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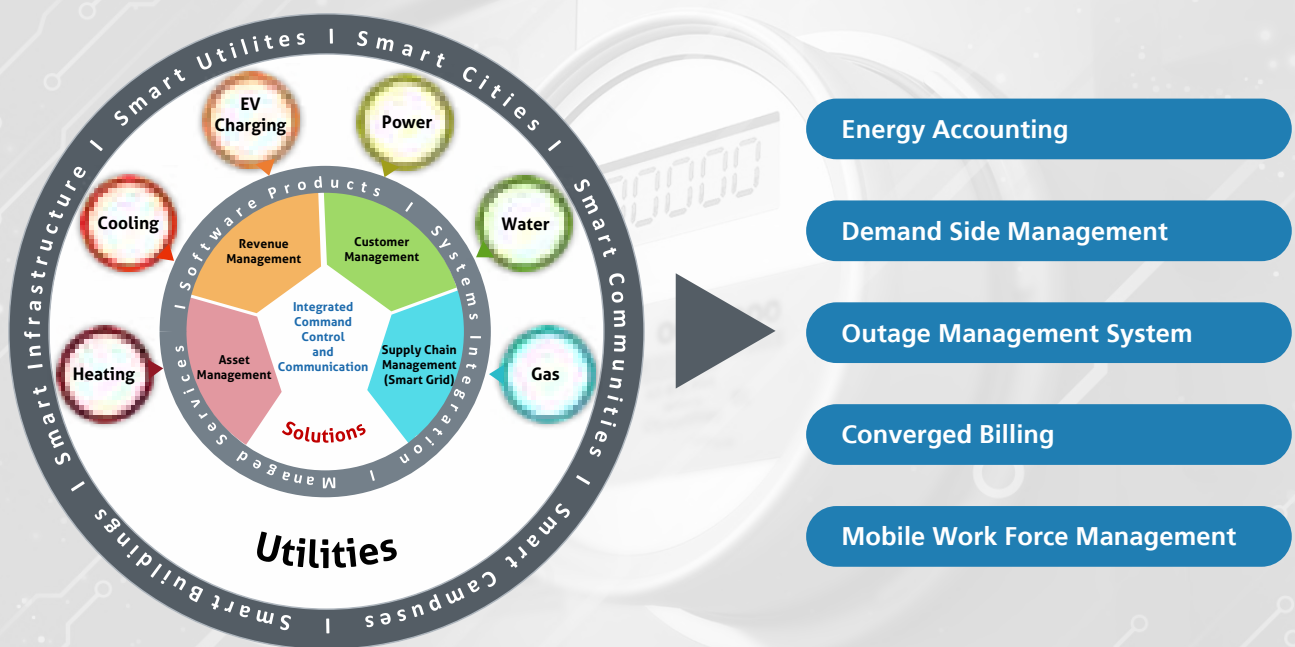


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I always like to look on the optimistic side of life, but I am realistic enough to know that life is a complex matter.

— Walt Disney

Pace of transmission infrastructure addition needs to improve

Though power T&D continues to undoubtedly be a thrust area in terms of public and private investment, it is a matter of concern that the pace of transmission infrastructure upgrade of late has been slower than expected.

During the first eight months of FY24, addition of new transmission lines and substation (transformation) capacity has fallen short of target. According to latest statistics released by Central Electricity Authority (CEA), India could add 7,844 ckm of new transmission lines in the April-November period of FY24, meeting only 64 per cent of the targeted 12,236 ckm. In terms of substation capacity addition, the target achievement was barely 57 per cent with actual addition standing at 32,961 MVA.

Falling short of the target, and very significantly at that, is just one aspect. The actual performance in FY24 also does not compare favourably with that in FY23. In the case of substation capacity, actual addition in FY24 (April to November), was 24.6 per cent lower than in the same period of FY23. When it comes to transmission lines, actual addition in FY24 was only marginally higher than in the previous year.

The shortfall in target achievement is largely arising from poor performance of state transmission utilities, which are mainly associated with 220kV-rated transmission infrastructure. Central utilities, mainly comprising Power Grid Corporation of India Ltd (PGCIL), and private utilities have done relatively better. This is why transmission infrastructure upgrade, at the 765kV level, has not been way off the target.

During FY24, a record number of interstate transmission system (ISTS) schemes have been awarded. The winning developers represent a healthy mix between PGCIL and private developers. This would ensure that the pace of 765kV and 400kV transmission infrastructure addition would be healthy in the coming years. The 220kV upgrade remains a matter of concern as it is largely a state government prerogative.

State government utilities should actively consider engaging private enterprise in transmission network augmentation, through the TBCB (tariff-based competitive bidding) mechanism. Some states like Uttar Pradesh, Madhya Pradesh, Odisha, etc, are working towards it but by and large, the penetration of the TBCB culture in intrastate transmission system (InSTS) projects is still very poor.

The power T&D value chain ranges from extra high-voltage lines for interregional and interstate transmission, to intrastate lines, culminating in the downstream distribution network.

Inadequacies at any stage would be a weak link in the value chain, and would militate against the ultimate objective of reaching electricity to the smallest and remotest consumer.

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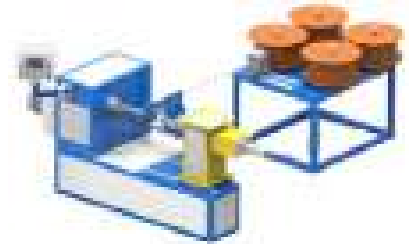
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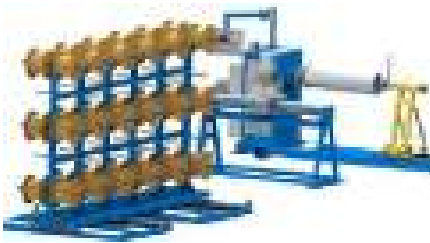
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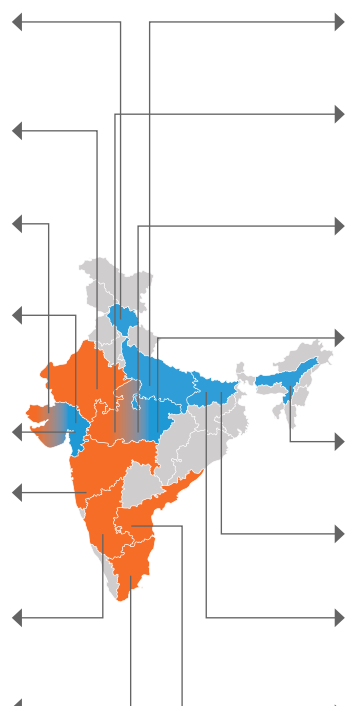
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MGVCL, Gujarat Smart Metering Points- 500,000	APDCL, Assam Smart Metering Points- 300,000
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Over 87,000 ckm of transmission lines added since FY19

India has added over 87,000 ckm of transmission lines to the grid since FY19, it was informed in Parliament recently.

In a written reply in the Rajya Sabha, R.K. Singh, Union minister for power and new & renewable energy, said that India has seen the addition of 87,397 ckm of transmission lines during the period between FY19 and FY24 (up to October 31, 2023). The period covers a little over five and a half fiscal year, starting from April 1, 2019 to October 31, 2023. The transmission lines discussed here are of 220kV or above.

The actual addition of 87,397 ckm of transmission lines, however, fell short of the targeted 1,07,315 ckm by 18.6 per cent.

The capacity of the National Grid is being expanded on a continuous basis commensurate with the increasing electricity demand and increase in generation capacity, the reply said, adding that on average about 16,000 ckm of transmission lines and 75,000 MVA of transformation (substation) capacity is added to the National Grid each year. Once again, this infrastructure pertains to voltage rating 220kV or above.

In recent years, the highest addition of transmission lines, at 22,437 ckm, was seen in FY19 (April 2018 to March 2019). In FY20, under the negative influence of the pandemic, transmission line addition was at a low of 11,664 ckm.



The minister's reply added that as of October 31, 2023, India's total renewable energy generation capacity stood at about 179 GW. This was dominated by solar (72 GW), hydropower (52 GW) and wind (44 GW).

The National Grid is fully capable of accommodating the generation from existing renewable energy capacity, the reply added.

As already reported by T&D India, during FY24 (full year: April to March), the target for transmission line addition is 16,602 ckm. The actual addition during the first seven months of FY24 stood at 7,026 ckm against the corresponding target of 11,420 ckm. ■

Tata Power to impart power sector skills to ITI students in Odisha

Tata Power has signed an MoU with the Skill Development & Technical Education Department of Odisha government to impart industry-relevant training to students enrolled in Industrial Training Institutes (ITIs).

These ITIs are located across the license area of the four discoms which Tata Power runs on a public-private partnership model with the Government of Odisha. The initiative is in-line with the state governments 'Skilled in Odisha' programme.

The MoU was signed by Reghu G, IAS, Director of Technical Education & Training, and Sanjay Banga, President of Transmission & Distribution at Tata Power, in Bhubaneswar.

Collaborative effort: The MoU is a collaborative initiative between Tata Power and the Odisha government to empower the young talent in the state and make them industry-ready through targeted programs. Covering 20 ITI's (five per discom) in the first year, Tata Power intends to impart an exclusive



program designed to enhance the skills of students enrolled in these ITIs. These programs are specifically tailored to improve their employability and get better placement opportunities in the power sector, aligning with the evolving needs of the industry. Budhish Kumar Behera, Head of Learning and Development at Odisha discoms, Tata Power, has been designated as the Nodal Officer for this program.

Empowering local youth: Sanjay Banga, President - T&D, Tata Power, said, "Tata Power is happy to collaborate with the Government of Odisha

to provide the local youth with skills and opportunities necessary for fulfilling their aspirations and ambitions. We take pride in our role in making 'Skilled in Odisha' programme a great success by creating an enabling environment for the youth to thrive and excel in the power sector. We are excited to contribute to the growth of technical education in Odisha."

Practical training: To ensure the success of this initiative, Tata Power will design and share modules covering essential skills and knowledge required in the power sector, experienced professionals from the company will conduct training sessions to provide practical insights and guidance to the students and as part of the program, students will visit Discom's hands on training centre to get field experience of executing daily work in safe and efficient way. In addition to this they will also visit network control centre, Smart Meter Lab, 33/11kV substations, etc to have better understanding of power sector equipment. ■



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Andhra Pradesh tops street light installations under SLNP

Andhra Pradesh has the highest number of LED streetlights installed under the Street Lighting National Programme (SLNP), according to information provided in Parliament.

In a written reply by Union power minister, R.K. Singh, in the Lok Sabha on December 14, 2023, a total of around 1.30 crore LED streetlights have been installed in the country, as of given date.

As can be seen in the table, Andhra Pradesh has the highest number of installations amongst all states/UTs, at around 29.48 lakh, accounting for over a fifth of the national total.

Telangana, Uttar Pradesh, Maharashtra and Rajasthan – in serial order – follow Andhra Pradesh in terms of total LED streetlight installations. The top ten states accounted for nearly 84 per cent of the total installations nationwide.

SLNP, launched in January 2015, is being implemented by Energy Efficiency Services Ltd (EESL) and aims to replace conventional streetlights by LED streetlights, nationwide.

According to information available independently from EESL's SLNP dashboard, the programme is being implemented in



STREET LIGHT INSTALLATIONS UNDER SLNP*

State	Nos	% share
Andhra Pradesh	2,947,706	22.6
Telangana	1,682,878	12.9
Uttar Pradesh	1,290,949	9.9
Maharashtra	1,105,231	8.5
Rajasthan	1,073,238	8.2
Gujarat	903,519	6.9
Bihar	575,922	4.4
Jharkhand	534,356	4.1
Kerala	433,979	3.3
Chhattisgarh	381,199	2.9
Total for top 10 states	10,928,977	83.8
Rest of India	2,105,256	16.2
Total for India	13,034,233	100.0

*As of December 14, 2023

partnership with different entities like state governments, gram panchayats, urban local bodies, etc. SLNP currently has a nationwide reach, except in some northeastern states and the UT of Ladakh. However, the implementation of SLNP in these areas is under discussion, according to EESL's website.

In Andhra Pradesh, the Street Lighting National Programme is being implemented in partnership with individual urban local bodies (ULB) in the state, which possibly explains the high level of LED streetlight installations in the southern state. The only other states on the lines of Andhra Pradesh, in this respect, are Telangana and Jharkhand.

The power ministry, in his reply, also stated that EESL had the requisite capacity to support local self governments in achieving hundred per cent LED coverage of streetlights in the country, subject to regular payment of dues by the respective local self governments.

According to EESL, the replacement of conventional streetlights by LED lights has been resulting in annual energy saving of 8,900 million kwh, and the peak demand reduction is to the order of 1,488 mw.

MPPTCL strengthens network of Tikamgarh district

Madhya Pradesh Power Transmission Company Ltd (MPPTCL) has strengthened the transmission network of Tikamgarh district by commissioning a new power transformer.

In a release, state power transmission utility



consumers of the areas of Jatar, Digoda, Budhaira, Tikamgarh, Bada Malhara and Prithvipur with quality electricity supply and proper voltage profile.

With the new transformer, the transformation capacity of the 220kV Tikamgarh substation has risen to 540 MVA and that of the entire Tikamgarh district to 793 MVA. MPPTCL has five EHV substations in the district, the release noted.

MP Transco transmits electricity through its 416 substations including 14 of 400kV type, 88 of the 220kV class and 314 of the 132kV category. The state's total transformation capacity now stands at 78,947 MVA spread over 11,195 MVA of 400kV, 32,750 MVA of 220kV and 35,002 MVA in the 132kV category.

MPPTCL said that it has installed and energized a new transformer of 160 MVA capacity at the 220kV Tikamgarh substation, at an estimated cost of Rs.5.77 crore.

The new installation is poised to benefit

MPPTCL SUBSTATIONS

(As of December 17, 2023)

Class	Nos	MVA
400kV	14	11,195
220kV	88	32,750
132kV	314	35,002
Total	416	78,947

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DPRs worth Rs.2.52 trillion approved under RDSS so far

Detailed project reports (DPRs) for projects worth Rs.2,52,252 crore (around Rs.2.52 trillion) have been approved under the Revamped Distribution Sector Scheme (RDSS) so far, it was informed in Parliament.

In a written reply given recently in the Rajya Sabha, Union power minister R.K. Singh said that DPRs worth Rs.2,52,252 crore have been approved under RDSS since the launch of the scheme on June 30, 2021 up to December 6, 2023.

The aggregate value of DPRs approved, which can also be interpreted as project cost/outlay sanctioned, includes Rs.1,21,778 crore for loss-reduction works and Rs.1,30,474 crore for smart metering. Loss-reduction works typically covers infrastructure upgrade to the power distribution network.

The overall sanctioned outlay will involve gross budgetary support (GBS) of Rs.1,02,059 crore, inclusive of Rs.77,920 crore for loss-reduction works and Rs.24,139 crore for smart metering.

RDSS METRICS* (RS.CRORE)		
	Sanctioned outlay	GBS
Loss-reduction works	121,778	77,920
Smart metering	130,474	24,139
Total	252,252	102,059

*Cumulative, up to December 6, 2023

Tamil Nadu, Uttar Pradesh, Maharashtra, West Bengal and Gujarat (in that order) are the top five states in terms of smart metering project outlay approved. In terms of loss-reduction works leading states are, in serial order: Uttar Pradesh, Maharashtra, Madhya Pradesh, Rajasthan and Andhra Pradesh.

Of the total sanctioned cost under RDSS, Rs.5,897 crore has been released so far by the Central government as part of the GBS, so far. Of this, nearly Rs.1,000 crore has been released for state government discoms in Uttar Pradesh.

RDSS involves the nationwide rollout of 20.33 crore meters including 19.79 crore consumer prepaid smart meters, 52.18 lakh DT (distribution transformer) meters and 1.88 lakh feeder meters. Launched on June 30, 2021, RDSS has an overall outlay of Rs.3,03,758 crore, including GBS of Rs.97,631 crore, and will spread over the period FY22 to FY26. [It appears that the originally envisaged GBS of Rs.97,631 crore will be exceeded, going by the fact that Rs.1,02,059 crore of GBS has already been approved, as discussed in this story.]

RDSS objectives: The target of RDSS is to reduce the AT&C losses to pan-India levels of 12-15 per cent and eliminate the ACS-ARR gaps, by 2024-25. In FY22, India's AT&C losses stood at 16.44 per cent, down from 22.32 per cent in FY21. On the same lines, the gap between ACS and ARR declined from Rs.0.69 per kwh in FY21 to Rs.0.15 per kwh in FY22. [ACS = Average cost of supply, ARR = Average revenue realization]

IndiGrid raises Rs.670 crore through institutional placement

India Grid Trust (IndiGrid) announced that it has successfully raised Rs.670 crore through an Institutional Placement (IP) process as laid out by SEBI.

