them, all

means of power including the voltage, frequency, waveforms, etc. are made available in substantial levels to the final loads. Without any issues, one can expect good power quality and also assure extreme safety.

It's not only a vital aspect for larger industries but also even simpler businesses, commercial complexes, and household appliances. On the whole, they are the must and should inherent safety means for all the electric applications. In the end, as the children of our Mother Earth, it's everyone's responsibility to save its elements - so let save the power and associated resources through these competent power conveniences. 

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In the depths of the SAS

StationScout makes Substation Automation Systems transparent

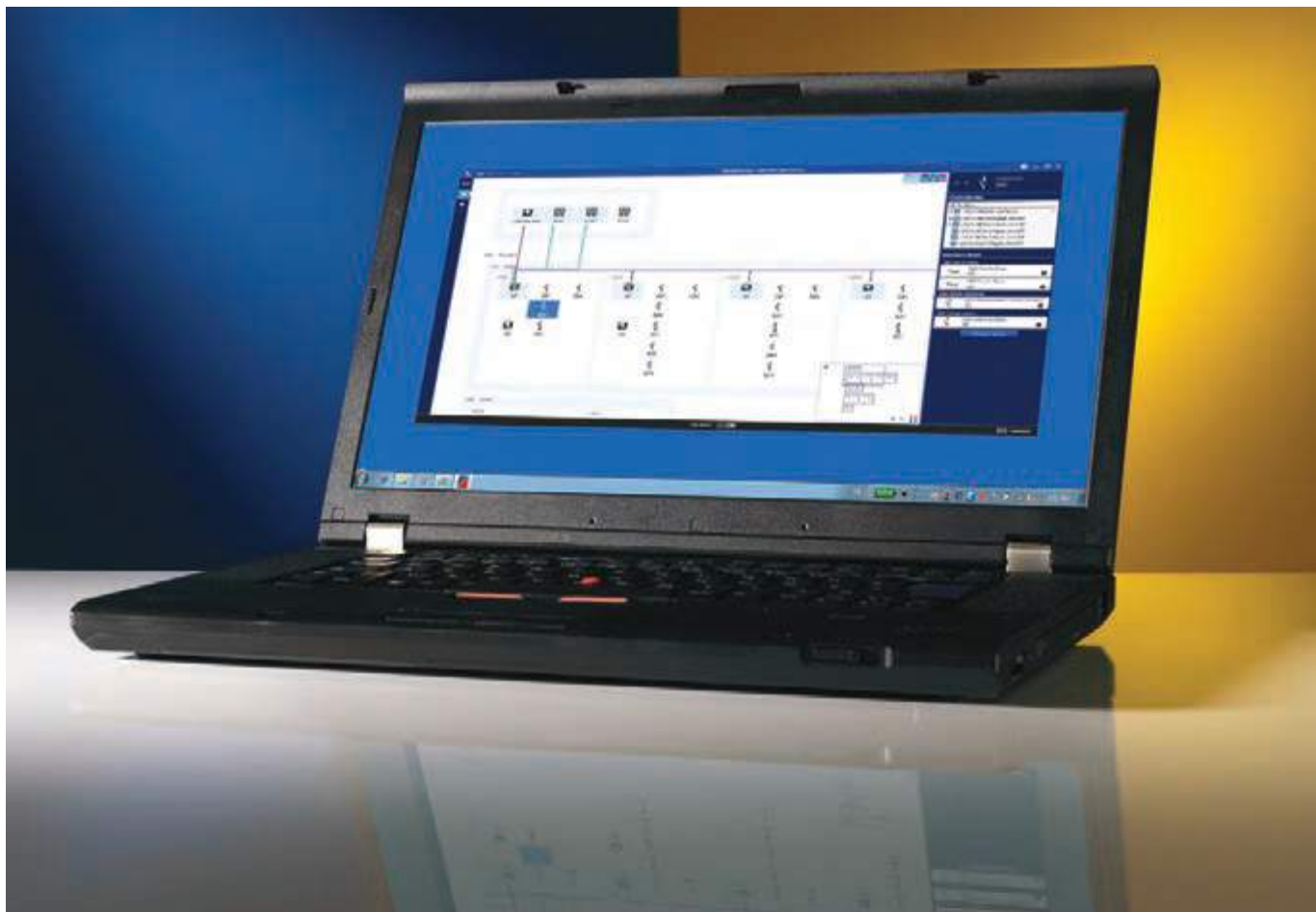


Fig 2. StationScout not only offers a simple and comprehensive presentation of all important data in a IEC 61850 substation but also a cyber secure connection.

