Vol 10 Issue 01 • Pages 116 • November 1, 2021 • ₹ 200/-

EPR
electrical & power review

www.eprmagazine.com

9th ANNIVERSARY

THE GREEN ENERGY SHIFT

Industry leaders share their optimism on how India's electrical and power sector is transforming itself towards green with the help of more sustainable technologies and solutions.

BERGEN

INDIA'S MOST EXPERIENCED TURNKEY SUPPLIER FOR SOLAR PV

www.bergengroupindia.com

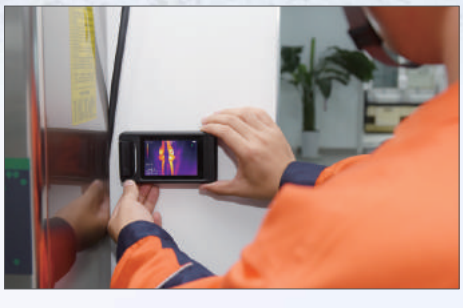
Email: info@bergengroupindia.com, s.kaul@bergengroupindia.com

Ph: +91 124 4986400-406, Tele fax: +91 124 4986 405
Mob: +91 9873452557

InfiRay | Sense Difference

Rotate to Unlock Your Thermal Potential

■ No Fear of Tall Targets



■ No Difficult in Narrow Spaces

IRay Technology Co., Ltd.

11th Guiyang Street, Yantai 264006, Shandong Province, China
www.infiray.com

Email : hetao.huo@raytrontek.com

EDITORIAL

EPR
electrical & power review

www.eprmagazine.com

Associate Editor*
Megha Iyer
editor@eprmagazine.com

EDITORIAL
Gurleen Kaur

ADVERTISING
Pratima Vaishy (+918655040259)
Mandar More (+91-9870009281)
ads@eprmagazine.com

SUBSCRIPTION
Swati Mistry
(+91-9821575178)
subscribe@eprmagazine.com

COVER CREDIT
Haresh Panchal

**responsible for selection of news under PRB Act*

Hello Readers,

Greetings from EPR! We are glad to present you with the 9th Anniversary Edition of EPR Magazine. On this special occasion, we convey our highest appreciation for helping us achieve another successful year.

The power sector In India is on a revival path after the pandemic hitting the market last year. India's peak power demand has surpassed the 200 GW mark this July, indicating a resurgence in power usage in commercial and industrial segments after governments lifted the lockdown, enforced due to the Covid-19 crisis.

As the nation was regaining the economic status after being entrapped by the second wave of Covid, there was a stressful debate over coal shortage and possibilities of large-scale power outages. Though the authorities are in constant denial over the crisis, and experts claim to have enough coal stock for the country; there are speculations that there can be surge in the electricity cost for the consumers, if the situation remains the same.

In August 2021, another milestone was established when the installed capacity of renewable power in the country crossed 100 GW, led by the growth in solar and wind power capacity installations. While the renewable energy market is gaining pace in the country, the government is making the conventional energy segment greener with revival of gas-based power plants; and increasing the PLF of existing coal-based power plants. Also, the major players in conventional energy have entered into renewables to bring down their share of power from conventional sources.

All these developments have opened up India's shift towards green energy. Based on the theme "The Green Energy Shift", the 9th Anniversary of EPR magazine explores how India's electrical and power sector is transforming itself towards green with the help of more sustainable technologies and solutions.

Please feel free to send your comments and feeback at editor@eprmagazine.com. Also, to stay abreast with the latest industrial updates and trends, kindly connect with us on our LinkedIn, Facebook and Twitter.

Printed and published by Mr Prasad Kumar Nair on behalf of I-Tech Media Pvt Ltd and printed at Print Process Offset Printers, B-23, Royal Industrial Estate, 5-B, Wadala, Mumbai-400031 and published at I-Tech Media Pvt Ltd, 604, Surya House, Road No 7, Vidyavihar East, Mumbai - 400077. Editor: Mr. Prasad Kumar Nair.