The IP process, launched on December 5, 2023, saw strong demand from both existing and new Indian and global institutional investors, a release from IndiGrid said.



In September 2023, IndiGrid had raised over Rs.400 crore through a preferential issue. With the recently concluded Institutional Placement, the company has successfully raised equity funds of around Rs.1,070 crore in FY24.

During the first half of this fiscal, IndiGrid acquired Virescent Renewable Energy Trust (VRET) at an enterprise valuation of Rs.40 billion. VRET was India's first and only renewable energy InvIT with a portfolio of 16 operational solar projects and a cumulative capacity of 538 MWp. The acquisition was funded through a combination of internal accruals, debt and capital raise and IndiGrid's Net Debt to AUM reached 63.5 per cent as on end of Q2 of FY24. Proceeds from the recently concluded Institutional Placement and those from the preferential allotment would be used for paring down the debt.

IndiGrid is the first Infrastructure Investment Trust (InvIT) in the Indian power sector. It owns 35 power projects, consisting of 46 transmission lines with more than around 8,468 ckm length, 13 substations with 17,550 MVA transformation capacity and 555 MWAC (676 MWp) of solar generation capacity.



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ADB approves \$200-mln loan for Uttarakhand power grid

Asian Development Bank (ADB) has approved a \$200-million loan to improve the quality, efficiency, and reliability of power supply in Uttarakhand, India.

The project will modernize capital city Dehradun's power network infrastructure by introducing an advanced and climate-resilient underground cable system comprising 537 km of underground cables, 354 ring main units, and 99 compact substations. Additionally, it will enhance the current power system by installing upstream substations and their associated power lines that will help meet increasing electricity demand, reduce network congestion, and improve power distribution reliability in urban and suburban areas.

"This project will help Uttarakhand in achieving its goal of providing 24x7 power to its residents and transitioning to the use of clean energy," said ADB Senior Energy Specialist



Jaimes Kolantharaj. "Rehabilitating, upgrading, and modernizing power facilities will contribute to improving lives and sustaining economic growth in the state."

Empowering women SHGs: The project will empower women self-help groups (SHG) in rural hilly districts, providing them with access to renewable energy sources and energy-efficient equipment to enhance their livelihoods. ADB will facilitate training programs for communities, focusing on energy conservation and business management skills, while also conducting awareness and educational activities in schools to promote

opportunities for employment in the energy sector. The project will involve nongovernmental organizations in implementing and monitoring the livelihood activities.

The Japan Fund for Prosperous and Resilient Asia and the Pacific, financed by the Government of Japan through ADB, will provide a \$2 million grant to support livelihood enhancement, training, and awareness-raising activities of the project.

Supporting state utilities: ADB will support the capacity development of the Power Transmission Corporation of Uttarakhand Ltd and the Uttarakhand Power Corporation Ltd by conducting leadership courses and project management programs to develop climate-resilient power sector projects. It will also collaborate with the Energy Department to formulate an energy transition road map to support Uttarakhand's low-carbon transition. ■

Finolex Cables to commission new electrical cable plant by March 2024

Finolex Cables expects to commission its new plant for specialized electrical cables by March next year.

In an investor conference, the senior management said that the new plant will produce electrical cables where high thermal stability is required. Application areas could include solar power and automobiles, among others.

The plant will be located at Urse in Maharashtra. Finolex Cables has its manufacturing facilities spread over Maharashtra (Pimpri and Urse, both near Pune), Goa and Uttarakhand (Roorkee).

It is further learnt that order for equipment has been placed on a Korean supplier. The machinery will be despatched from Korea in December 2023 and will arrive in India by January 2024. With the plant building already in place, the new electrical cable plant should be running by March 2024. The machinery order, it is



understood, was initially placed on a Chinese supplier but was subsequently cancelled.

Finolex Cables has planned capital expenditure of around Rs.400 crore over the next 12 to 18 months. Apart from the aforementioned electrical cables plant, the company is also undertaking capacity expansion at its Roorkee plant in Uttarakhand. This should be completed by next year.

EHV Cables: Finolex Cables produces EHV cables up to 500kV through Finolex J-Power Systems Ltd – a joint venture between Finolex (equity: 51 per cent)

and J-Power Systems of Japan (equity: 49 per cent), incorporated in 2008. J-Power Systems is owned by Sumitomo Group.

The current order book of FJPS is slightly under Rs.200 crore and the company has a current bidding pipeline of around Rs.1,500 crore.

The senior management explained that in the case of FJPS, the revenue generation tends to be slower as the company not only supplies the EHV cable but also undertakes the complete EPC works associated like cable laying, jointing and termination. Hence, even after the EHV cable is supplied, there could be delay in completing the contract for reasons like inability to secure right of way.

Application areas for EHV cables would include power transmission, metro rail, industrial plants and large infrastructure projects like seaports and airports. ■



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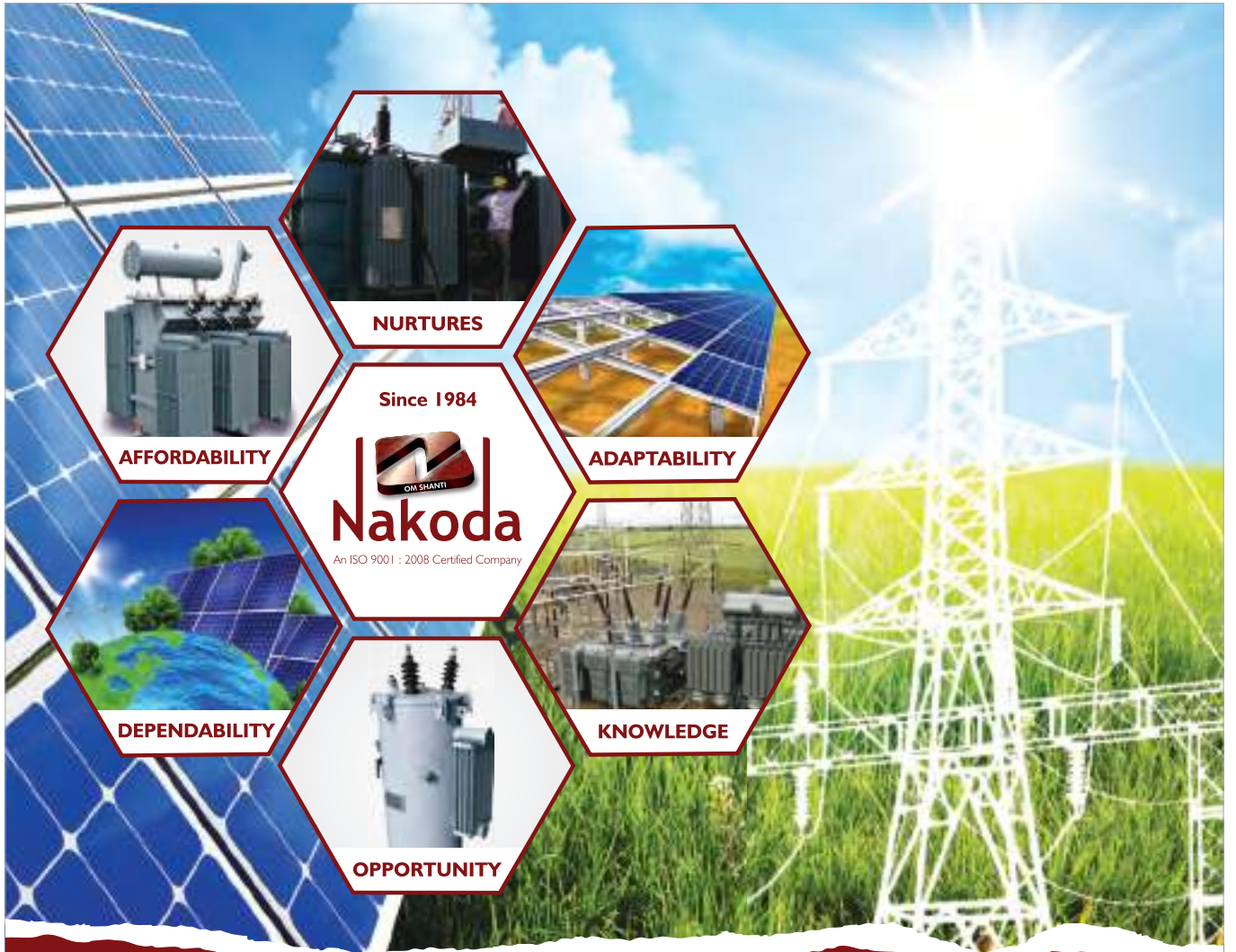
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Hitachi Energy is a global technology leader that is advancing a sustainable energy future for all. In this exclusive interaction, we have **Atul Pandit, Senior Vice President, Transformer, Hitachi Energy India Ltd**, discussing the company's transformer business.

He asserts that Hitachi Energy India is making significant technological advancements that are in fact setting new benchmarks for the transformer industry. Pandit explains that for Hitachi Energy India, sustainability and localization are two important philosophies where the company is taking major strides. An interview by **Venugopal Pillai**.

We are committed to championing environmentally sustainable practices

We learn that in May last year, Hitachi Energy inaugurated its transformer components factory in Gujarat, primarily to produce RIP bushings up to 400kV rating. Has regular production started from this unit? What is the indicative capacity?

Hitachi Energy's new transformer components factory in Gujarat commenced regular production soon after its inauguration. It marks a significant stride in meeting the escalating demand for Resin Impregnated Paper (RIP) bushings with a voltage rating of up to 400kV.

We received overwhelming support from our discerning customers. BHEL (Bharat Heavy Electricals Ltd), Bhopal, gave us a major contract in October 2022 of six 400kV RIP bushings. Our team delivered the order in a record time of five weeks as against a much longer lead time of 20-24 weeks when imported from overseas suppliers.





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Currently we are producing 500 bushings in a year and have plans to increase the production capacity by another 20-30 per cent in future.

Please discuss the relative advantage of RIP bushings over conventional OIP bushings. Also, does Hitachi Energy supply RIP bushings to other transformer manufacturers also, or are they for captive consumption alone?

Resin Impregnated Paper (RIP) bushings stand out as a technologically advanced alternative to traditional oil-impregnated paper (OIP) bushings, offering a spectrum of advantages, starting from reduced risk of fire, lower weight, no oil supervision/oil conditioning, environment friendliness, etc. More importantly, RIP bushings can be energised immediately after installation. Furthermore, RIP bushings demand lower maintenance efforts and costs, contributing to overall operational efficiency and cost-effectiveness.

Hitachi Energy, as a trailblazer, not only incorporates RIP bushings into its own transformers, underscoring a commitment to cutting-edge technology, but also extends its influence by supplying these advanced components to other transformer manufacturers.

This collaborative approach not only benefits Hitachi Energy but also contributes to industry-

wide advancements in technology and performance, fostering a collective drive towards higher standards in transformer manufacturing.

This dual strategy positions Hitachi Energy as a pivotal player not just in enhancing its own products but also in elevating industry benchmarks through the widespread adoption of RIP bushings.

What is Hitachi Energy's view on producing "green" transformers — those equipped with natural/synthetic ester oil as opposed to conventional mineral oil?

The use of biodegradable insulation fluids with higher flash and fire points such as esters (natural and synthetic) helps to safeguard surrounding ecosystems from the risk of pollution and increase safety for people. Ester offers higher absorption capacity of free moisture in oil compared to mineral oil which helps increasing the life expectancy of the transformer insulation.

Also, it helps in reducing the carbon footprint, as it leaves minimal carbon footprint of 0.07 kg CO₂ equivalent/kg produced, about ten times less than that of mineral oil.

At Hitachi Energy we are committed to championing environmentally sustainable practices in all spheres of our work. On the same line we have our eco-efficient transformer called EconiQ™ transformers. The EconiQ™ optimized transformer provides a reduction of over 21 per cent in the total carbon emissions across the lifecycle. The major contribution comes from lower emissions during operation associated with losses but also from the use of fossil-free electricity in manufacturing and the use of natural esters.

Hitachi Energy last year won a major order to supply 400kV transformers for renewable energy evacuation in Gujarat. What is the current status of this mega order? How do you see the prospects for EHV transformers, including 765kV, especially for RE evacuation?

The winning of the major order of 400kV transformers for the evacuation of solar energy in Gujarat stands as a notable achievement, marking the company's pivotal role in advancing renewable energy (RE) infrastructure. The order is in its advance stage of execution as per project timelines.



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• Standard: RDSO Specification No. ET/PSI/15(8)/2003)

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- Color: As per Customer's Requirement

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Looking forward, the prospects for extra high voltage (EHV) transformers, especially in the context of renewable energy evacuation, appear promising. The shift towards cleaner and sustainable energy sources is driving an escalating demand for EHV transformers to efficiently transmit power over long distances.

The Indian Ministry of Power has made clear roadmap to implement RE generation and to establish transmission system for integration of 500 GW RE generation by 2030. Considering this there would be major demand for transformers for evacuation of RE power, especially now at 400kV level, looking at size and scale of RE Parks. 765kV transformers are presently used for transmission of bulk power for long distance, which is a next step to the power evacuation from RE generation parks.

Apart from power transformers, Hitachi Energy, as we perceive, has been doing very well with other transformers, particularly traction transformers and dry transformers. Please discuss the prospects of dry transformers, and the growth drivers for the same.

Hitachi Energy has demonstrated remarkable success in diversifying its transformer portfolio, notably excelling in the domain of dry transformers, with a specific focus on traction transformers. The burgeoning popularity of dry transformers can be ascribed to their distinct eco-friendly attributes and low-maintenance characteristics. These transformers have become increasingly sought after due to their capacity to minimize environmental impact and operational costs.

Traction transformers, a standout segment within this portfolio, assume a crucial role in advancing

electrified transportation systems, aligning seamlessly with the global paradigm shift toward sustainable mobility.

The prospects for dry transformers, in general, are buoyed by the expanding adoption of electric vehicles (EVs) and a broader industry-wide trend favoring environmentally-conscious solutions. The dual benefit of reducing carbon footprints and meeting heightened sustainability standards positions dry transformers, including traction transformers, as pivotal components in driving the future of eco-friendly and efficient energy solutions.

Hitachi Energy's success in this arena not only underscores its technological prowess but also reflects its adeptness at aligning with and driving the transformative trends in the evolving landscape of energy infrastructure.

What is the current extent of Hitachi Energy India's localization with respect to transformers, especially for highly specialized transformers like HVDC converter transformers, etc.?

Hitachi Energy's commitment to localizing its operations in India, particularly in transformer manufacturing, reflects a strategic alignment with the 'Make in India' for India and the world. The company has achieved significant localization, notably for highly specialized transformers like HVDC converter transformers.

Hitachi Energy India has over the years developed capability to design, manufacture, test and supply wide variety of transformers and shunt reactors locally at Vadodara and Savli facilities. Having built a solid foundation through its presence in India by supplying high-end products that meet today's complex grid requirements.

The company has gained significant experience to add niche application products such as HVDC converter transformers which are highly complex to design, manufacture, process, and test.

We have done a commendable job in this segment by producing and commissioning a number of HVDC converter transformers like- first of its kind "multi-terminal 800kV HVDC projects — Northeast-Agra and Raigarh-Pugalur —for Power Grid Corporation of India Ltd. ■



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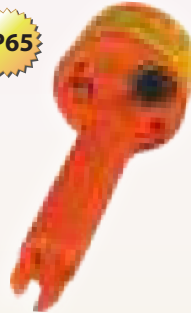
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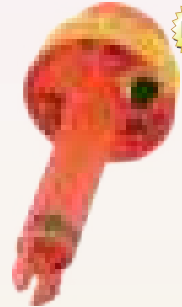
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IP65



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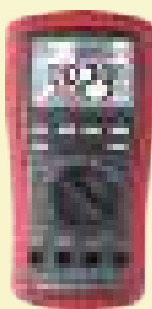
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Polycab India recently undertook to major change in its brand philosophy with a view to extending its traditional leadership in the wire & cable business to areas like electrical appliances, home automation, etc. In this interaction, we have **Bhushan Sawhney – Executive President & Chief Business Officer (B2B), Polycab India Ltd**, discussing the company's "brand refresh" as well as its diversification drive. Sawhney explains that Polycab is shifting its positioning from being primarily a B2B brand to embracing a consumer-centric approach, focusing on the well-informed and sustainability-conscious young population.