What is the key focus of commissioning secondary technology? Traditionally, it is testing the protection devices and the way that the entire system functions. Substation automation systems (SAS) are starting to be used in modern installations. When it comes to individual protection devices, they not only monitor important components

and feeders in energy transmission, but they also communicate with one another. This communication is key when it comes to the SAS functioning smoothly and predictably.

If you compare the effort that it takes to test the functionality of the protection system with what it takes to test the automation and control system, there is a

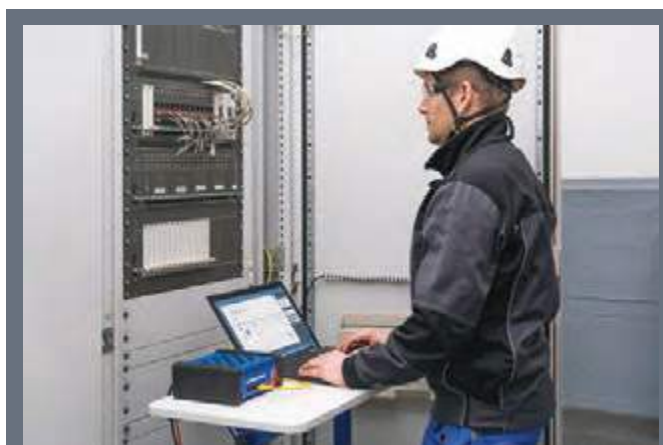


Fig 1. When looking at the time spent during commissioning, testing the automation and communication system nowadays consumes even more time than testing the protection.

significant difference, with the SAS losing by a long shot. This is due in large part to the increasing complexity of the structure and the signals being transmitted. The system requires these signals in order to function properly and communicate with the control centre.

However, the IEC 61850 engineering process and the data available in the SCD (substation configuration description) files, open the door to new testing methods that make commissioning and factory acceptance tests faster and much more efficient.

This data forms the basis of a completely new approach that is embodied by OMICRON's testing system StationScout. It's been developed specifically for this purpose and it dramatically simplifies and speeds up testing for automation and control technology in IEC 61850 automation systems and covers the whole lifecycle of a SAS.

The name speaks for itself because, like a scout, it goes into the depths of the SAS and explores all of the components and connections. By analyzing the SCD file, the system independently identifies potential signals for testing. It also detects communication connections and IEC 61850 services that have been implemented. Afterwards, the results can be used by the tester to create testing plans for both factory acceptance tests and commissioning tests.

The Smart Overview Package, released in 2018, enables signals to be tracked in the SAS, and detects any GOOSE publish or subscribe problems. It also allows interlocks to be tested manually and to simulate individual components or the whole SAS – a huge

time saver when testing protocol gateway/RTU configurations.

Cyber-secure connection

StationScout comprises two components: the high-performance MBX1 hardware and the software that runs on it with all of the necessary tools. MBX is controlled via a Windows PC. The additional firewall integrated into the system separates the testing solution (MBX1 and laptop) from the substation network, thus ensuring cyber security.

Because the SAS operation is often organised into several networks at once, MBX1 comes with four Ethernet interfaces for connection and analysis.

Simple and comprehensive presentation

One of the main problems that surrounds testing components and communication in SAS are the complicated terms described in the IEC 61850 standard. StationScout detects the names and purposes of the respective elements in the data model. It then visualises them with clear names and the corresponding connections in a graphic interface. These names can also be adapted, for example, to the respective national language.

This visualisation is performed with all of the available data in the SCD file. This includes all of the important data from the substation, such as the voltage level and the switchboard section. For this purpose, there is also an option for modeling in single-line diagrams, according to the standard. Because the majority of the current SCD files do not contain the information necessary for this, we have introduced the new ZeroLine presentation. This reproduces the respective status in real time. Navigation in a large SAS



Fig 3. It's very easy to connect StationScout via plug n play to a substation network and to retrieve and monitor all the important information.

can be carried out in the same way that it is done in a cartographic system.

Intuitive signal tracing

Within an SAS, GOOSE messages are transmitted by multicast from their source to all of the recipients. If an error occurs during this communication exchange, the protection testers must follow the signal on its route through the SAS, which has previously been difficult and very time-consuming, even with copper cable networks. In systems with IEC 61850, manual signal tracing is no longer possible.

Therefore, StationScout visualises all of the connections, shows how the signals propagate through the SAS and shows where they go and where they don't. In addition, special filters reduce the overall complexity by allowing the display to focus on the relevant elements and then displaying them in the intuitive "Smart Overview". This also includes tracing messages and signals sent as GOOSE, which simplifies error corrections in the communication structure significantly.

Anything missing will be simulated

One of the key features of StationScout is its ability to simulate individual components through the entire SAS, which can take place at any time during project planning. This can begin as early as the design, specification and engineering phase, and the test plans created at this point are available for the entire life cycle of the SAS.