All rights reserved. While all efforts are made to ensure that the information published is correct, Electrical & Power Review holds no responsibility for any unlikely errors that might occur. The information on products and services / technology on offer is being provided for the reference of readers. However, readers are cautioned to make inquiries and take their decisions on purchase or investment after consulting experts on the subject. Electrical & Power Review holds no responsibility for any decision taken by readers on the basis of information provided herein. Tel.: +91-22-25018601, +91-9821667357

I-Tech Media Pvt Ltd, 604, 6th Floor, Surya House, Station Road, Vidyavihar East, Mumbai - 400077 (India) Tel.: +91-22-25018601

SELECTED Superbrands INDIA Consumer Validated 2021

POLYCAB
Connection Zindagi Ka

FLEXIBLE by design.
TOUGH by nature.

Polycab Elastomeric (Rubber) Cable

Polycab Elastomeric (Rubber) Cable is the connection to go to when conditions are stretched to the limit. Built to exacting international and Indian standards, the cable has excellent flexibility and abrasive resistance. It performs consistently and reliably in extreme temperature and harsh weather conditions. Rest assured that Polycab Elastomeric (Rubber) Cable will withstand every challenge, every single time.

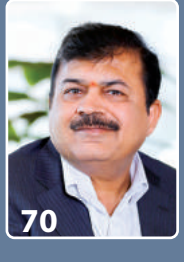
Leading Features: • Excellent flexibility • Rubber Cables with anti-torsional reinforcement for heavy-duty applications • Enhanced resistance to ozone, oxygen, and heat • Can withstand solvent, chemicals, and fire • Silicone Rubber Cables for high temperature (up to 180°C) applications • Welding Cables with HOFR (Heat, Oil Resistant, and Flame Retardant) rubber compound

Best Suited for: • EOT Cranes and Port Cranes • Hoists and Elevators • Processes & Automation Machineries, Foundry and Furnace • Welding, Oil Rigs and Mining

Email id: info@polycab.com | Phone: 022 67351418 | www.polycab.com

EPR
electrical & power review

CONTENTS



GREEN ENERGY SHIFT
IN ELECTRICAL AND POWER SECTOR

18 **Transforming energy outlook with distributed generation and micro grids**
Prabhajit Kumar Sarkar,
Managing Director & CEO, Power Exchange India Limited

32 **We believe in designing energy-efficient, low smoke and sustainable wires**
Bhushan Sawhney,
Executive President & CBO (LDC), Polycab India

36 **Addressing fire security risks is need of the hour**
Shreegopal Kabra,
Managing Director, RR Kabel Group

44 **Indian electrical sector is on a cusp of solar 1211 revolution**
Manas Kundu,
Director – Energy Sources,
International Copper Association India (ICA India)

48 **Digitalisation in substation will lead to new horizons**
Chhaya Bhonsale,
Chief - Technical Service, T&D, Tata Power

50 **Energy-efficient technologies will drive us towards carbon neutral future**
Ganesh Kothawade,
Sr. Vice President, Electrification- Distribution Solutions, ABB India Limited.

54 **IoT enabled remote monitoring T&M solutions is the new trend**
Narendra Goliya,
Chairman & Managing Director, Rishabh Instruments Pvt. Ltd.

56 **We need stringent emphasis in managing and recycling electronic waste: RIL**
Sanjeev Prasad,
Vice President & Plant Head – Power & Utilities, RIL – DMD

58 **Digitalisation in electrical equipment is key to sustainability**
Anil Saboo,
Chairman & Managing Director, Elektrolites Power Pvt.Ltd.

64 **Standardisation and regulation add impetus on safety**
Sunil Narula,
Vice President – Marketing, Panasonic Life Solutions India Pvt. Ltd.

ANCHOR
by Panasonic

GET A WIRE THAT KEEPS ONE SAFE FROM FIRE!

ADVANCE EFFR FROM ANCHOR BY PANASONIC.