Young consumers are actively seeking sustainable options

What impact do you see on Polycab's new brand philosophy "Ideas. Connected." on the wire & cable business of Polycab India?

Transitioning from 'Connection Zindagi Ka' to 'Ideas. Connected.,' Polycab is undergoing a transformative shift that not only fosters connections between people and ideas but also propels the company into a new era of growth and relevance. The updated brand philosophy underscores Polycab's ambition to lead in delivering innovative, future-ready products tailored for connected homes.

While traditionally recognized for its excellence in manufacturing cables and wires, Polycab has now diversified its offerings to present a comprehensive array of electrical solutions for contemporary, digitally connected households, epitomized by the new tagline 'Ideas. Connected.'

The brand's refreshed strategy seeks to expand Polycab India's audience base by appealing to a novel demographic: well-informed young consumers who possess a keen understanding of modern electrical and technological requirements. Polycab India is poised to





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meet this demand through its diverse product range and a robust brand reputation.

How has been the overall response to “Polycab Green Wire which we understand is a highly safe and efficient wire? Do you see end-consumers appreciating softer issues like the safety and energy efficiency of wires?”

It is worth noting that according to the National Fire Protection Association (NFPA), most fire-related fatalities result from smoke inhalation rather than burns. An estimated 50-80 per cent of the fatalities occur due to toxic smoke inhalation injuries, rather than burns.

This is where Polycab Green Wire stands out by incorporating special polymers that restrict the emission of toxic gases, making it a considerably safer choice compared to traditional wires. This safety aspect is particularly crucial in fire incidents, where toxic gas emissions can prove fatal.

Furthermore, Polycab Green wire boasts superior energy efficiency compared to traditional wires, thanks to its lower electrical resistance, which reduces energy loss during transmission. This translates into significant savings on energy bills over time.

Today's consumers are increasingly prioritizing nuanced issues such as safety and energy efficiency when it comes to choosing electrical products. This shift is driven by a growing awareness of the importance of sustainability and environmental protection. Young consumers are actively seeking sustainable options, making eco-friendly wires an ideal choice for them.

Tell us in brief about Polycab India's entry in the home automation services space. How does this complement your wire & cable and FMEG business?

Home automation services are becoming increasingly popular in India, driven by rising incomes, urbanization, and the growing adoption of smart home technologies. We have entered this space with the aim to leverage our expertise in the wires and cables industry to provide high-quality, reliable home automation solutions to our customers.

Our home automation services are integrated with our existing FMEG products, such as switches,

fans, and lighting solutions, to provide a seamless experience for our customers. This has helped us to differentiate ourselves from competitors and provide a unique value proposition to our customers. As Polycab, we want to be a company that understands every home's electrical needs be it wires, lighting, fans, or automation.

With the recent “Brand Refresh” and the sponsorship of the “ICC Cricket World Cup 2023”, how do you see Polycab's brand image and perception changing in the overall consumer base?

Polycab has made a remarkable transformation, shifting its positioning from being primarily a B2B brand to embracing a consumer centric approach. This shift in brand philosophy is likely to appeal to a wider range of consumers, including younger consumers and consumers who are interested in smart home technology. The new brand philosophy is also likely to help Polycab strengthen its position as a more innovative and forward-thinking company.

We have introduced a range of products tailored specifically for the new age consumers. This exciting product range encompasses smart home solutions, innovative lighting solutions, and a wide array of electrical accessories. In response to the growing urbanization and increasing disposable incomes in India, we have also expanded our distribution network to ensure greater accessibility for B2C customers.

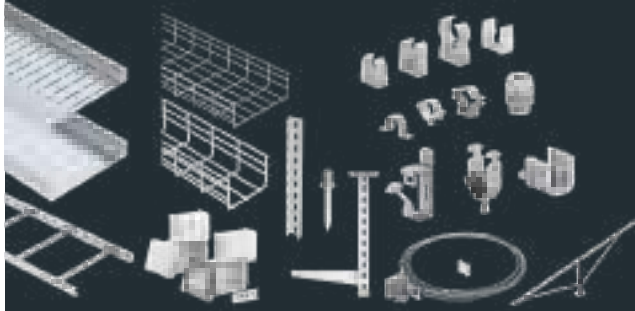
Polycab's sponsorship of the ICC Cricket World Cup 2023 is also likely to have a positive impact on its brand image and perception. The Cricket World Cup is one of the most popular sporting events in the world, and it is watched by millions of people around the globe. Polycab's sponsorship of the tournament will give the company a global platform to showcase its brand and reach a new audience.

In addition, the Cricket World Cup is a tournament that is associated with excitement, competition, and teamwork. These are all values that Polycab India wants to be associated with. By sponsoring the tournament, Polycab is hoping to create a positive association with its brand in the minds of consumers. ■

(This interview was conducted during the ICC Cricket World Cup 2023 season that took place from October 5, 2023 to November 19, 2023)

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Building Connections

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Here is a summary of recent developments on transmission schemes awarded under the tariff-based competitive bidding (TBCB) route. This covers projects related to the interstate transmission system (ISTS) only. Please scan the QR code alongside each news item to view the full story hosted on www.tndindia.com

PGCIL wins Vataman Transmission in TBCB mode

Power Grid Corporation of India Ltd (PGCIL) has won an interstate transmission system (ISTS) scheme, housed under project SPV "Vataman Transmission Ltd," under the tariff-based competitive bidding (TBCB) route. The scheme for which the letter of intent was received by PGCIL on December 4, 2023 will be developed on BOOT (build, own, operate & transfer) basis, PGCIL said in a stock exchange filing.



Three SPVs for ISTS-TBCB schemes incorporated

Three project special purpose vehicles (SPVs) have been newly incorporated for the development of as many interstate transmission system (ISTS) schemes, the developers for which will be selected using the tariff-based competitive bidding (TBCB) mechanism. Bid process coordinators REC Power Development & Consultancy Ltd (RECPDCL) and PFC Consulting Ltd (PFCCCL), in independent communications, have announced the incorporation of the three project SPVs.

PGCIL commissions Ramgarh ISTS scheme in Rajasthan

Power Grid Corporation of India Ltd (PGCIL) has commissioned an interstate transmission system (ISTS) scheme in Rajasthan, which it had won under the tariff-based competitive bidding (TBCB) mechanism. In a brief stock exchange filing, PGCIL said that on December 20, 2023, it fully commissioned the transmission scheme, officially denoted as "Transmission system strengthening scheme for evacuation of power from solar energy zones in Rajasthan (8.1 GW) under Phase II – Part A."



Adani Energy Solutions wins "Halvad Transmission" in TBCB mode

Adani Energy Solutions Ltd (AESL) has won an interstate transmission system (ISTS) scheme, housed under project SPV "Halvad Transmission Ltd" under the tariff-based competitive bidding (TBCB) route. In a release, AESL said that that it has received the Letter of Intent (LoI) for the acquisition of Halvad Transmission Ltd. from bid process coordinator PFC Consulting Ltd (PFCCCL).

ISTS-TBCB schemes: PFCCCL transfers three SPVs to winning developers

Bid process coordinator PFC Consulting Ltd (PFCCCL) has transferred three project SPVs, incorporated for development of interstate transmission system (ISTS) schemes, to the respective winning bidders. In a stock exchange filing, Power Finance Corporation, the holding company of PFCCCL, said that the latter has transferred three project SPVs that PFCCCL had incorporated for the development of as many ISTS schemes, to successful bidders chosen under the TBCB mechanism.



Sterlite Power acquires Neemrana II Kotputli Transmission Ltd

Sterlite Power has announced the acquisition of project SPV "Neemrana II Kotputli Transmission Ltd" from bid process coordinator PFC Consulting Ltd. The project was awarded to Sterlite Power through the tariff based competitive bidding (TBCB) process in November 2023. Through the SPV, the company will build this Green Energy -project on a BOOT (build, own, operate, transfer) basis, for a period of 35 years.



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UNS Number : C11040

Chemical, Mechanical & Electrical Properties

Parameters	Unit	Specifications	
		ASTM B49 / BS-EN 1977	UCR Typical
Copper	% min	99.90	> 99.95
Total Impurities	ppm	65.0	65.0
Oxygen	ppm	100-650	200-350
Surface Oxide	Angstrom max	1000	< 350
% Elongation	% min	30%	> 38.0%
Tensile strength	Min Mpa	200	> 210
Torsion test	10x10, 25x25	Smooth surface	Smooth surface
Conductivity @ 20s C	% IACS	100%Min	> 101

Packaging Dimensions:

Coil Net Weight	Kg Range	4050 - 4150
Coil outer diameter-QD	mm	1750
Coil inner diameter-ID	mm	900
Coil Laying	---	Laid type
Seaworthy packaging	---	Yes

Union Copper Rod LLC

Techno Electric & Engineering Ltd said that it has received orders worth Rs.1,750 crore that include Rs.709 crore in the power transmission space and Rs.1,041 crore in the smart metering domain. The power transmission-related orders include mandates from Sterlite Power for a 765kV AIS substation package for Neemrana-II (value: Rs.199 crore), a 765kV AIS substation package at Sikar from Power Grid Corporation of India Ltd (Rs.223 crore) and another Rs.288-crore substation package from PGCIL at Dausa and Beawar. All the locations mentioned above are in Rajasthan. The Rs.1,041-crore smart metering mandate has been placed by REC Power Development & Consultancy Ltd (RECPDCL) to provide advance metering infrastructure involving 7.27 lakh smart meters in Kashmir on DBFOOT basis.

GE T&D India reported the winning of a mandate worth GBP 74 million (approx: Rs.784 crore) from UK Grid Solutions Ltd. The order involves manufacture and supply of an HVDC converter transformer. The order is expected to be fulfilled by October 2026, GE T&D India said in a stock exchange filing, adding that UK Grid Solutions Ltd is a GE Group entity.

Transformers & Rectifiers (India) Ltd [TRIL] has received a Rs.237-crore order for transformers from Power Grid Corporation of India Ltd (PGCIL). In a stock exchange filing, TRIL said that the order is for designing, engineering, manufacture, testing at manufacturer's works, supply, freight, etc. of: 13x80 MVAR, 765kV, 1-Ph reactors at Dausa substation; 7x80 MVAR, 765kV, 1-Ph reactors at Beawar substation; and, 7x110 MVAR, 765kV, 1-Ph Reactors at Dausa substation. The order includes insulating oil and along with all fittings, accessories including marshalling box for each auto-transformer, Digital RTCC (remote tap changer control) panel, foundation bolts (if any), cables, etc. The order is scheduled to be completed in 15 months, TRIL said.

Kalpataru Projects International Ltd (KPIL) announced the winning of diversified orders worth Rs.3244 crore, including some of unspecified from the overseas power T&D market. These orders have taken KPIL's cumulative order inflows in FY24 so far to Rs.17,685 crore, a stock exchange filing from KPIL said.

Ultracab (India) Ltd, in a stock exchange communication, said that it has received an order worth Rs.8.66 crore for the supply of low-tension (LT) power cable from Tata Power. These cables will be used in the Mumbai distribution area of Tata Power, the communication said, adding that the supply period for the cables will run from December 1, 2023 to November 30, 2024.

Sharika Enterprises Ltd has won a turnkey order for building a 132/33kV GIS substation for J&K Power Transmission Ltd. This project is aimed at providing uninterrupted power to the Z-Morh Tunnel, ensuring year-round, all-weather connectivity between Srinagar and Ladakh. Sharika Enterprises will be responsible for design, manufacturing, supply, erection, testing and commissioning of

a 2x10 MVA, 132/33kV GIS substation at Sumbal, district Ganderbal. The project's ambit extends to cover the entire lifecycle, including design, manufacturing, supply, laying, jointing/termination, testing and commissioning of a 33kV 300 sqmm XLPE power cable from GIS Sumbal to Gagangeer.

In a stock exchange communication, **HPL Electric & Power Ltd** said that it has won smart meter orders worth Rs.545 crore from various prestigious customers, without giving further details. This achievement marks a significant stride in HPL's journey, further solidifying its market share in the competitive smart meter arena. The order is indicative of the company's continued growth trajectory and promising future in the industry. This order is a milestone in HPL's journey and a strong indicator of its promising future in the smart metering industry, the release noted. HPL Electric's order book had crossed Rs.2,000 crore, as of November 6, 2023. HPL Electric, with an installed capacity of 1.1 crore meters per year, commands a market share of around 20 per cent in the domestic meters market, the company said. Its product portfolio includes conventional meters as well as smart meters (including prepaid meters, and those driven by communication software).

Suzlon Group has announced a new order win for the development of a 100.8 mw wind power project for a leading global utility company. Suzlon will install 32 wind turbine generators (WTGs) with a Hybrid Lattice Tubular (HLT) tower and a rated capacity of 3.15 MW each. The project is located in Gujarat. Suzlon will execute the project with a scope of supply, supervision, and commissioning. Additionally, Suzlon will also undertake post-commissioning O&M services, Suzlon said in a release.

Transformers & Rectifiers (India) Ltd [TRIL] reported the winning of a Rs.118-crore order from Uttar Pradesh Power Transmission Corporation Ltd for the supply of five units of 500 MVA, 400/220/33kV transformers, including accessories. The order is scheduled for completion within 20 months, TRIL said in a stock exchange filing.

Goldi Solar has bagged a modules supply agreement (MSA) with ENGIE India, a subsidiary of the France-based ENGIE Group. The agreement entails the supply of 190 mw of modules for ENGIE India's upcoming Sayla village project under a 25-year PPA with Gujarat Urja Vikas Nigam Ltd. As a part of the agreement, Goldi Solar will provide an efficient HELOC® PRO series of 545wp photovoltaic modules to ENGIE India.

Waaree Energies Ltd has partnered with IRCON Renewable Power Ltd. to supply over 200 MW of DCR-category solar PV modules. IRCON Renewable Power Ltd., a subsidiary of IRCON International Ltd, is setting up a 500-mw grid-connected solar PV project, awarded by Indian Renewable Energy Development Agency Ltd (IREDA). The modules supplied by Waaree Energies Limited will be utilized by IRCON in Pavagada, Karnataka, Waaree Energies said. ■



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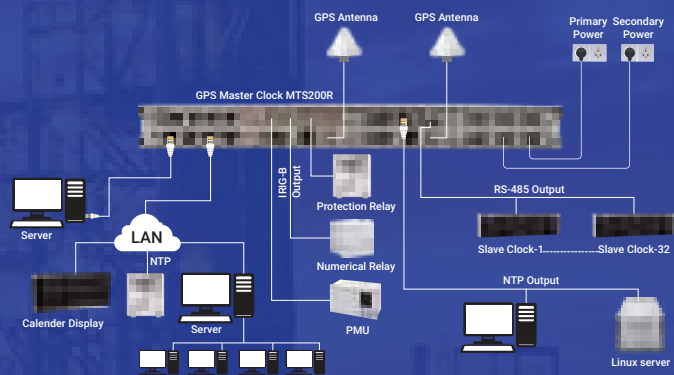
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ABB estimates 31 per cent energy savings potential in industrial motors

ABB, following an audit of over 2,000 motor-driven industrial systems done, has identified average energy saving potential of 31 per cent.

From June to September 2023, ABB analyzed more than 2,000 industrial electric motors under its Energy Appraisal service and has identified an average energy saving of 31 per cent.

That equates to more than 2.1 TWh of potential energy savings across the 20-year lifetime of these systems.

Energy appraisals enable industrial businesses to pinpoint exactly where their biggest energy savings lie across fleets of motor-driven systems. They overcome the barrier that industrial companies face when deciding where to target investment for the best energy savings and return on investment (ROI). Appraisals work by gathering operational data from motor-driven systems in the field. A service expert compares this with the theoretical performance that could be achieved by adding a variable speed drive (VSD), resizing or modernizing the equipment.

MEASURING SAVINGS

Improving energy efficiency enables businesses to reduce electricity consumption, with impressive CO₂ savings and return on investment (ROI) that depend on each country's energy mix and cost. For example, if all the motors audited were operating in the UAE, a 2.1 TWh energy saving would be equivalent



to 1.5 million tonnes of CO₂ emissions and an ROI of six months. Alternatively, in Germany this would equate to a saving of 940,000 tonnes CO₂ and an ROI of only three months. These savings would be enough to offset the emissions of a coal plant for 2 months in Germany and 3 months in the UAE.