Real-time values can even be worked on and tested during the factory acceptance test (FAT), which can then be verified again during commissioning. Using this feature speeds up the process considerably. All of this data then forms the basis of a quick and successful maintenance check, which also refers to these plans. In each of these steps, StationScout can simulate any IEDs that are missing so that the entire testing process can run smoothly.

Commissioning license accelerates testing

With the functionalities described above, StationScout already offers huge advantages for increasing the effectiveness of SAS testing in accordance with IEC 61850. The new Commissioning package greatly simplifies the testing of a SAS. It automatically identifies the signals used within the SAS or communicated to the control center and allows signal

Fact box:


Advantages

- Guarantees cyber-secure connection to the substation automation system
- Clear live overview of signal flows in the IEC 61850 system
- Quicker rectification of communication and logic errors
- Simulation of missing components or the whole SAS
- Connection to multiple substation networks
- Re-use of test plans for recommissioning and following security patches (Commissioning Package, 2019)

lists to be imported from spreadsheets. The tester can create a watch list to filter individual signals to focus on the information relevant for a test. This makes troubleshooting communication and logic errors much easier and faster.

Each test case can be described step by step to avoid accidental damage to equipment during the test. In addition, for each test case it can be defined in advance which signals are required for assessing the result. For example, for the interlocking of a load switch, the switch must not be operated under load and the corresponding signals must therefore be traced.

Once created, test plans and test results can be printed and duplicated for reuse in other feeders. Therefore, any tests that have already been carried out can be repeated quickly and easily. This saves a lot of time, especially when tests have to be performed frequently as a result of the numerous security patches and firmware updates being released.

StationScout also facilitates the documentation of all tests that were carried out, including test cases and test steps, and provides new overviews for this purpose. It works with any network topology and is the ideal tool for testing HMI and SCADA. 



Thomas Schossig,

Product Manager Business Development Power
Utility Communication, OMICRON electronics



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ENHANCED SAFETY IN DEEP DRILLING RIGS


igus launches new modular e-loop energy chain system for secure cable guidance on the top drive



For secure cable guidance on the top drive: the modular e-loop from igus with a tough, high tensile strength rope, replaces service loops.

Extrême conditions often prevail in deep drilling rigs in the oil and gas industry: wind and weather, dirt and harsh handling of installations and equipment affect the machine components. igus has now developed the e-loop for the safe guidance of the top drive. The new modular energy chain made of high-performance plastics ensures a defined bend radius of the cables and withstands vibrations and shocks.

Deep drilling rigs with top drive systems are used to extract oil from the earth. For the cable guidance of the systems, manufacturers and operators have so far been using so-called “service loops”. However, these often create problems. The cables have no guidance, no defined bend radius, can slip into the service loop and in the worst case, break. In extremely windy conditions, the freely hanging service loop can get caught in the mast or on the sensors as well as the lighting system and be torn off. If any one of these situations occurs and a cable becomes defective, another problem arises: you have to replace the complete dress pack, because the cables are enclosed together within the hose. With the e-loop, igus has now developed a new energy chain that can safely guide cables with large cross sections and heavy weight in hanging applications. The energy supply system is a


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Hall 4, Stall A16

round, three-dimensional modular system that can move strain-relieved cables with a defined bend radius.

Easy maintenance, assembly and disassembly

When developing the e-loops, the engineers focused on a simple installation. The modular energy chain can be opened from the outside and filled at any time. This allows individual cables to be inserted and replaced quickly in case of maintenance. The chain links can also be replaced at any time. Several secured screw connections are used between the elements of the energy supply, which prevent components from falling down and increasing operational reliability. Since deep drilling rigs need to change locations on a regular basis, the developers are relying on bolted mounting brackets that enable a quick disassembly. In addition to the use on deep drilling rigs, the saltwater-resistant e-loop is also suitable for hanging applications in the offshore industry, for construction machinery, shore power or even wind turbines.

High-performance polymers for secure cable protection

High vibrations, side impacts and bumps do not bother the e-loop. It consists of individual chain links, which have a shock-resistant outer body attachment made of PU foam and cable-friendly inner parts made of the igumid high-performance polymer. The igus material is corrosion-free and chemical-resistant. The new energy supply system from igus is built around a high-tensile plastic rope that absorbs the tensile forces of the cables. The rope is composed of a synthetic plastic fibre and is therefore shatter-proof, weather-resistant, flexible and corrosion-free. The e-loop can absorb weights up to 220 kilonewtons with the rope. 