- HIGH OXYGEN INDEX
- 100% BUNCHING
- 101% CONDUCTIVITY

Panasonic Life Solutions India Pvt. Ltd. 3rd Floor, B Wing, I-Think Techno Campus, Pokhran Road No 2, Thane (west) - 400607, Maharashtra.
Customer care no.: (022) 41304130 | WhatsApp No: 91360 28606 | Email: wecare@in.panasonic.com | www.lsin.panasonic.com

EPR
electrical & power review

CONTENTS

Industry leaders share their optimism on how Indian electrical and power sector is transforming itself towards green with the help of more sustainable technologies and solutions.

CONNECT WITH US

Got a story or suggestion, or just want to find out some more information

/ENPREVIEW
/EPRmagazine
epr-magazine

www.eprmagazine.com

GREEN ENERGY SHIFT
IN ELECTRICAL AND POWER SECTOR

66 **Facilitating smart opportunities with advanced smart lighting**
Sharmila Kumbhat,
Director, K-Lite Industries

68 **It's time to build strategic measures to enable energy-efficient lighting**
Varinder Bhatia,
Associate Vice President, Havells India

70 **Digital integration in smart lighting to drive future of smart cities**
Rajesh Uttamchandani,
Director, Syska Group

72 **Exploring the potentials of India's manufacturing capabilities**
Sriram Ramakrishnan,
Managing Director, Fuji Electric

80 **Ongoing coal trend might reroute PV manufacturers to hybrid systems**
Rajinder Kumar Kaura,
CMD, Bergen Solar Power and Energy Ltd.

84 **Increased investments will be catalyst for EV's growth in India**
Anshul Gupta,
Director, Okaya Power Private Limited

94 **Digitally integrated lighting will facilitate energy saving**
Rahul Bankar,
Director, Fevino Industries LLP

95 **Periodic testing and maintenance is a mandate for uninterrupted power supply**
Navin Goliya,
Director, Kusam Electrical Industries Limited

104 **India is projected to emerge as top market for energy storage**
Venkat Rajaraman,
Founder and CEO, Cygni

108 **Increasing flexibility with new age storage technologies**
Siddartha Ramakanth Keshavadasu,
Assistant Professor, Centre for Energy Studies

109 **Increasing localisation and incentivisation will boost EV supply chain in India**
Shikhar Gupta,
Associate Director, BIG4 Consulting & EV Expert

iCool Edge Solutions©
Intelligent Integrated InfraSuite
Self-Contained Edge Datacenter

Edge Data Center Solutions

DCIM | Micro Datacenter | Edge Data Center | Modular Data Center | Containerized Data Center | Converged Power | Cooling | AC Power

The power behind competitiveness

Intelligent Integrated InfraSuite Self-Contained Edge Data Center

In this IT intensive world with heavy data traffic, an edge data center acts as a caching and data-aggregation point between users and larger data center to ease overwhelming IT loads. Following the growing applications of edge computing, Delta is introducing a new generation of data center with flexible power and cooling designs, quick deployment and scalable capacity for implementation anywhere. The all-in-one design not only provides One-Stop Solution to customers, but also high system integration and reliability.
Solution is offered with best in class integrated UPS, dedicated cooling systems, intelligent rack structure, environmental monitoring systems, pre-planned power distributions and optional fire suppression, alarm, access control and other required accessories. We are the market leaders in providing ease of deployment and integration. Factory-built and tested iCool Edge.

More information and success stories about Delta
www.deltaelectronicsindia.com

Contact our local consultant for knowing more on Delta Edge Data Center Solutions
TEL: **+91 9873501221** Email: **info.mcis@deltaww.com**

DELTA
Smarter. Greener. Together.

Power ministry proposes amendment to Energy Conservation Act, 2001

Amendments proposed also address the global challenge of climate change and include defining minimum share of renewable energy in the overall consumption by industrial units.

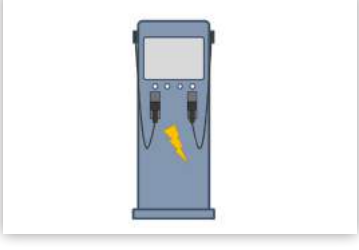
Amidst the growing energy needs and changing global climate landscape, the Government of India has identified new areas to achieve higher levels of penetration of Renewable energy by proposing certain amendments to Energy Conservation Act, 2001. The objective will be to enhance demand for renewable energy at the end-use sectors such as industry, buildings, transport etc.