UNTAPPED OPPORTUNITY

"With the world debating how to fight climate change at COP28 next week, our results show that it is possible to do the right thing for the planet, as well as for businesses. Thus, finding an average of 31 per cent energy savings across 2,000 motors shows that electric motor-driven systems are a great untapped opportunity to accelerate the transition to a low-carbon society," says Erich Labuda, president of ABB's Motion Services business.

With more than 300 million industrial electric motors in world, the results show great potential to save energy and CO₂ emissions, especially more than half of these are at least 20 years old and have been superseded by modern high-efficiency technology.

THE OMNIPRESENT MOTOR

The motors audited serve multiple industries, including food and beverage, chemical processing, energy, and HVAC (heating, ventilation, and air conditioning). They cover a range of low and medium voltage motor applications, such as pumps, fans and other systems. The appraisals found consistent patterns in performance between different motor-driven applications, with fans typically offering the biggest energy savings. Further analysis also identified that the biggest opportunities are related to motors operating without a VSD. VSDs control the speed or torque of motors to precisely match the output with the demand, which reduces energy consumption.

These findings support "The Case for Industrial Energy Efficiency" recently published by the Energy Efficiency Movement. This report aims to give corporate leaders key insights into ten measures that rely on mature technologies, have a meaningful impact on costs and emissions and can be deployed quickly without complex or expensive projects. ■

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Private sector leads FGD retrofits to thermal power units

The private sector is currently leading in terms of flue gas desulphurization (FGD) retrofits to coal-fired power units, according to information recently tabled in Parliament.

In a written reply in the Lok Sabha on December 7, 2023, Union power minister R.K. Singh a total of 24 coal-fired power generation units with an aggregate capacity of 10,600 mw have so far been retrofitted with FGD units.

These 24 units are spread across ten thermal power plants, owned by Central government and private sector entities.

Of the 24 power generation units, as many as 15 units with an aggregate capacity of 6,950 mw belong to private sector entities while 9 units with a total capacity of 3,650 mw are owned by Central government enterprises.

Thus, the private sector is currently leading the FGD-retrofit endeavour with a share of nearly 66 per cent, in terms of FGD-enabled installed capacity.

It is interesting to note that no state government entity has so far completed FGD retrofitting to its thermal power units, though several such entities have already embarked on the exercise.

The 3,650 mw of FGD-retrofitted coal-fired power capacity by the Central government sector is entirely attributed to NTPC Ltd. Private sector entities that have completed FGD installations include Adani Power, Tata Power, Apraava Energy, JSW Energy and IL&FS Tamil Nadu Power Company.

Compliance Schedule: All thermal power plants are required to comply with the emission norms as notified by the Ministry of Environment, Forest & Climate Change (MoEF&CC) and directions given by Central Pollution Control Board (CPCB) from time to time.

For compliance with Sulphur dioxide (SO₂) emission norms, thermal power plants are installing flue gas desulphurization (FGD) equipment. MOEF&CC, through notification dated September 5, 2022, has specified following timelines for SO₂ compliance for

non-retiring thermal power plants for compliance to emission norms.

For non-compliance beyond the specified timelines, MoEF&CC has prescribed environment compensation on non-retiring thermal power plants, which ranges from Rs.0.20 to Rs.0.40 per kwh of electricity generated, depending on the delay in FGD compliance.

Scope for FGD: The immense business potential for FGD retrofitting can be gauged from the fact that India's total coal-fired power capacity, as of October 31, 2023, stood at 2,06,825 mw. Just over 5 per cent of this has been FGD-retrofitted. Despite a large number of FGD contracts already awarded, there exists significant coal-fired capacity where FGD orders have yet to be firmed up, according to industry sources. ■

Kakrapar Atomic Power Plant: Unit-4 achieves criticality

The upcoming Unit-4 of the Kakrapar Atomic Power Project (KAPP-4) of Nuclear Power Corporation of India Ltd (NPCIL) achieved criticality, for the first time, on December 17, 2023.

In a release, NPCIL said that criticality, which is the start of controlled fission chain reaction, was achieved after meeting all the stipulations of the Atomic Energy Regulatory Board (AERB). Further, criticality of KAPP-4 was achieved within six months of commercial operation of KAPP-3.

KAPP-4 is the second in the series of sixteen indigenous Pressurised Heavy Water Reactors (PHWR) of 700 mw each being set up in the country. The first was KAPP-3 that turned commercial on June 30, 2023.

After the first criticality, several experiments and tests will be conducted in KAPP-4 and the power level raised in steps, in line with the clearances of AERB, ultimately culminating in operation of the unit at full power.

KAPP-3 and KAPP-4 are located at Kakrapar in Surat district of Gujarat, adjacent to the existing reactors KAPS 1&2 (2x220 mw). These indigenous PHWRs have advanced safety features and are among the safest reactors in the world. While these reactors have been designed, constructed, commissioned and operated by NPCIL, the supply of equipment and execution of contracts have been by Indian entities, and thus the true reflection of the spirit of AtmaNirbhar Bharat, NPCIL said.

NPCIL presently operates 23 reactors with a total capacity of 7,480 mw and has nine units (including KAPP-4) with a capacity of 7,500 mw under construction. In addition, 10 more reactors with a total capacity of 7,000 mw are in pre-project activities. These are expected to be completed progressively by FY32. ■

FGD-RETROFIT COMPLETED

Owner	No. of units	Capacity (MW)
Central	9	3,650
Private	15	6,950
Total	24	10,600

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With a standing of over four decades, Skipper is today one of the largest manufacturer of power T&D structures, globally. Kolkata-headquartered Skipper operates through three divisions – engineering products, infrastructure and polymers. In this exclusive interview, we have **Sharan Bansal, Director, Skipper Ltd**, giving rich insights into the company's power T&D business.

Bansal asserts that Skipper is well poised for domestic business growth given India's major thrust on power T&D infrastructure upgrade. In the global supply chain, India is gaining confidence as a trusted Asian supplier, which can have a big positive impact on Skipper, feels Bansal.

Skipper has grown into a trusted brand, both in India and overseas

What is Skipper's latest outstanding order book position and what is the respective share of company segments in the revenue mix of H1 FY24? What has been the order inflow of engineering products in the current year FY24, so far?

Skipper Ltd's closing order book has reached a record all-time high, at Rs.60,740 million. During Q2FY24, the company successfully secured new orders totaling Rs.15,290 million, contributing to its highest-ever first-half inflow of Rs. 27,440 million.

The revenue mix of Skipper for H1FY 24 includes Engineering (76 per cent), Infra (6 per cent) and Polymer (about 18 per cent). Furthermore, the order book to sales ratio for the Engineering & Infra segment is at a robust 3.9 times the FY23 sales, providing substantial revenue visibility for the next 3-4 years.

This solid order book position underscores Skipper's strong market presence and its ability to meet the demands of the evolving industry landscape.

The commissioning of Skipper's transmission tower testing facility in Howrah is indeed a significant development for the company and the industry. Tell us more about the facility, mainly in terms of the different types of transmission hardware that it can test.



Skipper's foresight in recognizing the significance of R&D in its sector sets it apart as one of the few companies making substantial investments in innovation. The company's involvement extends well beyond manufacturing, offering comprehensive services to its clients.

The company's dedicated R&D Center, located in Howrah, West Bengal, has earned recognition by the Department of Scientific & Industrial Research (DSIR), Government of India. This research hub boasts of National Accreditation Board for Testing & Calibration Laboratories (NABL) accredited Tower Test Station for Full Scale Towers and Poles testing.

Skipper's state-of-the-art tower testing facility, spanning 14 acres in West Bengal, ranks among the largest globally. Having this testing facility sets Skipper apart as a fully backward-integrated company, a rare trait among global T&D structure manufacturers.

The test station boasts of: an expert design team with vast experience; and in-house prototype manufacturing facility and other industry-best technical parameters like capacity to handle towers up to 1,200kV with heights of 130m (the highest in the country), and ability to accommodate exceptionally heavy towers with optimal loading capacities (up to 1200 tonnes per leg) and large base widths (up to 35m).

The station employs dual-speed VFD-driven electrical winches for smooth loading and features an automated central loading and supervision system for precise control.

With such world-class technologies at its disposal, Skipper's facility has become the preferred destination for overhead transmission line (OHTCL) contractors and manufacturers for prototype testing.

Skipper's tower testing station exemplifies the company's unwavering commitment to quality and reliability in the realm of transmission towers.

We appreciate that Skipper has been deriving growing revenues from the international markets over the recent past. Is this mainly with respect to engineering products? Please discuss.

Yes, Skipper has been experiencing growing revenues from international markets, and a significant portion of this growth is indeed attributed to its engineering products (power T&D structures).



Exports share in overall engineering revenue stood at 35 per cent in Q2FY24. Skipper currently has a robust bidding pipeline, and actively pursuing projects worth Rs.80,200 million on the international front. We are expecting the international orders to pace up further as post-Covid, India has emerged as a preferred sourcing location vis-à-vis other Asian countries.

The global supply chain now is actively looking for reducing their dependence on China, which is a great positive outcome of the pandemic, bringing more opportunities on our way. The other reason is that majority of new transmission lines are now getting built to cater to renewables, leading to shorter execution cycle and faster supplies to meet project deadlines.

Skipper is now certified by prominent international organizations, enhancing confidence and credibility about the brand. Our international tower marketing team also secured new product approvals in MENA and LATAM market, which holds tremendous power T&D business opportunity.

Currently Skipper exports to more than 65 countries across the globe and with working with 200+ global EPC players.

Speaking only of engineering products how has been Skipper's export performance in recent years?

Skipper's export inflow stood at Rs 6,020 million in H1FY24, up by 67 per cent from Rs.3,560 million in H1FY23. Our engineering products exports made inroads into high potential developed markets of North America, Asia Pacific, West Africa and Middle East, which were earlier dominated by Chinese/Turkish players.

We have been receiving initial orders and inquiries from various countries including Europe, Australia, Dominican Republic, Iraq, Kuwait, Canada and others.



We feel Skipper is well poised for success with a five-year international bidding pipeline, fuelled by the substantial increase in global T&D spending from \$274 billion per year to an impressive \$500 billion per year by 2030.

Skipper is actively scouting markets around the world to penetrate newer markets. Our company's vision is in alignment with the "Make in India" initiative. We focus on manufacturing world-class products and exporting them to the global market. Our vision is to make India the preferred sourcing hub for global manufacturing needs.

Give us an idea of the total manufacturing capacity of Skipper with respect to power T&D-related products.

Skipper is the largest Power T&D structures manufacturer in India and one of the largest in the world with a manufacturing capacity of 3,00,000 MTPA and 3 PGCIL-approved plants. Since its inception in 1981, the company has become a trusted brand both domestically and globally.

Incidentally, do you perceive opportunities for Skipper coming from the Revamped Distribution Sector Scheme (RDSS) – either infrastructure upgrade or smart metering?

The Revamped Distribution Sector Scheme (RDSS) can bring several benefits to power transmission and distribution companies, particularly in terms of infrastructure upgrade and the implementation of smart metering. Here's how these companies can gain from RDSS:

RDSS often involves substantial government investment in upgrading the power distribution infrastructure. Power transmission and distribution companies like Skipper

stand to gain as they can participate in projects related to the modernization and expansion of distribution networks, substations, and other essential infrastructure components.

With a shift toward renewable energy sources, there's a growing need to integrate these sources into the distribution grid. Skipper's products can be used to strengthen the grid's capacity to accommodate renewable energy generation and distribution.

We also observe Skipper is beginning to derive significant revenue in its engineering products division from non-power T&D products like telecom and railways, among others. Is this shift in line with your corporate plans? Please discuss.

Yes, it's a strategic move to broaden our product portfolio by increasing the proportion of non-T&D products, such as railways and telecom, has been yielding favorable results, helping to de-risk its exposure in just T&D.

Skipper recently won new order of Rs.2,570 crore for BSNL 4G telecom projects which has led to the share of non-T&D products in the overall order book rise to 42 per cent. Our broad basing strategy is well reflected in our decisions and actions, making us well-positioned to capitalize on opportunities in the fast growing telecom and railway infrastructure sectors while maintaining its commitment to quality and innovation.

Please also elaborate on how India's plans in the field of power transmission could positively impact Skipper's business growth. In summary, how do you see the years ahead for Skipper?

India's ambitious plans in the field of power transmission can positively impact Skipper's power T&D segment's growth.

We saw India's power sector demand peaking at 236.6 GW in August 2023 and reached a record high level of 239.97 GW on September 1, 2023, which critically needs expansion and strengthening of its power transmission network, which is causing a surge in demand for reliable and efficient transmission and distribution solutions.

With the government's emphasis on achieving 100 per cent rural electrification, and as electricity reaches even the remotest areas, the demand for efficient transmission and distribution systems will soar, presenting significant opportunities for the sector in the foreseeable future. Skipper can tap into the increasing demand for providing

efficient transmission systems and contribute to the electrification of even the most remote regions.

Government's supportive policies, regulatory relaxations, and financial incentives for the power sector create a conducive environment for companies like Skipper. The government's initiatives such as the Integrated Power Development Scheme (IPDS) provide opportunities for Skipper to participate in projects and benefit from the overall sector growth.

India has set an ambitious target to achieve 500 GW of RE capacity by 2030, from 170 GW as of FY23. RE projects are usually located in remote areas, far from the national grid, and hence, pose a significant challenge in setting up the evacuation infrastructure. We expect a transmission opportunity of Rs.2.5 trillion while setting up this RE capacity. This transition not only reduces our carbon footprint but also diversifies our energy mix, ensuring a more resilient and eco-friendly power infrastructure.

Grid modernization initiatives further amplify the industry's brilliance, paving the way for enhanced flexibility and adaptability. Upgrading aging









infrastructure, incorporating advanced control systems, and deploying innovative energy storage solutions contribute to a grid that can seamlessly accommodate the evolving demands of our dynamic society.







In summary, India's proactive measures in power transmission align with Skipper's expertise and capabilities, presenting the company with favourable conditions for growth. The emphasis on rural electrification, government support, collaboration opportunities, and the integration of renewable energy collectively contribute to a positive outlook for Skipper in the power T&D business. ■

Come Along Clamps For Conductors

Cable Grips For Bare Aluminium, ACSR/AAAC/AL-59/ACSS/ACCC HTLS Conductors

<p>AL-10 KN</p>  <ul style="list-style-type: none"> • Capacity: 10 KN(1TON) • Min. Cable: 5 mm • Max. Cable: 22 mm • Jaw Length: 70 mm • Weight: 1.1 kg • Eye Size: 25mm x 30mm <p>For Bare ACSR, AL & Copper Cable</p>	<p>AL-Mighty-20</p>  <ul style="list-style-type: none"> • Capacity: 20 KN(2TON) • Min. Cable: 5 mm • Max. Cable: 28 mm • Jaw Length: 120 mm • Weight: 1.9 kg • Eye Size: 32mm x 42mm <p>For Bare ACSR, ACCC HTLS, AL & Copper Cable</p>	<p>AL-35 KN</p>  <ul style="list-style-type: none"> • Capacity: 35 KN(3.5TON) • Min. Cable: 5 mm • Max. Cable: 22 mm • Jaw Length: 90 mm • Weight: 1.7 kg • Eye Size: 32mm x 42mm <p>For Bare ACSR, AL & Copper Cable</p>
<p>AL-Large 30</p>  <ul style="list-style-type: none"> • Capacity: 30 KN(3TON) • Min. Cable: 18 mm • Max. Cable: 35 mm • Jaw Length: 120 mm • Weight: 2.4 kg • Eye Size: 32mm x 42mm <p>For Bare ACSR, ACCC HTLS, AL & Copper Cable</p>	<p>AL-60KN (18-36)</p>  <ul style="list-style-type: none"> • Capacity: 60 KN(6TON) • Min. Cable: 18 mm • Max. Cable: 36 mm • Jaw Length: 180 mm • Weight: 4.7 kg • Eye Size: 43mm x 51 mm <p>For Feeder Cable, Bare AL, ACSR, ACCC HTLS, Copper Cable</p>	<p>AL-60KN (28-46)</p>  <ul style="list-style-type: none"> • Capacity: 60 KN(6TON) • Min. Cable: 28 mm • Max. Cable: 46 mm • Jaw Length: 220 mm • Weight: 7 kg • Eye Size: 60mm x 51 mm <p>For Feeder Cable, Bare AL, ACSR, ACCC HTLS, Copper Cable</p>

Wire Grips For Covered Cable, Copper Cable, Wire Rope, Barbed Wire

<p>New-SD</p>  <ul style="list-style-type: none"> • Capacity: 10 KN(1TON) • Min. Cable: 2.6 mm • Max. Cable: 15 mm • Jaw Length: - mm • Weight: 0.6 kg • Eye Size: 25mm x 30mm <p>For CU Cable, Guy Wire, Steel Rod, Barbed Wire</p>	<p>SD-S</p>  <ul style="list-style-type: none"> • Capacity: 10 KN(1TON) • Min. Cable: 3 mm • Max. Cable: 12 mm • Jaw Length: 50 mm • Weight: 0.6 kg • Eye Size: 25mm x 30mm <p>For Bare Copper Cable, Covered Cable, Guy Wire</p>	<p>35-KN</p>  <ul style="list-style-type: none"> • Capacity: 35 KN(3.5TON) • Min. Cable: 5 mm • Max. Cable: 22 mm • Jaw Length: 90 mm • Weight: 1.7 kg • Eye Size: 32mm x 42mm <p>For Bare Copper Cable, Covered Cable, Trolley Wire, Guy Wire, Wire Rope</p>
<p>Mighty 20</p>  <ul style="list-style-type: none"> • Capacity: 20 KN(2TON) • Min. Cable: 5 mm • Max. Cable: 28 mm • Jaw Length: 120 mm • Weight: 1.9 kg • Eye Size: 32mm x 42mm <p>For Covered Cable, Bare Copper Cable, Guy Wire</p>	<p>Large 20</p>  <ul style="list-style-type: none"> • Capacity: 20 KN(2TON) • Min. Cable: 16 mm • Max. Cable: 35 mm • Jaw Length: 120 mm • Weight: 2.1 kg • Eye Size: 32mm x 42mm <p>For Covered Cable, Bare Copper Cable</p>	<p>Large 30</p>  <ul style="list-style-type: none"> • Capacity: 30 KN(3TON) • Min. Cable: 18 mm • Max. Cable: 35 mm • Jaw Length: 120 mm • Weight: 2.4 kg • Eye Size: 32mm x 42mm <p>For Covered Cable, Bare Copper Cable</p>

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Largest solar PV park in Bangladesh

In this case study, **Abhay Adya** discusses how Zetwerk has aided the design, supply, execution and commissioning of Bangladesh's largest solar park.