For more details, visit www.igus.in

BANDWEAVER TO SHOWCASE KEY SOLUTIONS FOR INDIAN ENERGY MARKET AT ELECRAMA



Bandweaver, a provider of fibre optic monitoring sensors and integrated technologies, will be attending ELECRAMA 2020 in support of their key regional partner, Power International. Bandweaver's Managing Director, Richard Kluth will be at the event on stand H4A7 alongside the Power International team, taking place at India Expo Mart, NCR India.

The Indian energy market continues to grow at an incredible pace, in terms of both demand for electricity and capacity for production. However, due to inefficiencies in the transmission network, at least 10 per cent of energy produced is wasted. Whilst the renewable energy sector is currently growing at a rate of 24 per

cent, the supporting infrastructure is only growing at 7 per cent. This under-utilised capacity directly impacts huge key companies and their projects.

With the support of its local partner, Bandweaver's smart technologies are helping to combat these challenges. Utilising Real Time Thermal Rating (RTTR), Perimeter Intrusion Detection Systems (PIDS) and Third-Party Interference (TPI) detection, Bandweaver's solutions are providing substantial efficiencies by increasing cable capacity and reducing downtime.

"Bandweaver selected Power International as their partner in the region based on their strong reputation and expertise in DTS and DAS technology applications. Throughout

India, Power International's technically accomplished engineers and support staff are well positioned for the delivery of Bandweaver's solutions throughout the Indian energy transmission network," a statement said.

Richard comments, "Power International has a substantial track record of delivering solutions for power cables, fire applications and PID solutions to high-profile customers such as RIL, Tata and Adani. For us, it's exciting to work with such a competent systems integrator in a vibrant, fast growing market such as India. We are hopeful that by working together we can improve the outlook for India's energy market and beyond."

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SMART CITY POLE

The concept of smart cities came into being as a consequential development to Internet of Things (IoT), digital connectivity, global warming and the compelling necessities for energy saving. More than 50 per cent of the world's population lives in cities. A city environment, with a closely knit street light network, become a natural choice for a smart city concept, hosting sensor networks and wireless communications for traffic control, smart parking, noise and air quality monitoring, incident detection, and more. Smart city lights are not standalone system. They have to be integrated with other systems under what is known as IoT. Hence the chosen smart city light poles should be able to accommodate a full range of lighting controls compatible to remote control and integral with suitable sensors for the respective application.

In fact, the smart city pole is going to be a service platform for various

services for network redundancy, application areas such as mobile connectivity (WLAN), traffic control, security camera (CCTV), information transfer, public announcement with loud speakers, smart parking, environmental monitoring and even the electric charger for electric cars etc.

K-Lite announced the launch of smart city poles (intelligent poles) with its modular solution, to cater to the above needs in the upcoming smart cities.

Salient Features of Smart City Pole

One main pole with one to five modules, smart column is a multitude of combinations. With flexible modules, the smart column is very handy and flexible for add-on. Choose your combination, add the module, connect them together and the smart column is ready to meet your requirement.

For more details, email: info@klite.in



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Sharmila Kumbhat,
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- HMI/PLC control with data logging
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The Customer's Challenge

When an insulator fails, it may cause a widespread outage. There's a good chance it will affect multiple components in the transmission system – creating a larger, more unmanageable problem. It isn't always easy to inspect for potential failures as insulators are often located up high and out of reach. Since it's difficult to inspect, it's also a challenge to diagnose a problem. The failing component could be inside of the insulator, making it harder to get an accurate temperature measurement from a distance.

A Solution


Regular temperature monitoring



using a combination of thermal imaging cameras can help you both inspect and diagnose impending failures before they occur. Using a thermal camera, such as the FLIR E8, you can easily scan for temperature differences and hot spots to locate the problem area. Then you can use a high-performance thermal

camera, such as the FLIR T640, to diagnose the issue. This type of thermal camera will give you the ability to detect small anomalies, as well as the best accuracy from a long-range distance.

The Results

Through regular thermal inspections, you can find fault locations, diagnose the severity of problems, and correct issues before an incident. This will establish a safer work environment, increase product efficiency a cross the system, and improve customer satisfaction by ensuring no loss of electricity. 

For more information, visit: www.flir.in/substation-transmission

HIGH SPEED DOORS



New Prime Plus high speed door

High-speed door product range from Gandhi Automations is best described as the all-in-one solution. These doors are extremely suitable in situations where temperature control is necessary, but the frequent entry and exit of vehicles requires a door that opens and closes quickly.

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- **Superior seal:** Quiet and up to Class 4 wind resistant
- **Self-repairing:** After a crash, over full clear size height
- **Minimum maintenance and safe:** Frequency operated drive (soft-start/soft-stop)
- **No damage to people and products** due to flexible soft edge and curtain.