The ministry of power has prepared amendments, after consultations with stakeholders. The proposal includes defining a minimum share of renewable energy in the overall consumption by the industrial units or any establishment. There will be provision to incentivise efforts on using clean energy sources by means of carbon saving certificate. Power Minister R.K. Singh, reviewed the proposed amendments recently and directed to seek comments and suggestions from concerned line ministries / departments and state governments. Accordingly, a meeting was held by shri Alok Kumar, Secretary (Power) with the stakeholders ministries and organisations on 28th October, 2021 to give a final shape to the proposed amendments in the EC Act.

To review the act in detail, four stakeholder consultation meetings (one national consultation workshop and three regional consultations) were conducted with various stakeholders to discuss and receive inputs on the possible amendments. Further, to the discussion and stakeholder consultations, the amendments have been proposed to strengthen the institutions originally envisaged under the act. The proposed amendments would facilitate development of carbon market in India and prescribe minimum consumption of renewable energy either as direct consumption or indirect use through grid. This will help in reduction of fossil fuel based energy consumption and carbon emission to the atmosphere.

Greenshift pivots to green climate solutions

The solar power company offers carbon finance option to its customers to monetise carbon emission savings.



Opening up new frontiers in clean energy and decarbonisation, Mumbai-based GreenShift Initiatives Private Limited (GIPL) with its trailblasing transformational solar-as-a-service (SaaS), zero-investment on rooftop solar installation, and fast electric vehicle (EV) charging infrastructure is poised be a game-changer in fostering green climate solution across all major metro cities, and concurrently offer opportunities to monetise carbon emission achievement.

Greenshift is India's only solar power company to offer its customers the option to monetise carbon emission savings. As per its climate-resilient strategy, the company has rolled out carbon credits – a 'carbon finance' option to its customers to support decarbonisation and foster lower-carbon future. Under the plan, the company will remit the monetary amount, allowing residential and commercial buildings to monetise their carbon credits earned from their rooftop solar installations and transformation to electric mobility.

Fast EV charging infrastructure:

Further fortifying its blueprint for zero carbon emission, GreenShift has planned to set up multi-city fast EV charging hubs in the next 12 months. During its phase-1 plan, the company plans to set up fast EV charging stations across major metro cities and branch out to tier-II cities. Subsequently, during phase-2, it will install fast EV charging hubs on the national highways (NHs) and expand to state highways.

Elaborating on various benefits to residential and commercial real estate customers, Satinder Aggarwal, Founder & Managing Director, GreenShift Initiatives Private Limited (GIPL) said "GreenShift invests and installs rooftop solar power solutions at a pre-approved location applying the latest technology, high industry standards and guarantee the performance of the plants. We supply power at lower rates on a long-term Power Purchase Agreement (PPA) basis. Our customers will be charged for units consumed as per the solar meter. The rooftop installations are fully financed by our company with no upfront cost of planning, designing, installation, and operation. Our service model frees up cash flow that one would otherwise have to spend on the project. We offer up to 25-years of comprehensive on-site warranty, remote monitoring to identify glitches and emergency response within a stipulated time period."

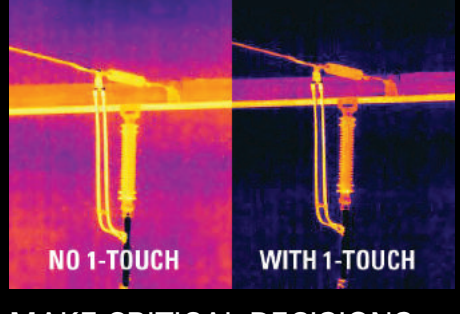
TELEDYNE FLIR

EFFICIENT CONDITION MONITORING

Run camera-guided inspections with the ***FLIR T800-Series***

IMPROVE WORKFLOW EFFICIENCIES

WORK SAFELY AND COMFORTABLY



MAKE CRITICAL DECISIONS QUICKLY

Discover more: **flir.in/T800-series**

For more information, please call us at +91-11-4560 3555
or write to us at flirindia@flir.com.hk

Images for illustration purpose only.