Zetwerk has aided in the design, supply, execution and commissioning of Bangladesh's largest solar park. The 275 MWp solar power project is the largest of its kind in the country and has commenced power generation and transmission to the national grid.

THE CHALLENGE

Located 45 km from the main city of Rangpur, Bangladesh's largest solar power park was set to be executed in a remote village in the Gaibandha district. A solar project of this scale requires a variety of expertise – from concept to commissioning – with effective project management.

Add a difficult terrain and strict timeline to the mix, you've got a tight challenge on your hands. And with the site located along the banks of the Brahmaputra, it became imperative to cautiously execute the project without any environmental impact. Owing to the unique soil conditions of the area, the solar piles required a special helical design, and were packaged along with customized inverters and drums.

On average, it takes 138 hours and 55 signatures to move one



to delivery. With a robust network of reliable suppliers across India, and all the required approvals in place, we were able to efficiently deliver heavy materials across the border and into Bangladesh via specialised quality and logistics teams. This ultimately led to shorter lead times and timely delivery of the full project.

Given the tight timeline and variables at play, Zetwerk's in-house project management software helped optimize the time required for identifying the proper manufacturer for the design

PROJECT PROFILE	
Owner	Bangladesh Export Import Company Ltd (BEXIMCO)
Project	Ground-mounted solar PV plant
Capacity	275 MWp
Completion time	14 months
Location	Sundarganj, Gaibandha District, Bangladesh

truck from India to Bangladesh. With 2008 trucks to be moved across the border in the span of 330 days, shipping material from 50 locations across India, Zetwerk's Renewables team rose to the challenge and effectively moved one truck every four hours.

THE ZETWERK ADVANTAGE

Zetwerk's proprietary tools & technology enabled seamless project management from design

specified. Parallel manufacturing and supervision by expert quality control engineers deployed at each factory ensured on-time production.

The company's dedicated logistics and production monitoring teams handled material delivery from 12 Indian states, including the delivery of 20,000 tonnes of steel, 6.5 lakh meters of cable, 16 inverter duty transformers with HT/LT panels & switchgear, and other major materials manufactured in parallel, in a span of six months.

To accommodate the tight project delivery timelines, Zetwerk used multiple modes of transportation, including roadways, waterways (barge) and air freight. ■



About the author:
Abhay Adya is **Business Head – Renewables, Zetwerk.**



Lighting sector boosting employment by leveraging “Make in India”

The lighting sector is one of the many industries that have been able to leverage the Make in India initiative for maximum employment and expansion in the country, notes **Ankur Mehta**

The Make in India initiative was launched in 2014 to transform India into a global manufacturing hub. This initiative has not only boosted manufacturing in the country but has also increased employment opportunities for millions of people. The lighting sector is one of the many industries that have been able to leverage the Make in India initiative for maximum employment and expansion in the country.

According to a report by ResearchAndMarkets.com, the Indian lighting market is expected to grow at a CAGR of 12.7 per cent during the period of 2021-2026. The demand for energy-efficient lighting products is on the rise due to the increasing need for sustainable development. The government has also been promoting the use of energy-efficient lighting products to reduce the country's carbon footprint.

The Make in India initiative has provided an excellent opportunity for the lighting sector to cater to the growing demand for energy-efficient lighting products. The government has introduced various schemes and incentives to promote the manufacturing of energy-efficient lighting products in the country. These schemes have not only boosted the manufacturing of lighting products but also increased employment opportunities in the sector.

According to a report, the LED lighting market in India is expected to reach \$7.5 billion in 2023. This is due to the increasing demand for energy-efficient lighting products in the country.

Here is how the LED lighting sector is leveraging Make in India for maximum employment and to expand the sector:

INCREASED EMPLOYMENT OPPORTUNITIES

The LED lighting sector has greatly benefited from the Make in India initiative's promotion of local production, which has resulted in the growth of already-existing factories as well as the development of new ones. This has helped to solve the issue of unemployment in the nation by generating a large number of job possibilities for the local workforce.

REDUCED DEPENDENCE ON IMPORTS

A significant majority of LED lighting products in India were imported before the “Make in India” effort. The effort has inspired domestic producers to create these products domestically, decreasing the nation's reliance on imports and increasing the domestic economy.

TECHNOLOGICAL ADVANCEMENT

Local LED lighting producers now have a platform to create new technologies and products thanks to the Make in India program. This has prompted the development of creative and energy-efficient lighting solutions that are tailored specifically for the Indian market.

INCREASE IN THE USE OF LED LIGHTING PRODUCTS

The government has also been promoting the use of LED lighting products in the country. This has led to an increase in demand, which has in turn led to an increase in the manufacturing of LED lighting products in the country.

REDUCTION IN THE COST OF LED LIGHTING PRODUCTS

The increased domestic production of LED lighting products has led to a reduction in their cost, making them more accessible to a wider range of consumers. This has helped to promote the adoption of LED lighting solutions, which are more energy-efficient and environmentally friendly than traditional lighting options.

CONCLUSION

The Make in India initiative has provided an excellent opportunity for the lighting sector to cater to the growing demand for energy-efficient lighting products in the country. The government has introduced various schemes and incentives to promote the manufacturing of energy-efficient lighting products in the country. This has not only boosted the manufacturing of lighting products but has also increased employment opportunities in the sector.

The availability of labour in the country has attracted many lighting manufacturers to set up their manufacturing units in the country, thereby increasing employment opportunities for the locals. The government's promotion of energy-efficient lighting products and the use of LED lighting products has not only reduced the carbon footprint of the country but has also made it more affordable for consumers to switch to energy-efficient lighting products. The future of the lighting sector in India looks bright, and it is poised to become a global manufacturing hub for energy-efficient lighting products. ■

About the author: **Ankur Mehta** is Founder & Chairman, Crescent Lighting



Established in 1947, Jakson Group is a diversified conglomerate with business interests in distributed energy, EPC, solar energy, real estate, hospitality, etc.

In this interaction with *T&D India*, we have **Raghav Gupta, Managing Director**

– EPC Business, Jakson Group,

discussing the company's current strengths and envisioned opportunities in the power T&D-related EPC business.

Raghav Gupta is confident that given the government's focus on a robust and self-reliant power grid, upcoming opportunities in the power T&D space are going to be an integral component of Jakson group's growth journey.

Power T&D will be integral to our growth journey

In the electrical substation space, we understand that GIS substations are gradually replacing AIS substations. What are the advantages of GIS over AIS?

Few fundamental differences are driving the obsolescence of AIS substations:

Footprint reduction with GIS substation is approximately 35 per cent in comparison to AIS which gives utilities an upside on total cost of ownership given the escalating land prices.

Reduced weight and smaller switchgear enables GIS substations to be installed in 30 per cent less time as compared to AIS, which dramatically reduces project's turnaround time.

O&M effort required for AIS is more intensive as compared to GIS. Primarily due to the thorough inspection routine needed for individual components every year for AIS substation. On the other hand, GIS substations need to be only visually inspected every four years given all its elements are fully insulated and can be monitored.

On the other hand, are there any challenges with execution of GIS substation projects?

The major challenge around deployment of GIS substations is the limited number of technology providers for switchgear



along with the restricted number of qualified turnkey contractors capable of constructing GIS substations.

Has Jakson Group undertaken underground cabling work? Please discuss some recent projects. Do you feel that underground EHV cabling (220kV or higher) has not picked up in India, as expected?

Jakson has completed over 1,000 km of underground cabling work, at 11kV and 33kV voltage levels, in states of Jharkhand, Uttar Pradesh and Andhra Pradesh.

Adoption of EHV undergrounding cable is slow due to the inherent challenges associated with construction and O&M. RoW (right of way), especially in urban areas is a major impediment for construction. Securing associated clearances required from ancillary government authorities can also be challenging.

Additionally, during operation and maintenance period specialised equipment is needed to detect any faults, which makes the process more expensive and increases downtime.

Currently, few drivers are enabling adoption of underground cabling (UGC) such as disaster management. Areas vulnerable to extreme weather adopt UGC to avoid power cuts. Also, areas with excessively cluttered overhead cabling routes adopt UGC to improve public safety.

The Revamped Distribution Sector Scheme (RDSS) has created big business opportunities for power distribution infrastructure upgrade as well as smart metering. How does Jakson Group plan to capitalize on RDSS?

Objective of Revamped Distribution Sector Scheme (RDSS) is to aid discoms in improving their operational efficiencies and financial sustainability by providing result-linked financial assistance to discoms. The scheme has an outlay of over Rs.3 lakh crore over five years (FY21 to FY26) to strengthen the 11kV/33kV infrastructure along with the associated distribution lines, end goal is to reduce AT&C losses and create a sustainable revenue stream for discoms by deploying prepaid smart meters at customer end.

Jakson Group is a major market shareholder in this domain with order book (as of FY23) of approximately Rs.2,000 crore in states of Uttar Pradesh, Maharashtra, West Bengal and Rajasthan.



Jakson Group qualifies to participate in all three categories of work —armouring of distribution lines, upgradation of 11/33kV transmission infrastructure, and installation of smart meters under HAM (hybrid annuity) model, also called as the TOTEX model.

Broadly speaking, do you cater to government utilities more than private sector players, especially in the core T&D area of substations, transmission lines, cabling, etc?

Given that majority of the power evacuation assets are owned and developed by government utilities our clientele is primarily government institutions.

Does the Jakson Group have plans of entering the international market for EPC contracting in the power T&D space?

Yes, Jakson Group has clear plans to penetrate EMEA and SAARC regions in the near future, extending our core competencies of building transmission and civil infrastructure to foreign government institutions.

Currently over \$200 million of power T&D projects in Africa, where Jakson Group has bid, are under evaluation with results awaited.

Given that power T&D has been identified as a thrust area with massive investment outlay, how do you rate the business opportunities for Jakson Group in the years to come?

Opportunities in the power T&D space are going to be an integral component of Jakson group's growth journey. We are exploring inorganic strategies to enhance our strengths and position ourselves as a global leader in the domain of power infrastructure development. With government's focus on creating a self-reliant power grid, the pie is going to be big enough to accommodate Jakson Group's appetite and other market leaders as well. ■

Substation capacity addition falters at 765kV level

Substation capacity addition during the first eight months (April to November) of FY24 fell substantially short of the target, especially considering the 765kV voltage class.

According to latest statistics released by the Central Electricity Authority (CEA), India could add 4,500 MVA of 765kV-based transformation (substation) capacity during the April-November period of FY24, which was just 30 per cent of the 15,000 MVA targeted. State government utilities were expected to add 7,500 MVA of 765kV substation capacity, accounting for half of the overall target. As against this, actual addition stood at nil. (See table).

765kV	4500	15000	30.0
400kV	16740	25400	65.9
220kV	11721	17664	66.4
Central	9535	13645	69.9
State	16426	36419	45.1
Private	7000	8000	87.5

Private sector entities did well to commission 3,000 MVA of transformation capacity of 765kV level during the first eight months of FY24. In doing so, they not only met the target set for the period but also attained the targeted quantum for whole of FY24.

Central government agencies (mainly Power Grid Corporation of India Ltd) could add just 1,500 MVA of 765kV-rated substation capacity as against the targeted 4,500 MVA.

It may be mentioned that the private sector also did well in



terms of 765kV transmission line addition in the first seven months of FY24, as already reported by T&D India.

The overall performance of transformation capacity addition at lower voltage levels – 400kV and 220kV – was relatively better.

400kV

Across all ownership groups, a total of 24,500 MVA of 400kV-rated transformation capacity was targeted during the April-November period of FY24. As against this, actual addition was 16,740 MVA, resulting in 66 per cent achievement. In the 400kV category, Central PSUs performed the best, scoring an achievement rate of nearly 90 per cent.

220kV

The overall addition of 220kV substation capacity during April-November FY24 stood at 11,721 MVA, meeting 66 per cent of the targeted 17,664 MVA. Much of

this addition, as expected, came from state government utilities.

Overall

Across all voltage categories, substation capacity addition in the first eight months of FY24 was 32,961 MVA, meeting just around 57 per cent of the targeted 58,064 MVA. For the whole of FY24, the targeted substation capacity addition is 78,109 MVA, which appears arduous, by current thinking.

Substation capacity addition, especially by state government utilities, should accelerate during the remaining months if the actual achievement were to come anywhere close to the annual target. In FY23, addition of transformation capacity stood at 75,902 MVA as against the target of 78,959 MVA. It should however be noted the stated target was arrived at after a substantial 17 per cent downward revision to the originally-envisaged 95,659 MVA. ■

GreenPowerMonitor introduces hybrid power plant controller

GreenPowerMonitor (GPM), a DNV company, has announced the launch of its new Hybrid Power Plant Controller (GPM Hybrid PPC).

Power Plant Controllers (PPCs) are control systems designed for managing real and reactive power from plants, either directly or through a SCADA solution.

PPCs communicate with inverters and turbines able to receive commands, independently of the monitoring and control of the facilities, to ensure that the relevant utility requirements are complied with. GPM Hybrid PPC is an advanced controller, set to shake up hybrid plant management by effectively meeting grid codes in all markets it serves.

Unlike traditional renewable power plants that rely on a single power source, such as photovoltaic (PV) or battery energy storage system (BESS) plants, hybrid sites introduce a new level of complexity.

The GPM Hybrid PPC leverages the unique characteristics of both PV and BESS, combining the strictly one-directional power of PV with the storage flexibility of BESS. This allows for a multitude of services and requirements, and, importantly, help plants avoid grid saturation situations by distributing the energy produced throughout the day.

At the heart of GPM Hybrid PPC is GreenPowerMonitor's Power Plant Controller software service, which ensures grid compliance at the Point of Interconnection (POI), thus enabling seamless integration with Transmission System Operators (TSOs). By intelligently distributing the required active power between the PV plant and the BESS, GPM Hybrid PPC guarantees optimal performance while meeting the stringent requirements imposed by TSOs.



GPM Hybrid PPC offers flexibility for quick integration, the ability to reuse developments for continuous improvement, and adaptability to meet the evolving needs of the sector and modifications of the network code. With its wide applicability, GPM Hybrid PPC can be implemented in numerous countries with varying requirements. ■

TPREL secures its first FDRE power tender

Tata Power Renewable Energy Ltd (TPREL) has secured its first Firm & Dispatchable Renewable Energy (FDRE) project.

In a release, TPREL, a subsidiary of Tata Power, said that it has received a letter of award for developing a 200-mw FDRE project with SJVN Ltd. SJVN has been designated as the Renewable Energy Implementing Agency (REIA) by the Union ministry for new & renewable energy (MNRE) for achieving the nation's target of 500 GW of RE capacity by 2030.