A safe solution

The standard safety features, the flexible door leaf without horizontal reinforcement profiles and soft edge bottom profile, result in a safe solution when accidentally driving or walking against the door leaf.

Standard soft edge

No damage to people and products due to flexible soft edge and curtain.



High Speed Doors



Prime

Durable and self-repairing

As a standard, the high-speed door, is self-repairing after a crash over the full clear size height.

A curtain for every situation

Gandhi Automations' high-speed door has a 1.3 mm thick door curtain as a standard. The curtain is fitted with a vision panel at eye level. Other curtains in the product range are the 3.5 mm or 7 mm thick curtain for temperature-controlled rooms and a 30 mm thick curtain for (deep) freeze environments.


Superior seal and highly wind resistant

The high-speed doors from Gandhi Automations are provided with a special construction which guarantees superior sealing around the entire opening. Because of this sealing, the doors are highly wind resistant (up to Class 4) and can therefore also be used as exterior doors.

Beautiful design and hygienic

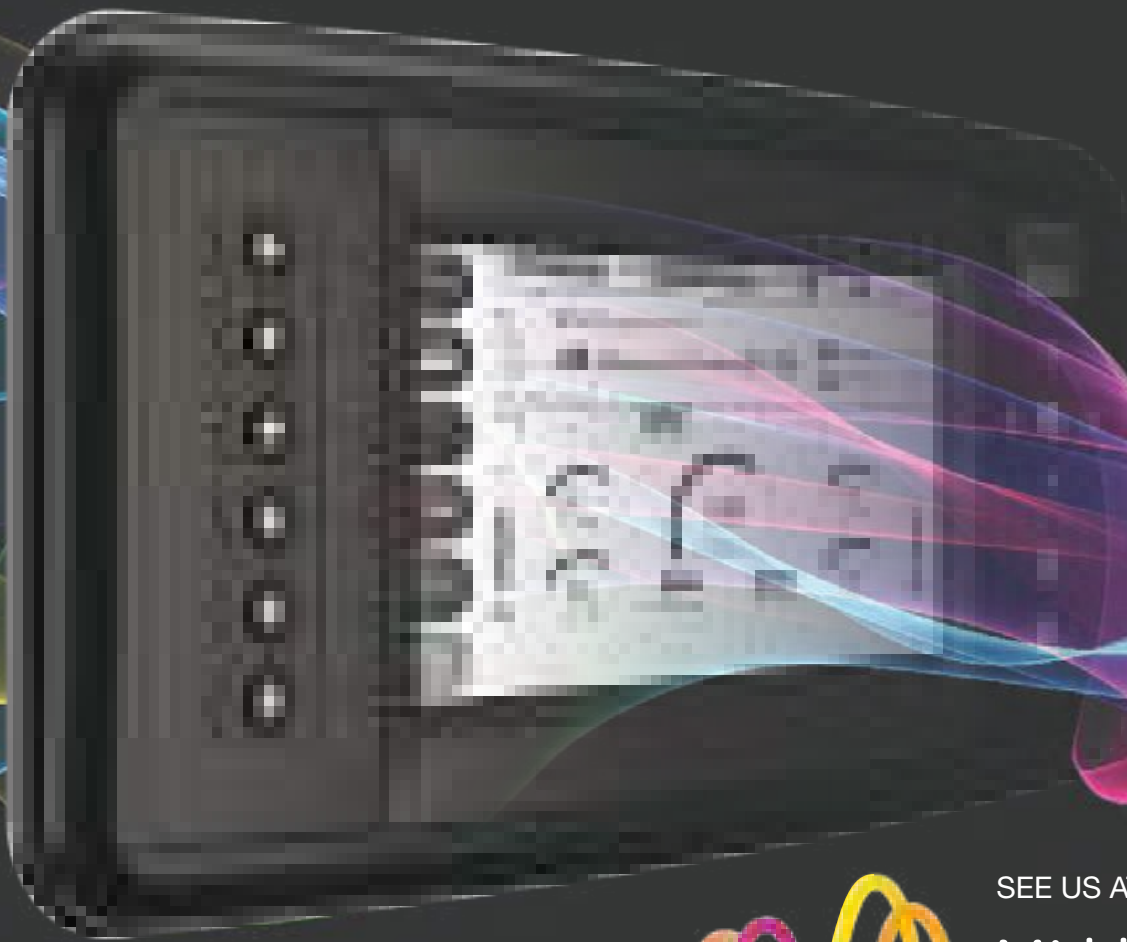
The side guides of Gandhi Automations' high-speed doors are made of high-quality steel. Their freezer doors are made of galvanised steel, whilst the side guides are made of high-quality stainless steel. All high-speed doors come with covers for the drum and engine in the same material. All drives are IP65 certified to prevent damage caused by water and moisture.