India's energy Outlook 2022: a promising future

Looking ahead, India is already making strides toward its goal of decarbonisation and energy independence.

India ranks sixth in the list of countries to make significant investments in clean energy. Growing population along with incessant increase in the electricity demand has further provided impetus to an increase in the per capita power consumption in India.

Presently, India is the third largest producer for power and second largest consumer of electricity in the world. Talking about the renewable energy capacity, India has fifth largest installed capacity for renewable, fourth largest in wind power, and fifth largest solar installed capacity in the world. In August 2021, another milestone was established when the installed capacity of renewable power in the country crossed 100 GW, led by the growth in solar and wind power capacity installations. Also in the distribution sector, the government plans to install 250 million smart meters by 2022 at a cost of ₹ 3 lakh crore, which is expected to bring in more efficiency in the power usage in the country.

Indian power sector is presently going through a transformational phase that has redefined the industrial outlook. With the government's focus on achieving the dream of 'Power for All', Indian industries are taking leaps in adding capacities to their utilities and generation.

Renewable energy trends

Installed renewable power generation capacity gained momentum in the past few years. Looking at the government's initiatives and the industrial trends to enhance the economic structure of India, the power and renewable energy sector is expected to attract investors' in the coming years. As India expects to meet its growing energy demand on its own, and we are anticipating reaching 15,820 TWh by 2040.

The government is aiming to achieve 227 GW of renewable energy capacity (including 114 GW of solar capacity addition and 67 GW of wind power capacity) by 2022, more than its 175 GW target as per the Paris Agreement. The government plans to establish renewable energy capacity of 523 GW (including 73 GW from Hydro) by 2030. Although India is moving towards achieving its set target but we are still lagging significantly in terms of growth. There is disconnect among the government targets, and the constrains pertaining to investments, finances, operational imbalances and regulatory concerns.

The road ahead

The overall goal is to increase renewable energy uptake, electrify the transportation sector with electric vehicles, increase 'tail-end' generation and utilisation through decentralised renewable energy solutions, and increase the use of energy efficiency equipment and design, such as solar pumps, to improve agricultural and energy efficiency.

To meet its target of 450 gigawatts (GW) of renewable energy capacity by 2030, India will need to invest $500 billion. A total of $300 billion would be allocated to wind and solar infrastructure, $50 billion to grid strengthening investments, and $150 billion to transmission expansion and modernisation. Financial stability is a significant barrier to attracting necessary investment for state utilities.

Looking ahead, India is already making strides toward its goal of decarbonisation and energy independence. Making that aspiration a reality, however, will be heavily reliant on the distribution sector's trajectory.

Robust
Reliable
Efficient

Triveni TURBINES

Up to 100 MWe

POWER TO SUSTAIN DREAMS

Sustainable Steam Turbine Solutions for Power Generation

>13 GW OF INSTALLED CAPACITY

>5000 STEAM TURBINES INSTALLED

>20 INDUSTRIES SERVED

>70 COUNTRIES OF PRESENCE

100MW Leading Manufacturer of Industrial Steam Turbines up to 100 MW.

One stop turnkey solution - Concept Engineering to Installation and Commissioning

50+ YEARS OF MAKE IN INDIA

Contact Us

12-A, Peenya Industrial Area, Phase 1, Bengaluru - 560058, Karnataka, India
mktg@triveniturbines.com +91 80 22164000 +91 80 22164100
/triveni-turbines /TriveniTurbineLimited www.triveniturbines.com

SUSTAINABLE SOLUTIONS TO LEAD INDIA'S GREEN ENERGY SHIFT

Industry leaders share their optimism on how Indian electrical and power sector is transforming itself towards green with the help of more sustainable technologies and solutions.