FDRE provides round-the-clock power supply and supports the discoms in meeting Renewable Purchase Obligation (RPO) and Energy Storage Obligation (ESO).

This is the first FDRE power tender won by TPREL, showcasing its commitment to ushering in reliable and sustainable energy solutions. The tender includes a greenshoe option, allowing for additional capacity beyond the initial 200 mw. ■

Waaree Energies plans solar module facility in US

Waaree Energies announced it will be setting up its first manufacturing facility in US. In a release, Waaree said that the facility, to be located in Brookshire town, Houston, Texas, will have initial capacity to manufacture 3 GW of solar modules annually, and will go on stream by end of 2024.

Waaree plans to invest up to \$1 billion over the next four years to scale its annual module manufacturing production up to 5 GW by 2027, making it one of the largest solar module manufacturing facilities in the US.

Waaree will also add an integrated US-made solar cell facility that is expected to be operational by 2025. In total, Waaree's new facility is expected to create over 1,500 total jobs in the US when at full capacity, the release said.



Waaree already has major presence in the US solar market. Till date Waaree has supplied over 4 GW of modules from its current Indian facility to US customers. Waaree's ambitious US expansion benefits from the long-term supply agreement with SB Energy, a leading climate infrastructure and technology platform with over 2 GW of solar in operations, 1 GW in construction, and another 15 GW+ of solar and storage in development across the US.

Waaree will supply multi-GWs of solar modules to SB Energy over the next five years following the commissioning of the facility which is expected to be set-up in 2024. The deal further enhances SB Energy's leadership in the domestic supply chain and ensures availability of modules for a growing pipeline of projects. ■



Launched in 2021 at the COP26 in Glasgow, The Long Duration Energy Storage Council (LDES Council) is on a mission to replace the use of fossil fuels to meet peak demand by accelerating the market for long duration energy storage. In this exclusive interaction with T&D India, **Julia Souder, CEO, LDES Council**, gives a comprehensive understanding of the LDES Council – its formation, functioning and objectives. Given India's massive thrust on renewable energy, long-duration energy storage would play a critical complementary role, and so would LDES Council, notes Julia Souder. An interaction by **Venugopal Pillai**.

Long-duration energy storage is imperative for grid stability

Let us start by understanding the LDES Council. When was this set up and what are the main objectives that it seeks to achieve?

The Long Duration Energy Storage Council (LDES Council) is the global voice of long duration energy storage (LDES), working to accelerate its commercialization and markets through education, advocacy, research, benchmarking, and strategic partnerships. The LDES Council is a membership-based organization, whose members work collaboratively to develop and share data, market intelligence, and analysis that creates critical information around the current state of the market.

The organization was formed by a group of innovative LDES leaders in the industry and was launched at COP26 in Glasgow, in 2021.

What is the strength of LDES Council in terms of membership, and what is the current geographic reach? Are Indian companies members of LDES Council as yet?

The LDES Council is made up of over 60 members in over 20 different countries. The strength in membership is due to the diversity of member technologies across four families of LDES (mechanical, thermal, electrochemical, and chemical), and the range of the entire ecosystem which includes innovative start-ups, equipment manufacturers, utility companies, and service providers.



One member is based in India - Reliance Industries, the largest public company in the country. It is a leader in the energy storage space, having invested heavily in LDES technologies to help India reach its target of 500 GW of renewable energy by 2030, under India's Central Electricity Authority. There must be LDES on the system to ensure round the clock clean energy and LDES provides energy shifting to take excess renewables and store it to be used later when needed.

It is well appreciated that addition of renewable energy capacity will need complementing grid-scale energy storage. Please discuss.

While wind, solar, and other renewable sources have proven their viability, their intermittent nature poses a significant obstacle to achieving a fully renewable energy-based grid.

India has very ambitious plans to install 500 GW of renewable energy capacity by 2030, up from the current level of 179 GW.

India's one transmission grid is a good machine. However with more renewables coming online, LDES will be vital as it can store energy from 8-10 hours, to days to weeks to months to seasons.

LDES can act as a dispatchable resource, serving as the backbone of a sustainable and resilient future, whilst accelerating the phase out of fossil fuels. It provides flexibility to deal with various ramp rates and curtailments and also provides ancillary services such as load following, inertia, frequency response and more.

Following India's Energy Storage Week (IESW) in June 2023, it is clear India is one of the first movers globally on LDES, with a series of tenders for six hours of energy storage already released.

There are also projects being delivered on the ground, with plans in place for a 20 MW / 50 MWh thermal energy storage project in Phyang, Leh, Jammu & Kashmir, India, which will be commissioned this year and a 1 MW thermal storage energy storage project located in Talheti, Rajasthan, India.

It is expected that India could well exceed its '50% by 2030' target for renewable energy generation, and continuing to focus on battery storage, including diverse LDES technologies, will be crucial in doing so reliably and sustainably.



Globally, what is the projected demand for energy storage, say over the next 10-15 years? What does the total current worldwide capacity look like?

According to the LDES Council's Net Zero Heat report, we will need to deploy 8 TW of LDES by 2040 in order to achieve our net zero goals. This will represent a 50-fold increase in comparison to the 30 to 40 GW predicted by 2025.

The LDES industry is in the lift-off phase of the developmental curve, proving the technology works and is here today for commercial use at the utility level. India can lead the scaling up of LDES by continuing to strengthen the regulatory frameworks for LDES.

As things stand today, which countries are taking the lead in grid-scale energy storage – in terms of capacity addition, and also with respect to technology development?

The world continues to push forward with ambitious renewable energy targets. In July, in an announcement at the 14th Clean Energy Ministerial, influential organisations including the International Renewable Energy Agency, the Global Renewables Alliance and COP28 Presidency, signalled their support for a new global renewables target which will triple the total installed capacity to 11 TW by 2030.

LDES will be essential in enabling us to achieve these increasingly ambitious goals.

Currently North America, Europe and parts of Asia lead the way on grid-scale energy storage. The US and China in particular have the most advanced markets, which are experiencing rapid growth due to strong backing from their respective governments.



China is set to produce 1,200 GW of energy through wind and solar power by 2025, reaching its 2030 goal five years ahead of time, according to the report by Global Energy Monitor. However, with coal still holding sway as the dominant power source, and China trying to manage an outdated and inflexible energy grid, storage has become a crucial priority to deliver a secure energy future.

China has set goals to boost its non-pumped hydro energy storage capacity to around 30GW by 2025 and 100GW by 2030 – a more than 3000 percent increase from 3.3GW in 2020.

Chile is leading the way on LDES in South America by seeking to invest US\$2 billion for energy storage projects beginning in 2026.

Similarly, Spain has taken the vital steps to incorporate LDES into its future planning, launching €280 million for energy storage, including standalone, thermal, and pumped hydro technologies. This, in addition to €160 million in grants for energy storage projects, aims to fund 600MW of projects to go online in 2026.

Australia and the UK are also two hotbeds of innovation, driving the development of LDES technology at the grid-scale. We have seen the UK run several grants to stimulate the market for LDES, with almost £70m handed out as part of the £1bn Net Zero Innovation Portfolio from the Department for Energy Security and Net Zero.

In Australia, regional governments have a major role to play in ramping up ambition and delivery, with Victoria setting an interim target of 2.6GW by 2030. The target

includes eight hour-plus LDES as well as shorter duration and was announced alongside an AU\$157 million (US\$101.77 million) support package for renewables and storage projects in the state.

It is crucial that governments around the world find the right balance of policy measures and financial support to create a marketplace for LDES which can enable its success and scalability. When delivered effectively, these measures can increase LDES deployment to deliver reliable renewable energy, storing and discharging power and providing ancillary services to help maintain a reliable electricity system.

India has also signed up to Mission Innovation, and became the first member country to establish a Clean Energy International Incubation Center (CEIIC) for supporting and promoting clean energy-based start-ups.

LDES provides an extraordinary opportunity for clean energy innovation and growth, and India is well set to capitalize on this to become a global market leader.

India has very aggressive plans for renewable energy capacity; the current official target is 500 GW by 2030. Given this, how do you see the role of long-duration energy storage?

India has some of the most ambitious targets globally for scaling up renewable energy. To achieve its target of 500GW by 2030, it will need to install four times the amount of renewable power by the end of this decade than was delivered between 2010 and 2020.

For this to be successful, LDES is essential. Peak demand periods can be impacted by renewable energy sources, which affect grid stability. By integrating LDES into the grid, India can address voltage fluctuations, frequency regulation, and grid congestion issues, thereby improving the overall resilience of the grid by regulating and balancing the supply and demand dynamics.

What is the current engagement of LDES Council with India? Do you see the growing role of LDES Council in the years to come?

The LDES Council recently attended the G20 Clean Energy Ministerial in Goa, discussing with world leaders the urgent need for long duration energy storage to achieve our renewable targets and decarbonization goals, as well as the need for 24/7 clean power which can be achieved with LDES. The LDES Council also works closely with the US Department of Energy who are supporting India through the U.S.-India Strategic Clean Energy Partnership (SCEP) to advance energy security, clean energy innovation and ensure clean energy access.

India has one of the fastest growing economies in the world, up 7.2% in 2022-23, and the country's growth as an economic superpower is set to be matched by its growth as a renewable energy superpower. We look forward to continuing to work closely with policy makers and companies to accelerate the deployment of clean energy and underpin that growth with LDES.

What are the specific challenges that you foresee for India in attaining its grid-scale energy storage ambitions?

Currently the largest hurdle for grid scale storage is policy and regulation. For LDES to thrive, India needs to create market-driven mechanisms including introducing dynamic pricing models and encouraging the procurement of ancillary services. It would also be valuable to see India commit to LDES targets in a similar vein to the new renewable targets, to create certainty for investors and developers.

Finally, increased financial support will be critical in accelerating LDES development and deployment. This can come in the form of tax breaks, subsidies, by drawing in foreign investment or from research and development grants.

What are the various LDES technologies available today, and which of these appears to be most sustainable?



There are four families of LDES technologies: Mechanical Energy Storage, Electrochemical Energy Storage, Thermal Energy Storage, and Chemical Energy Storage. They each have different benefits and trade-offs, so it is difficult to pick just one that stands out as the most sustainable.

These technologies can cost-optimally store power anywhere from half a day to a week or more in capacity, thereby filling a gap between today's batteries and seasonal storage. In the long-term, LDES provides insurance against prolonged periods with low or no renewable power output, while in the near-term, these assets can potentially act as insurance against elevated power prices such as those electricity consumers are experiencing in many parts of the world today. LDES can therefore contribute directly to the triple imperative of the energy transition, driving greater security, affordability, and lower emissions of power supply.

In general, how do you see the growing role of LDES Council in helping the world meet its energy storage requirements?

The LDES Council's mission is to replace the use of fossil fuels to meet peak demand by accelerating the market for long duration energy storage. This will cut global emissions and ensure flexibility in electricity supply, while providing flexible, affordable, reliable, and resilient clean energy solutions.

The LDES Council's industry experts provide fact-based guidance to Governments and grid operators in the deployment of long duration energy storage to help achieve NetZero for electric grids by 2040. The LDES Council provides education and advocacy services to help advance the adoption of long duration energy storage and accelerate carbon neutrality. ■



Growth of Test & Measurement Equipment Market in India

GAURAV BAWA

WHERE ARE WE CONSUMING PRECISION T&M TECHNOLOGY?

A study by Future Markets Insights indicated that the segment will experience a CAGR of 5.1% during the period 2022-2032. Frost & Sullivan, a market research firm, forecasts that the Indian market for general-purpose electronic T&M instruments alone has touched US\$ 300 million by 2022. According to a report by Market Research Future (MRFR), the valuation of the worldwide test and measurement equipment market is expected to touch USD 28 billion by 2023. Enhanced adoption of electronic devices and increased penetration of modular instrumentation in every appliance used today depend on precision test and measurement tools. As the growth of the segment is registered by key end-user segments like telecom, automotive, aerospace and defence, electronics design and in a demand-driven scenario, the market is expected to boost forward in the near future.

Test and Measurement equipment are such an integral part of our life, that most of the time, we do not even register their importance or its role in making electronics smart and comfortable to fit in the digital era.

THE AUTOMOTIVE SPIN

The connected cars that the customers are contemplating will be fitted with a combination of electronics empowering seamless connectivity, automating speed, having infotainment to keep the driver busy, and providing smart information on traffic, roadways, amenities and re-fuelling stations. This entire exercise will need seamless data transmission and synchronisation to the road ahead for each car for safe travel. Bluetooth, cameras, radars, GPS connection and e-calling are some new areas in the automotive industry which require testing. A thought flitting on is a solar-empowered battery-driven car; a completely green vehicle free of pollution. However, that will need extensive test and measurement instruments to constantly monitor the fuel intake and battery efficiency.

FIFTH GENERATION NETWORK

Smart homes and uber lifestyle today demand that the rooms will reach the right temperature, be it air-conditioning or heating, before the person actually gets to the door. A Smartwatch or a Smartphone can perfectly satisfy the requirement. But what the remote control needs is to be perfectly synchronized through 5G

Testing & Measurement are crucial dynamics for any manufacturing process, more so with smart technology embedded in them. As the world speaks of smarter and more accurate technology, further spotlight is on the test and measurement market because efficiency will remain a function of testing, adjustments, and maintenance, notes Gaurav Bawa.

As product complexity increases with multiple output expectations from one product, and the product itself changes size to become more compact, precision testing is pertinent at every stage of the product lifecycle — starting from the product design and development phase, and moves to production testing, pre- and post-market testing, and later on, product maintenance and support. Thus, demand and growth of the test and measurement industry is an exponential function of expanding end-user applications and technological demand.

India is a hotbed for test and measurement equipment, given the major tech overhaul the country is going through in every sector, including start-ups or traditional industries. Led by changes and demand of emerging trends like green mobility, rapid urbanisation that is ushering in demand for Smart Appliances and 5G led telecom industry, coupled with government focus on smart transition to green energy, hi-tech manufacturing processes, health industry, communication tools and Smart transportation, the testing and measurement market is expected to experience unprecedented growth in India.

networks. These networks need good quality, highly reliable T&M instruments to create, design, deploy, and maintain them. With the wireless applications increasing in range, the need for precision engineering is more in demand. Millimetre (mm) wave is the newest buzzword in the telecom industry and has created demand for a new type of T&M instrumentation.

EDUCATION & SOCIAL SECTOR

India, with its vast geography, has always struggled with accessible information, due to a large digital gap. With the government of India leveraging 5G technology to push inclusive growth, there will be an addition to the latest network infrastructure that can enable quality education and health to grassroot level, subsequently leading to basic inclusivity. This will essentially lead the Test and Measurement sector into research and development of 5G for interoperability related testing and products to secure the future digital social fabric of the country through open network.

DEFENCE

Test and Measurement products will also play an important role in the defence and aerospace industry. Communication is crucial in this sector, with every type of security agency stepping up efforts to detect the presence of drones or unmanned aerial vehicles (UAVs) in undesired spaces. This is possible by using a spectrum analyser. Many defence-specific materials need critical testing, which requires various T&M tools such as signal generators, power meters,

spectrum analysers, vector network analysers (VNAs), and of course, long distance communication gear. As very pragmatically referred to, future wars will be electronics and technology based!

GOVERNMENT PUSH AND WAY FORWARD

The government's push for BharatNet (Bharat Broadband), Digital India, smart cities, information highways, e-governance, India Stack are a few key projects which require extensive use of T&M as the crucial enablers for each of these are connectivity and precision data. Further demand is created by the steps taken for pan-India optical fibre cable installation and maintenance in the community antenna television (CATV) segment.

The government has mandated testing of many consumer goods, and a number of labs have been established under this programme. These are known as Mandatory Testing and Certification of Telecom Equipment (MTCTE) labs.

The drive for environmental sustainability and the Carbon-neutral approach to value add will further drive the demand up for the test and measurement sector. The downside of such a huge demand is that the quality of products available in the market may not be up to standard in remote areas. While the test and measurement market is expected to see unprecedented, demand-led growth, it is important that there is enough awareness on quality products, regular maintenance, and the right fitment according to requirements. ■

About the author: Gaurav Bawa is Senior Vice President, WIKA India

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Thermax to plans multifarious approach to green hydrogen diversification

VENUGOPAL PILLAI

Thermax is planning to adopt a multifarious approach while tapping opportunities in the green hydrogen space, according to Ashish Bhandari, MD & CEO, Thermax Ltd.