Applications

Gandhi Automations' high-speed doors are suitable for applications across industry including warehousing, logistics, manufacturing, processing, packaging, loading docks, cool rooms/freezers, and production areas. 

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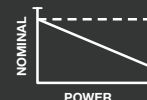
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HAN REAR-FIT: QUICK INSTALLATION OF INTERFACES INSIDE SWITCH CABINET

Rear mounting option for contact inserts and modules extended to further housing ranges of the Han product family



From the first quarter of 2020, rear-mountable interfaces for trouble-free data transmission are also available: Han B / EMC Rear-Fit.

In addition to solutions in the Han B and Han-Eco B standards, rear-mountable interfaces for trouble-free data transmission will also be available as of Q1 2020 – the Han B/EMC Rear-Fit. Simplified

handling speeds up the processing of equipping control cabinets with interfaces and thus offers interesting options to manufacturers of robotics and automation technology.

Han industrial connectors are particularly suitable for environments that require the simplest possible installation yet place high demands on component robustness. Until now, installing control cabinet interfaces first required cables to be routed through a cut-out in the outer panel. Assembling the inserts then took place outside the control cabinet. This is different with the new Han solutions: the prefabricated inserts can be snapped directly into the bulkhead housing from inside the control cabinet. This results in time and cost advantages.

The contact inserts are mounted in a plastic mounting frame that snaps securely into the rear-fit mounted housing made of aluminium and, if necessary, the frame is just as easy to disassemble. The attachment of the PE connection to the metal housing is structurally ensured. To achieve an IP65/66 degree of protection to and to protect against UV radiation and ozone emissions, a flange rubber seal runs the whole way inside the rear-fit mounted housing.

The rear-fit option makes the assembly of prefabricated units more efficient. Connections for control cabinets and machine modules can largely be pre-assembled separately. This results in cost advantages.

The new Han rear-mount connectors are compatible with previous connector generations. All contact inserts and modules from the Han line can be used without restriction in the new rear-fit mounted housings. “Effectively immediately, manufacturers of robotics and automation technology now have a new, economically interesting alternative in the Han portfolio,” says Gero Degner, Technical Application Manager Installation Technology Han at HARTING Electric.



For more information, visit www.HARTING.in

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THE SMARTER E INDIA FEATURE INNOVATIONS FOR THE NEW ENERGY WORLD

The smarter E India, the innovation hub for empowering new energy solutions featured riveting discussions between industry pioneers in the fields of solar, energy storage and electric mobility. The three co-located exhibitions Intersolar India, ees India and Power2Drive India has celebrated its debut in Bangalore, November 27-29. The high-level conferences featured 30 sessions and workshops, including the new two-day Power2Drive Conference, organised in partnership with Energy Alternatives India.

Conference sessions, exhibition stage presentations, workshops and conversations on the exhibition floor were dominated by the same key theme: the intersection where renewable energy technologies meet will give ways to a treasure trove of new service opportunities and enable a more sustainable, reliable and resilient energy mix for India's future generations.

After a year of elections, changes and uncertainty in the Indian renewable market, researchers and industry leaders delivered comments


that offered a bold and optimistic take on the future for solar, energy storage and e-mobility technologies, and reminded attendees of the industries' accomplishments and long history of innovation. Mercom India Research forecasts India to install over 7.3 GW of solar capacity in the calendar year 2019. In the white paper "India Solar Market 2019 – An Overview" released in partnership with Intersolar India during the first day of the event, Mercom analysts predict solar installations in India to reach 70 GW by the end of 2022 based on current market dynamics and, for the first time, India will mark 10 GW of annual installations in 2020, assuming stable market conditions.

The smarter E drives forward B2B contacts

On the heart of the show floor, business to business meetings and lively interaction between buyers and sellers were seen at the "Buyer-Seller Forum" and attendees packed seats at the Innovation & Application stages to gain an understanding of new technology solutions and programs hitting the market. The

free presentations included product demonstrations from exhibitors and special events hosted by Alliance for Rural Electrification, AGNI's/ Invest India, Skill Council for Green Jobs, Indo-German Energy Forum, National Solar Energy Federation of India and The Energy and Resources Institute.

Dr. Florian Wessendorf, Managing Director of Solar Promotion International, said, "We were the first event to recognise the value of coupling solar, storage and e-mobility and to unite those grid-edge technologies under the umbrella of The smarter E. Our goal has always been to provide a platform that facilitates important conversations and creates meaningful business connections. We look forward to continuing that tradition next year in the dynamic and promising Indian renewable market at The smarter E India 2020 in Mumbai."