Now you can read this story online by scanning the QR code

GREEN ENERGY SHIFT IN ELECTRICAL AND POWER SECTOR

The power sector In India is on a revival path after the pandemic impacted the market last year. India's peak power demand has surpassed the 200 GW mark in this July indicating a resurgence in power usage in commercial and industrial segments after governments lifted the lockdown enforced due to the COVID-19 crisis.

Present trends impacting the electrical and power sector

Presently, we have various ongoing trends like digitalisation, urbanisation, globalisation, demographic shift that are impacting the health of people and the industries, especially in a Covid era. Let's not forget the overall impacts on the climate change and on the environment across the world. When we talk about India, we have humungous young population, and with the number of young populations, India can impose pressure to build required additional infrastructure, further opening several avenues for employment opportunities. This will further boost Indian government's plan to make India a manufacturing hub.

Noting the market projections, Ganesh Kothawade, Sr. Vice President, Electrification-Distribution Solutions, ABB India Limited., says, "This push will also augment the demand for power, along with advanced electrical equipment. If we compare a data per capita consumption in India, is hardly 1200 kWh per person, and if we compare it to the developed country which is 10 times more." So, you can imagine even to just reach a world average, our per capita consumption is likely to triple in the next 10 years.

As per views of Manas Kundu, Director – Energy Sources, International Copper Association India (ICA India), "India's energy story in recent times is no less than an extraordinary success, but sustaining the benefits of this success remains to be a key concern. Purely, in terms of availability of power, in recent years, hundreds of millions of Indians gained access to electricity; dedicated programs have helped rapid adoption of highly efficient LED lighting in most households; there is a massive expansion in renewable sources of energy, predominantly led by solar power." No doubt, there has been a tangible improvement claimed in areas of electricity supply to citizens. However, there are quite a few cracks in the graph that need to be fixed if the graph must continue the trajectory.

Highlighting his view from the power trading aspect, Prabhajit Kumar Sarkar, Managing Director & CEO, Power Exchange India Limited feels "There has been a growing shift towards utilising market mechanisms for power transactions. Market mechanisms have, after all, ushered in transparency of price discovery, allowed equal access to the marketplace for all participants and ensured information symmetry for all." Since the power markets in the country have demonstrated benefits for all over the last few years, it has helped foster the shift towards deepening it further through new types of transactions and opening up of existing segments.

Coming to the technical trends that further enhance the power sector, Chhaya Bhonsale, Chief - Technical Service, T&D, Tata Power highlight that migration toward the future transmission and distribution substation is taking place; because of the desire to bring more automation and intelligence to the power grid network, to address many utility concerns. "It includes how to reduce operational expenses to meet new regulatory requirements, increased reliability, early detection of faults and quick diagnosis and restoration, improved worker safety, and enhanced utilisation of grid infrastructure. This significantly drives the demand and growth of substation automation in the coming period."

Attaining energy efficiency in electrical sector

According to Anil Saboo, Chairman & Managing Director, Elektrolites Power Ltd., today it's a mandate for all manufacturers to reduce their costs, and with the adoption of digitalisation and newer technologies, they will be able to reduce their production costs as well as carbon emissions. So, this pandemic has really done a lot of good for all of us, because it has manufactured everybody else's way of reducing their costs, and they are adapting.

On the other hand, Sriram Ramakrishnan, Managing Director, Fuji Electric says that there products leverage the latest in power semiconductor technology like IGBT, designed and manufactured by Fuji Electric in many of its power electronic platforms, like energy-efficient UPS and variable frequency drives. Fuji Electric is also a pioneer in renewable energy solutions with comprehensive offerings of solar inverters, fuel cells and geo thermal power plants.

Smart and efficient lighting

Sharmila Kumbhat, Director, K-Lite Industries feels, "This decade is going to witness phenomenal changes in the field of lighting. The last decade's thrust was energy saving measures, which gave rise to the LED lighting to replace all other conventional lighting. Application of solid state devices as a source of lighting has given way to new concepts in lighting control and automation. Gone are the days when our options were just limited to the lighting with GLS lamp or FTL lamp with just one off control. Now, the general public are well informed and have started prescribing the lumen requirements, watt per lumen, lighting control, and above all IoT compliance etc.