In a media interaction during the recent Thermax Fest 2023, Ashish Bhandari explained that Thermax was interested in pursuing opportunities across the green hydrogen value chain, even as it explores production of biomass-based hydrogen on commercial scale.

Bhandari noted that electrolyzers – the heart of the hydrogen production process – are equipped with different technologies and there are several companies in the fray. Thermax would be working towards finalizing a suitable technology for the manufacture of electrolyzers up to giga-scale. The R&D team of Thermax is currently working on evaluation of electrolyzer technologies and it was likely that there would be visible progress in the next 12-18 months.

While manufacturing of electrolyzers is very much on Thermax's green hydrogen business agenda, Ashish Bhandari explained that there are many other aspects that the company would be looking at. For instance, Thermax has a rich legacy in the EPC business with over 150 projects executed across various industries. Added to this, is the company's strong in-house manufacturing capability. Empowered by these strengths, Thermax could explore the EPC contracting opportunity for large green hydrogen plants.



Ashish Bhandari, MD & CEO, Thermax

Bhandari explained that there are several building blocks around green hydrogen plants—electrical works, water management, gas purification, etc. Conversion of green hydrogen into green ammonia (to facilitate transport) would also be an important element of new green hydrogen plants. "Handling such complex technologies is what Thermax is good at," asserted Ashish Bhandari,

Another possibility was to develop green hydrogen plants on BOO (build, own, operate) basis where Thermax is empowered by its experience across over 60 such green energy projects, currently in operation. Incidentally, the green energy BOO business of Thermax is housed under its subsidiary Thermax Onsite Energy Solutions Ltd (TOESL).

Thermax, it may be mentioned, formally launched its strategic business unit (SBU) for green hydrogen in June this year.

It is pertinent to note that through the National Green Hydrogen Mission, announced in January 2023, India is aiming at installing 5 million tonnes of annual green hydrogen capacity by FY30, with a view to mitigating imports of fossil fuels and de-carbonizing core industries such as steel, cement and fertilizers.

BIOMASS-BASED HYDROGEN

In what could be a first in the industry, Thermax has made significant progress in production of hydrogen from gasification of biomass. Hydrogen thus produced also qualifies as "green hydrogen" as it does not involve the use of fossil fuels. Thermax has patented the technology for producing hydrogen through "woody" biomass and has even set up a pilot plant in Gujarat. Located in Vadodara, this plant (see featured photograph) can process 125 tonnes per day (tpd) of woody biomass to produce hydrogen.

ENERGY STORAGE

On the subject of battery energy storage systems (BESS), Ashish Bhandari observed that Thermax would be equipping its renewable energy assets with BESS. "Energy storage will come up at all our (renewable energy) plants. Costs of energy storage are coming down and the need for RTC (round-the-clock) power is increasing," Bhandari explained in support of the move. "I think that within the next year, we will have our first energy storage plant," Ashish Bhandari projected.

The proposed energy storage plants will be associated with Thermax's green energy business, comprising solar, wind and hybrid (wind and solar) plants, which is carried out by its subsidiary First Energy Pvt Ltd (FEPL) and several step-down subsidiaries that act as special project vehicles (SPVs). Currently, FEPL has an operational portfolio of 140 mw, while another 400 mw is under construction. Thermax, as a group, has targeted renewable energy capacity of around 1 GW (1,000 mw) by 2027. ■



Photograph shows Thermax's 125-tpd pilot plant at Vadodara in Gujarat that produces hydrogen through gasification of woody biomass.

Wärtsilä launches advanced energy storage system

Technology group Wärtsilä has launched Quantum High Energy (QuantumHE), a next-generation energy storage system with advanced safety features and enhanced energy density.



QuantumHE utilises 306 Ah battery cells, optimising the usable energy during the lifecycle and increasing the energy density of storage facilities by nine percent. The enhanced density reduces land requirements by up to fifteen percent and reduces the number of units required per facility, lowering equipment costs, expediting the development process and reducing maintenance requirements.

QuantumHE is compatible with Wärtsilä's sophisticated GEMS Digital Energy Management Platform, which monitors, controls and optimises energy assets on both site and portfolio levels. GEMS can support large energy storage facilities with built-in control features and power purchase agreement optimisation. GEMS enables several advanced grid support services including black start, island operation and virtual synchronous generator (VSG) and it is evolving to provide

predictive battery analytics.

Wärtsilä is the third largest energy storage system integrator, according to S&P Global, with a portfolio of over 3.5 gigawatts (GW) and over 7.5 gigawatt-hours (GWh) of energy storage capacity awarded, contracted, or in deployment.

Features of QuantumHE

- Advanced battery cells that provide high energy density (306 Ah)
- Active dehumidification to combat moisture and condensation
- Pre-fabricated fire walls to reduce the risk of unit-to-unit thermal propagation
- External door latches to provide first responders safe and fast unit access
- Gas detection ports allowing for external sampling enhancing safety for first responders
- Centrally located dual sprinkler systems to improve fire suppression performance
- Leakage protection for coolant, electrolytes and low Global Warming Potential (GWP) refrigerants. ■



Salzer Electronics secures patent for ACCL

In a release, Salzer said that it has received a 20-year patent for its heavy-duty energy efficient automatic source changeover (ACCL). This patented innovation, introduced in 2016, has contributed significantly, generating revenues of approximately Rs.10 crore, primarily within the "Building Segment" business division of the company.

The ACCL is a precise system designed to successfully manage generator power distribution in residential buildings, apartment complexes, townships, and commercial structures. This is an Automatic Source changeover with current limiting feature. Its purpose is to help prevent generator overload. The innovative feature in this product is to adapt and incorporate the "heavy duty contactor" design into the changeover product for the first time in the world. This product helps to load the generator supply during main supply failure and acts as a current limiter when the load on the generator exceeds the preset limit, thus preventing overload on the generator.

Beyond the company's own distribution channels, Salzer has branding partnership with major players in the electrical industry in India. Given its versatile applications, this product exhibits significant potential in the urban market and is anticipated to experience accelerated growth. The company foresees robust growth prospects for this patented innovation, attributing its success to the product functionality and relevance in addressing critical power management needs on the demand side, the company said.

in the kits are not only BIS & IEC certified but also compliant with Panasonic's Corporate Safety standards (PCSS). ■



Finolex Cables launches LAN passive components

Finolex Cables has announced the introduction of LAN passive components to its existing business of LAN cables. The product range includes patch cords, information outlet, patch card and faceplates. These are especially useful in places like data centres, IT networks, conference rooms and branch office connections with high-density switches.

Structured cabling: India is undergoing a digital revolution driven by the rapidly changing business requirements and increased usage of data for decision making. The Indian government aims to develop 100 smart cities, where the Internet of Things (IoT) will play a pivotal role. At the same time, the need for intelligent buildings is increasing, as more companies are working to make their campuses and facilities world class, while saving costs and responding to the government's smart building initiative. Due to the growing need for data transmission systems, particularly in metropolitan areas, the number of telecommunication companies have exploded in recent years. Structured cabling offers the critical support for high-performance and unified communication systems; and hence rapid digitization has become a key trend in the structured cabling market for India. ■

Siemens chooses sustainable stainless steel for MV switchgear

Underpinning its commitment to making sustainability a key priority within its operations, Siemens Smart Infrastructure has taken delivery of sustainable stainless steel at its Frankfurt switchgear factory.

Recognizing that the urgent need for decarbonization and increased electrification requires sustainable solutions, Siemens is committed to using sustainable steel for medium-voltage switchgear. With plans to not only integrate the product at other locations but also to include second-tier suppliers in this sustainable approach, Siemens is prioritizing sustainability within its own operations, while also fostering a broader network of environmentally conscious practices across its supply chain.

SUSTAINABLE STAINLESS STEEL

Provided by Outokumpu, a global leader in sustainable stainless steel, Outokumpu Circle Green® steel delivers an up to 93 per cent lower carbon footprint than the industry average. To produce this sustainable steel and achieve such a significantly reduced carbon

footprint, 100 percent low-carbon electricity is used, alongside low-carbon raw materials, such as recycled steel.

RESPONSIBLE APPROACH

“As industries around the world look to reduce carbon emissions to reach ambitious net-zero targets, sustainable steel has a huge potential. In Outokumpu we have found an organization dedicated to accelerating the industrial decarbonization of stainless-steel production,” said Stephan May, CEO of Electrification and Automation at Siemens Smart Infrastructure. “By utilizing sustainable materials in our Electrification and Automation portfolio, we are frontrunners in driving a responsible approach to industry progress.”

CARBON MITIGATION POTENTIAL

Steel manufacturing produces more CO₂ than any other heavy industry, comprising around 8 percent of total global emissions. With population growth and the resulting increased demand for energy, the demand for



Photograph shows Siemens taking delivery of Outokumpu's "towards-zero" stainless steel at its Frankfurt switchgear factory in Germany.

steel is also set to increase. However, if all stainless steel were to be produced with the same methods used for Circle Green production, it would reduce global carbon emissions from the stainless steel value chain by 364 million tonnes per year. This equates to over 900 million one-way flights from London to New York.

GREEN ENERGY TRANSITION

By transitioning to renewable energy and investing in low-carbon technologies and materials today, companies can significantly mitigate the effects of climate change. Our solution, Circle Green, enables green energy transition and we are proud to join forces with Siemens, who sets an example for a low-emission future,” says Niklas Wass, President, Stainless Europe business line, Outokumpu. ■

Prolec GE plans mfg capacity expansion in Mexico

Prolec GE has announced additional manufacturing investments of \$85 million to meet unprecedented North American demand for single-phase pad-mount transformers.

In a release, Prolec GE said that will increase its manufacturing capacity in Monterrey, Mexico, by equipping a new facility capable of annually duplicating the number of transformers produced at its existing Mexico facility.

The company will also take this opportunity to incorporate state-of-the-art manufacturing technology to increase productivity and improve ergonomics in key areas throughout the new plant, the release said.

To capitalize on production and supply chain synergies, Prolec GE's new facility will be located less than one mile from the company's existing location. Construction of the new plant will begin in 2024, with project completion scheduled for June 2025.

“We are thrilled to be investing additional time



and money to increase our manufacturing capacity in support of North America's electrification goals. With the majority of this new capacity being allocated to US utility customers, Prolec GE is proud to provide the critical equipment needed to improve grid resiliency, efficiency, and reliability,” said Prolec GE CEO, Ricardo Suarez. “This investment reinforces our commitment to being a strategic partner in the journey toward a sustainable energy future.”

Investment commitment: This latest Prolec GE announcement raises the company's investment commitment to its North American customers to

more than \$145 million. Earlier this year, Prolec GE publicized plans to manufacture three-phase pad-mount transformers in the US for its renewable energy and industrial customers by adding a production line to the company's 500,000 square foot facility in Shreveport, Louisiana. The site will undergo additional infrastructure upgrades to accommodate capacity increases for its traditional voltage regulator and network transformer customers. Prolec GE is also investing in power transformer process improvements to increase throughput and decrease manufacturing cycle times.

Global footprint: Prolec GE is a joint venture between Mexico-based Xignux and GE. It is internationally recognized for quality manufacturing and reliable performance for over 25 years. Prolec GE has six manufacturing facilities strategically located in Mexico, the United States, and Brazil. Prolec GE has an installed product base in more than 35 countries. ■

Bid process coordinator PFC Consulting Ltd has incorporated a wholly-owned subsidiary “Gola B – Ramgarh B Transmission Ltd” that will develop an intrastate transmission scheme in Jharkhand, where the developer would be selected using the TCB modality. The transmission scheme, to be set up for Damodar Valley Corporation, involves setting up of new 400kV and 220kV substations at Gola-B and Ramgarh, apart from associated transmission lines. The project forms part of “Package – B” of a larger transmission scheme, and falls in Jharkhand. “Package – A” of this project is in West Bengal.

Adani Group has announced that Bimal Dayal, CEO, Transmission business, and a key managerial personnel of Adani Energy Solutions Ltd (AESL), has been appointed as the Chief Executive Officer of Adani Infrastructure India Ltd. The current management team of AESL, led by Anil Sardana, Managing Director, and Kandarp Patel, who has been given charge of all verticals of AESL, will drive the ambitious growth of transmission, distribution and smart meter segments. This movement has been duly approved by the board of directors of AESL, a company release said.

REC Ltd, on December 8, 2023, signed a 200 million euro loan agreement with the German Bank KfW. This is REC’s sixth line of credit under Indo-German Development Cooperation, which REC will utilize to re-finance investments in the distribution infrastructure of DISCOMs in alignment with the Revamped Distribution Sector Scheme (RDSS), REC said in a stock exchange filing.

Tata Power EV Charging Solutions Ltd and **Indian Oil Corporation Ltd** have signed an MoU to roll out fast and ultra-fast electric vehicle (EV) charging points across India. The collaboration will see Tata Power install 500+ EV charging points across multiple IOCL retail outlets. These EV charging points will be installed in major cities like Mumbai, Delhi, Kolkata, Bengaluru, Ahmedabad, Pune, and Kochi, as well as across major highways such as the Mumbai-Pune Expressway, Salem-Kochi Highway, Guntur-Chennai Highway and the Golden Quadrilateral.

Essar, in a release, said that has signed an MOU with the Gujarat government to develop a 1-GW green hydrogen project, with an estimated investment of Rs.30,000 crore. The MoU also envisages additional investment of Rs.16,000 crore by Essar for Phase-II expansion of the conglomerates existing 1,200-mw Salaya power plant in Gujarat.

Hartek Power Pvt Ltd, the power system and T&D business unit of Hartek Group has announced the successful extension of 220kV for the 400kV substation at Khatkar (Jind) Haryana PGCIL substation project. The project, awarded under package SS01 by PGCIL represents extension of the 220kV Khatkar (Jind) Substation. The scope included the development of 220kV and 400kV substations, a release from Hartek Power said.

Nextracker announced it has surpassed a corporate milestone of 10 GW of smart solar trackers either operational or under fulfilment for projects located in the Middle East, Africa, and India. In parallel timing with the United Nations COP28 Climate Change conference held in Dubai over the last two weeks, this milestone was achieved in December 2023, after securing

significant orders in the region, a release by Nextracker said.

BluPine Energy has announced financial closure for its 120-mw solar project in Gujarat, secured under the GUVNL 16 tender. The green loan financing for the project has been secured through Standard Chartered. The total investment for this project is Rs.665 crore. Upon completion, the solar plant is expected to generate about 3.23 lakh MWh of solar energy annually, BluPine Energy said.

Sterling and Wilson Renewable Energy Ltd (SWERL), on December 14, 2023, announced the completion of a fundraising of Rs.1,500 crore through the Qualified Institutions Placement (QIP) route. “Through this QIP, we are more strategically positioned to harness the immense potential of renewable energy market, globally,” noted Amit Jain, Global CEO, SWERL. The company provides EPC services for utility-scale solar, floating solar and hybrid & energy storage solutions and has a total portfolio of over 15 GWp (including projects commissioned and under various stages of construction). SWERL also manages an O&M portfolio of 6.4 GWp solar power projects. As of September 30, 2023, the company’s unexecuted order book was Rs.6,835 crore.

Shakti Pumps (India) Ltd has received a patent for inventing “Helical Pump Assembly.” This patent is set to maintain its validity for duration of 20 years, commencing from the date of filing. The patented positive-displacement pump promises a 50 per cent reduction in necessary solar panels for water requirements, serving as a sustainable alternative to manual hand pumps in remote areas for drinking water, a release by Shakti Pumps said. ■



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Keeping the lights on and preventing failures with the FLIR Si124

SPI Inspections provides their customers with top-notch utility system and infrastructure inspections, relying on their extensive experience in the field and advanced inspection technology. The team uses UAVs, FLIR thermal cameras, and other high-tech equipment to deliver qualified inspection services and independent verification of construction standards and monitoring of power systems.

Recently, the team at SPI Inspections test-ran the new FLIR Si124 acoustic imaging camera. Built with 124 microphones, the Si124 produces a precise acoustic image that visually displays ultrasonic information in real time on top of a digital camera picture. This allows the user to visually pinpoint the source of the sound.

The founders of SPI Inspections have more than 100 years of combined experience working with utility systems, from building power lines to inspecting substations. "We've been around the block a few times," says Elton Hunter, Field Manager at SPI. "Our background is basically power, from where it's made in the generating facility to where the meter is— either the meter on your home or the meter on your business."

"We've really assisted our customers," says Hunter. "Our goal is to make their systems work better, safer, and be more reliable." The team at SPI Inspections found the FLIR Si124 to be an invaluable asset in detecting partial discharge, a sign of approaching or imminent failure in power infrastructure.