The smarter E India 2020 will be held December 15-17, 2020 in Bombay Exhibition Centre in Mumbai. 

For more information on The smarter E India, visit: www.thesmartere.in



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IEEE Standard 998 is the only international standard dealing with shielding of substations against direct lightning strikes.

Design Methodology

Leader Inception Theory (LIT)

LPI uses the Leader Inception Theory (LIT) for designing lightning protection systems for HV power facilities. LIT is one of a number of design methodologies detailed in IEEE Std. 998.

Guardian Plus Hardware

- Air terminals manufactured to a design achieving compliance with IEC 62651-2 & UL96
- Placement of Guardian Plus air terminals carried out in accordance with LIT as per **IEEE Std. 998**
- Air terminal geometry is optimised to minimise corona discharge for the particular installation parameters

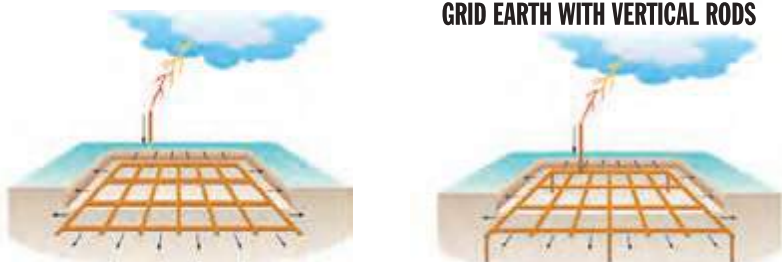


Comprehensive Lightning, Surge Protection

GRID EARTH

Specially Design for substation based on IEEE standard.

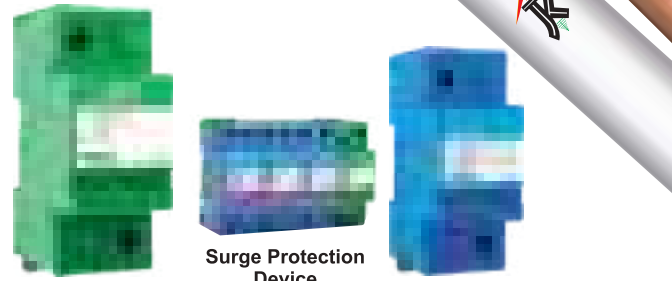
GRID EARTH WITH VERTICAL RODS



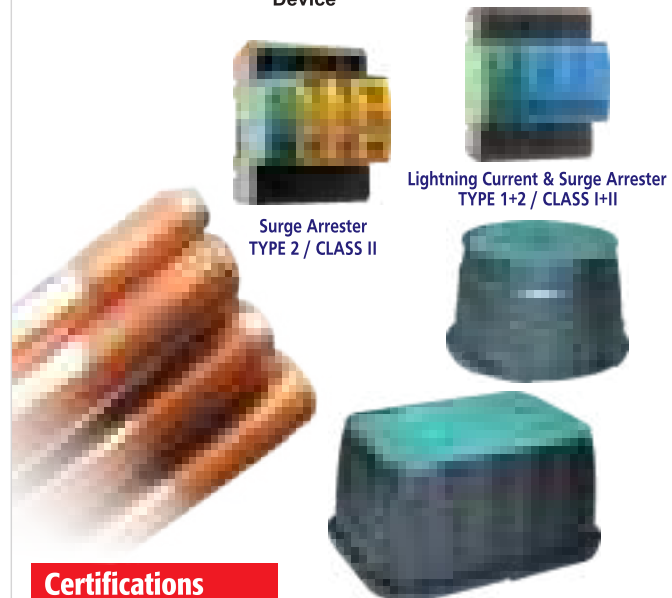
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Insulation Monitoring Device