Built with 124 microphones, the Si124 produces a precise acoustic image that visually displays ultrasonic information, even in loud industrial environments.



The FLIR Si124 is a lightweight, one-handed solution that can identify issues up to 10 times faster than with traditional methods.

THE TOOLS OF INSPECTION

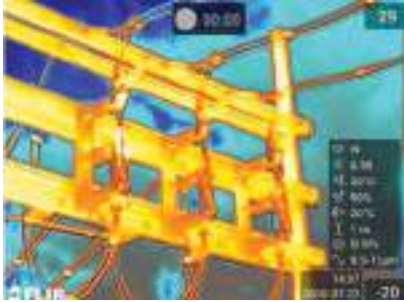
The journey of electricity from power plant to lightbulb in your home presents plenty of opportunities for failure if infrastructure isn't properly

maintained. SPI uses their extensive experience to recognize when an element needs maintenance, aided by advanced technology. "We bring a lot of technological tools to the trade," says Hunter.

Among the tools in their arsenal is the FLIR GF77 gas detection camera, which allows them to spot sulfur hexafluoride (SF6) leaks in electrical installations as well as detect hot spots. The GF77 is a multi-use camera that can detect a range of gases just by changing out the lens. When equipped with an HR Lens, the camera can visualize sulfur hexafluoride, while an LR Lens allows the camera to see methane, ethylene, ammonia, and other gas emissions. The camera is also calibrated for temperature, so it functions as a standard thermography camera use to reveal a wide range of utility issues.

Having relied on FLIR gas detection cameras for previous inspections, the SPI team was excited to get their hands on the Si124 and see what it could do. Though acoustic imaging cameras are often used to locate pressurized leaks in compressed air systems, the Si124 is also a very effective tool for detecting partial discharge from high-voltage systems.

Partial discharge—caused by a breakdown in electrical insulation—can be detected when the air around the breakdown becomes ionized, creating a phenomenon called "corona." Corona can be quickly detected by acoustic imaging, identified by a "meatball" of sound in the image. "For us, that's invaluable," says Hunter.



The FLIR GF77 offers both radiometric temperature measurement and the ability to detect a wide range of gases by simply changing lenses.

The team had previously been using ultraviolet technology to detect corona and were pleased to find that the Si124 achieved about the same result for a fifth of the price. "The Si124 basically does the same job and it's very easy to use," explains Brett Fleming, Corporate Manager at SPI Inspections.

INTUITIVE AND ACCESSIBLE FEATURES

Because so much of their work is done in the field, it's important to the team at SPI Inspections that their tools are ready for the job. "It's very user friendly," says Hunter about the Si124. "Within a half-dozen hours, we were very confident working with it."

"The camera has wonderful clarity for us in the field," Hunter continues. He said his team appreciated the quality of the images, ease of download to a laptop or the cloud, and the functionality of the user interface. "We're guys that have been in construction for 40-plus years—we've got arthritis and big swollen fat hands hitting hammers and stuff. The user interfaces—the keys, the touch boards—are very user friendly. We found them very easy to work with."

The Si124 made it much easier to spot failures from the ground. During their test run of the camera, they found a failure on a power line 220 feet up in the air, a difficult issue to detect. "With our drones we could, but we



Almost invisible electrical utility issues are quickly detected with the Si124.



FLIR Si124 Acoustic Imaging Camera.

would have known where to look," says Hunter. "Because of our field experience we were able to pick it out and zoom in on it, then we knew that there was a bit of a problem up there."

"That's a 25-million-dollar failure on a line that's only five years old," he remarks. With the Si124 they were able to catch the problem early, before the cost to fix it became nearly that high.

CATCHING PROBLEMS SAFELY BEFORE THEY BECOME CATASTROPHES

Electrical substations and other utility infrastructure present numerous hazards for workers and inspectors. When the team confronted a particularly dangerous area inside the substation where a capacitor bank had come down, they were required to stay outside the chain-link fence enclosing



The Si124 can detect issues up to 100 m (328 ft) away, keeping inspectors on the ground and out of danger.

the area. They were pleased to find that the Si124 could look through the fence to assess the situation.

"We were able to walk right up, and we could look right through the chain-link fence. Because there's 124 microphones on the front of the camera and then one little tiny camera," Hunter explains, "that camera was able to look right through that two by two inch square and keep our people safe, which is a huge advantage for us being in the field."

SPI's goal during inspections is to catch issues before they're allowed to escalate too far. Spotting partial discharge and corona early with tools like the Si124 helps them anticipate failures and keep the lights on for their clients. "It allows us to preemptively prognosticate what's happening in our power line," says Hunter. "So instead of there being a catastrophic failure and then an outage and a repair, we can go in ahead of time and we can tell them, 'hey, you're going to have a problem with this if you don't fix it!'"

Unplanned outages can be prevented with regular inspection and maintenance. "If we do our jobs right, nobody ever knows we're out there," says Hunter. "The customer doesn't know we're out there; we do our job, we make recommendations, and then through planned outages or regular maintenance they can repair something." ■

Learn more about the FLIR Si124: www.flir.in/products/si124

Contact info: +91-11-4560 3555; flirindia@flir.com.hk

Toshiba wins “Star Performer” Award from EEPC India

Toshiba Transmission & Distribution (India) Pvt Ltd (TTDI), has been honoured with the Star Performer Award for the year 2019-20 by the Engineering Export Promotion Council of India (EEPC India).

In a release, TTDI said that it has won the National Award for Export Excellence in the category of “Electric Motors, Generators, and Transformers and parts – Large Enterprises.”

Mr. Hiroshi Furuta, Chairman and Managing Director, TTDI received the award at an award function held in New Delhi on November 21, 2023.

The Star Performer Award, bestowed by EEPC India, recognizes TTDI for its exceptional performance in exporting its Products to many reputed electrical power distribution utilities and various other customers located in developed / developing countries across the globe.

Speaking on this achievement, Mr. Hiroshi Furuta, Chairman and Managing Director, TTDI, expressed gratitude and remarked, “We are honoured to receive this prestigious accolade from EEPC India. Toshiba Corporation, Japan has established TTDI as its global



manufacturing hub for T&D business. This recognition reaffirms our dedication to “Make-in-India & Export-from-India” initiative by manufacturing and delivering a wide range of high-quality, reliable and efficient transmission and distribution equipment, which includes Power Transformers, Distribution Transformers and Gas Insulated Switchgears (GIS). This award motivates us to continue our relentless pursuit of excellence and innovation.” ■

Siemens to incorporate WoS for potential demerger

The board of directors of Siemens Ltd has approved the immediate incorporation of a wholly-owned subsidiary to house the energy business of Siemens Ltd, if and whenever the potential demerger of the energy business takes place.

In a stock exchange communication, Siemens Ltd said that certain promoters of the company, namely Siemens Aktiengesellschaft, Siemens International Holding BV, Siemens Energy Holding BV and Siemens Energy Aktiengesellschaft, have each requested the board of directors of Siemens to consider, evaluate and thereafter start taking exploratory steps towards a potential demerger of the company's energy business into a separate entity.

The board of directors of Siemens Ltd, at its meeting held on December 18, 2023, took note of the above and authorized the company's management to commence exploratory steps as may be required to examine a potential demerger of the company's energy business.

The potential demerger shall be subject to further consideration and deliberation to be carried out by the board of directors, and committee(s) thereof, at the relevant point in time.

The board of directors has approved the immediate incorporation of a wholly-owned subsidiary in Mumbai on the basis that the proposed subsidiary may be required if and when the board of directors of Siemens decides to implement the aforesaid demerger. ■

Jakson Group inaugurates genset plant in Maharashtra

Jakson Group has announced the inauguration of its state-of-the-art manufacturing plant at Phaltan in Maharashtra.

This momentous occasion, graced by senior officials from Jakson Group, its key clients and select representatives from Cummins India, highlighted the company's unwavering commitment to excellence and its steadfast dedication to delivering quality products to its customers, a release from Jakson Group said.



From this plant, the company expects to produce about 2,500 gensets annually, ranging from 250 kVA to 3,500 kVA, including gensets compliant to latest CPCB IV+ norms.

CPCB IV+ gensets can cater to diverse power requirements and are designed to be highly fuel efficient with lower emissions, in line with our commitment to provide sustainable energy solutions. This plant cumulatively expands the total manufacturing capacity of Jakson to around 15,000 gensets every year.

The facility is expected to positively impact the local community, providing employment opportunities for over 200 individuals and making substantial contributions to the local economy. The company also plans to develop essential facilities and support systems for nearby villages, contributing to indirect economic growth, the release noted. ■

MECO Battery (Load) Meter - BM63

A Battery is an electrochemical cell that is charged externally to store electrical power. The stored power of the battery is released when it is needed for various applications that could be required for normal day to day working, back-up operations, critical applications or for emergencies. The use of batteries is increasing every day in order to drive / support various applications such as Cars, Motor Cycles, UPS, Generators, Automobiles, Emergency Lights, Solar Power, etc.

A battery is expected to always perform flawlessly as per its capacity. However sometimes even new batteries fail and hence periodic testing and maintenance of batteries is required. It is important to also test incoming batteries as a part of the

quality control procedure to ensure proper compliance of the supply made by the battery manufacturer. The loss of the battery capacity occurs gradually often without the knowledge of the user.

The function of the battery meter BM63 is to check the capacity of condition of various Lead Acid storage batteries and to ensure that the supported equipment is adequately backed-up, prevented from unexpected failures and forewarned for any calamity. The battery tester helps to identify the weak batteries so that they can re-charged or weeded out of the system before they make the complete system unreliable.

MECO BM63 is a portable Battery (Load) Meter which can check the



capacity condition of different types of batteries from 4 to 500Ah.

Technical Specifications :

- DC Voltmeter : 0 to 15V DC
- Rated Voltage of Battery to be Tested : 2, 6 & 12V DC
- Rated Capacity of Battery to be Tested : 4 to 500Ah



MECO Professional Digital Clampmeter

MECO Model 99+ is a 3 5/6 Digit 6000 Counts, Current Range upto 600A AC & DC, with LCD Backlight having Voltage Range upto 600V AC & DC and with Jaw Opening size of 30mm.

Accessories are One pair of Test Leads, Carrying Case, K Type Thermocouple (upto 260°C), Two 1.5 "AAA" Battery (installed) and Instruction Manual.

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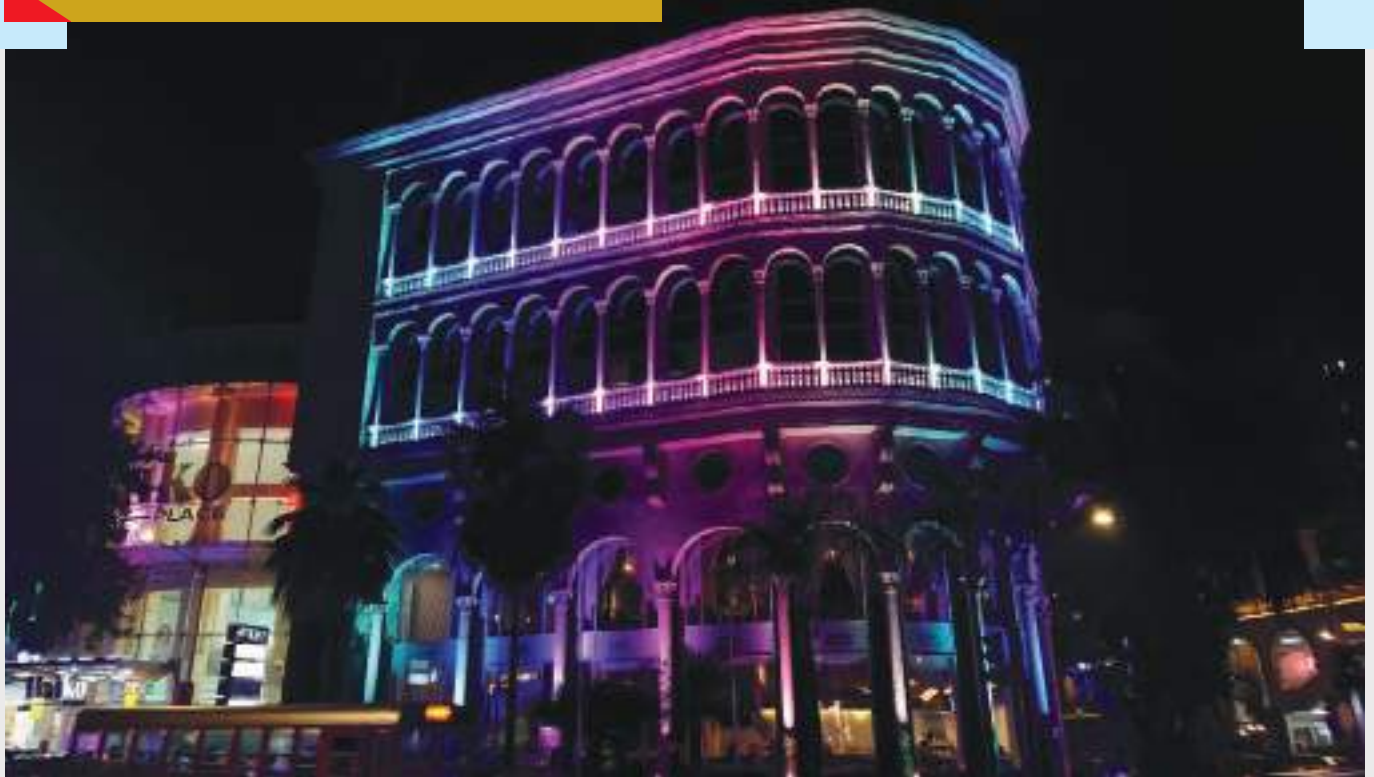
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Panasonic Life Solutions India lights up Mumbai with “YOI-en”

Panasonic Life Solutions India (PEWIN Division) has announced the lighting up of a renowned estate in Mumbai – Powai, Hiranandani – using YOI-en technology.

The cloud-based technology service “YOI-en” allows users to customize the lighting experience using a web app. The structure is to be lit up during the period of festival season this year.

The unique lighting technology, at the prime location of Powai, allows for lighting staging over a large area with several buildings (multi-point simultaneous control) and controlling from remote locations. It enables remote production modifications, monitoring of equipment communication, and schedule management. By combining these features, the system will

connect the city’s tourist resources, creating a lively ambiance that aims to raise the passerby’s experience and intends to boost tourism.

UNIQUE LIGHTING EXPERIENCE

Speaking on this initiative, Masato Miyamaru, Director, Lighting business, PEWIN, Panasonic Life Solutions India, said, “Bringing the first of-a-kind technology at one of the finest premises of Powai this festive season has been a privilege for us. We have worked with the Hiranandani Group to provide an unforgettable experience to the residents and passersby. This unique activation is an effort to operate a smart solution system architecture while providing the best in line service. PLSIND aims to continue creating such one-of-a-kind lighting experience in the times to come at all over India and worldwide.”

AIMING FOR NO.1

Panasonic Life Solutions India (PEWIN Division) has planned to enhance its lighting business towards 2030, aiming for No.1 lighting company in India. Their purpose is to contribute to improving people’s living and developing the future growth in India. They will introduce their unique solutions and products (with high-quality and high efficiency realized by Indian and Japanese technologies) mainly in commercial and professional market for their customers. ■



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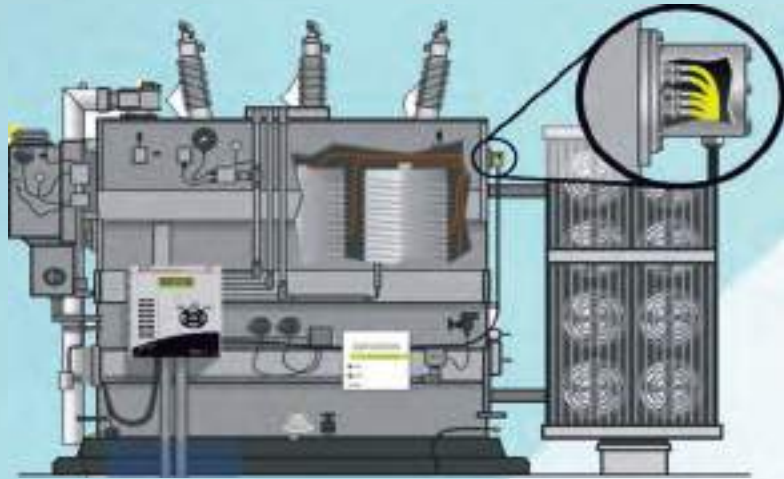
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