Surge Protection Device



Surge Arrester TYPE 2 / CLASS II

Lightning Current & Surge Arrester TYPE 1+2 / CLASS I+II

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Relay Testing



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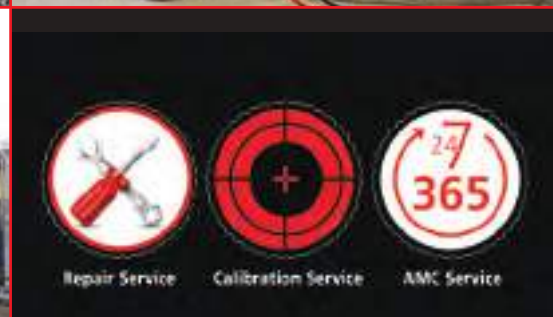
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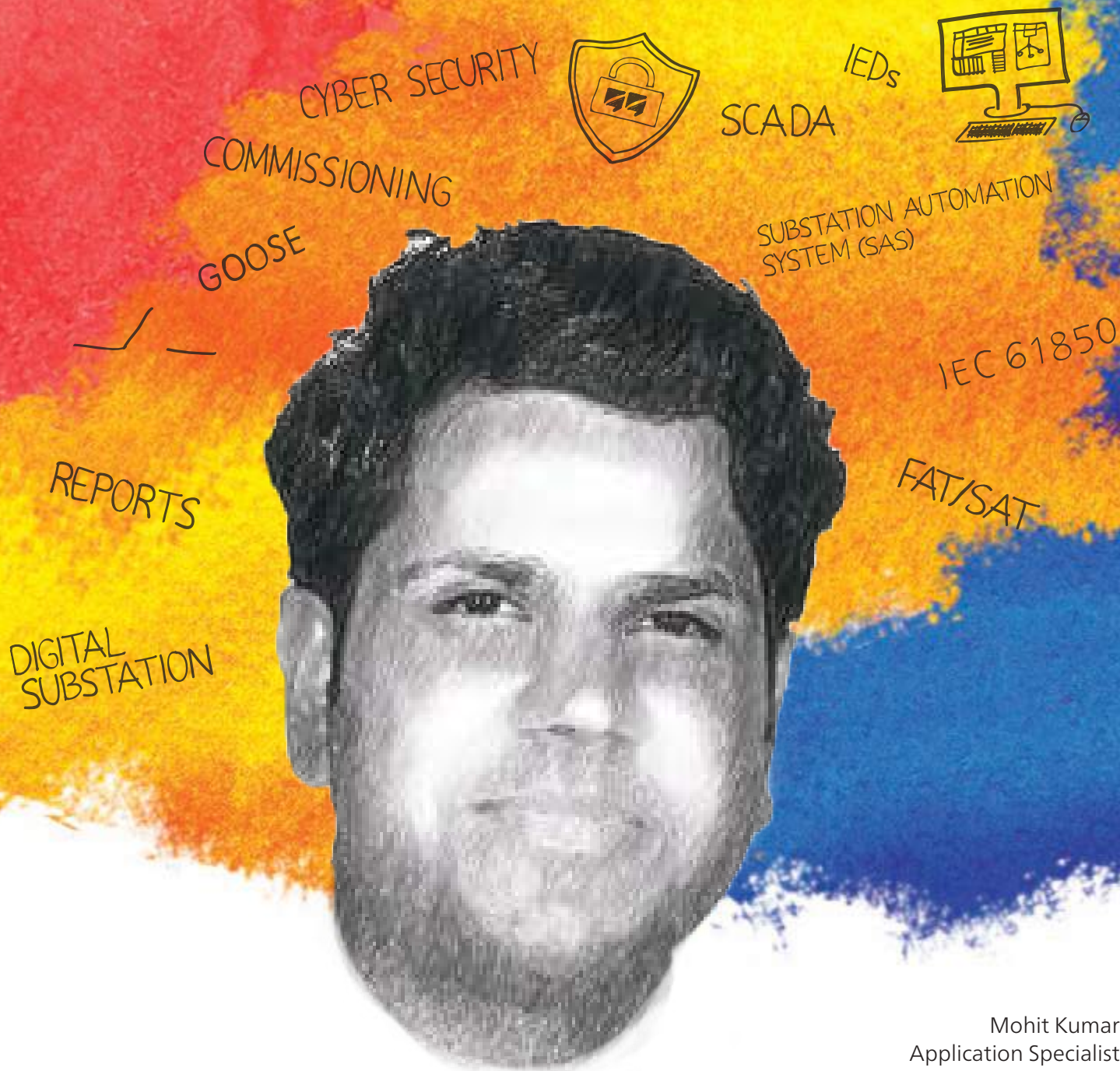
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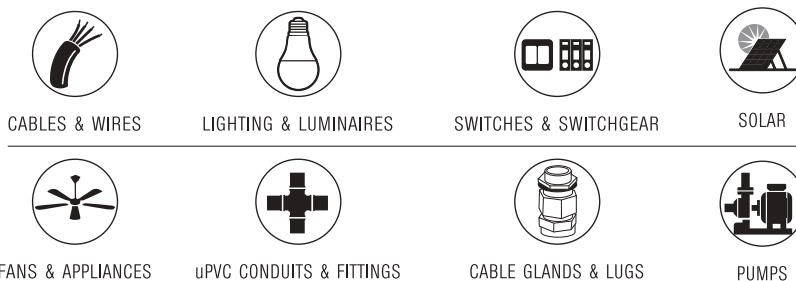


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