RE enabling efficient lighting

"Many countries have effective lighting strategies in place in the form of policies to phase-out inefficient incandescent lamps Looking at the strategies being in place to enable efficient lighting systems, Varinder Bhatia, Associate Vice President Havells India says, "Effective lighting is going to directly contribute to the reduction of carbon emissions, resulting into a more sustainable environment and a cost-effective transformation alternative across markets."

Whereas, Rajesh Uttamchandani, Director, Syska Group, feels that the needs and preferences of consumers in terms of lighting have changed dramatically. The COVID pandemic has sparked interest in IoT-based smart products that provide a touch-free experience. "Smart lighting with sensors and AI-driven software provide an ease of access,

allowing users to operate the product at any time and from any location, which is not only environmentally friendly but also protects users by eradicating the need for physical access."

Safety aspects of cables and wires

There is a positive and growing demand for wires and cables. But when it comes to green, my question is how many people are familiar with the concept. When we talk about green wires and cables, RR Kabel are the only group of companies that provide 100 percent rich and green wires.

When asked about developing solutions and finding the right support from the government to address the safety aspects, Shreegopal Kabra, Managing Director, RR Kabel Group says, "There's only one solution that the government should create laws to address these issues on a regular basis. An appropriate and stringent law and regulation in place, along with specific norms will further ensure that these specifications are thoroughly followed."

Coming to the disruptions pertaining to the cost and other allied complications, Bhushan Sawhney - Executive President & CBO (LDC), Polycab India says, "I don't expect a disruption in case of the conductor because copper has been the most common conductor since inception, and it will continue to do so. However, as the copper prices are on a very steep rise, researchers are trying to develop alloys with the same conductivity as copper."

Future of green India

This entire transition is going be a big challenge, as converting the entire process from fossil fuels production into generating renewable and sustainable energy is a critical task. Noting the same, Ganesh Kothawade adds, "With the growing economy and increasing population, we need to comprehend to the ever growing demand for efficient power supply and accommodate relatable consumption to the users."

When we say green, we must also look upon the increasing carbon footprints. Here, Chhaya Bhonsale explains that digitalisation provide both tangible benefits such as reduction in space, reduction in copper cabling, less environmental impact (CO_2 foot print) and optimisation in resources as well as non-tangible benefits like improved personal and equipment safety, improved asset performance, lower fire hazards due to reduction of conventional wiring Reduction in Project Commissioning time and least forced outage. These benefits will certainly drive the demand for digitalisation of substation in India.

"Definitely, people are cost conscious, and that's actually something that all of us can support; as pandemic has hit various industries and people at large" says Rahul Kale, Founder & CEO, SunPower Renewables. So it's important to be conscious of about it. Another important thing is, we have reached grid parity, and the price of panels and lithium-ion batteries has dropped significantly to the place from where it started. We are now in a position where customers have come back to us and mentioned of being able to save over 70 percent of cost with solar.

Recycling Electronic and electrical waste

Sanjeev Prasad, Vice President & Plant Head – Power & Utilities, RIL – DMD higlights sigificance of recycling as - First is accessibility. Secondly, we are driven by laws. So, we have to comply with the given regulations, which will further drive us towards sustainability. It's also important for the business to become profitable, otherwise nobody will come forward to invest, and we will again be dependent on the government. These are the only two ways in which a business will get recycled. The recyclers and the government need to ensure that all the relevant information is available online and on other platforms that allow us to get through those providers.

Localisation in RE gets an upper hand with PLI Scheme

With the government's push to boost localisation and domestic manufacturing under the PLI Scheme, we see a increase in demand for locally produced products and technologies. Here, according to Rajinder Kumar Kaura, CMD, Bergen Solar Power and Energy Ltd., "The PLI scheme for the complete supply chain, right from poly-silicon to modules has attracted almost 6 bidders for 10GW of capacity. The government must also ensure that new and latest technologies are encouraged where Opex and LCOE are reduced." Till the complete supply chain is not there, China will continue to arm-twist the Indian players in manufacturing, especially cell and module manufacturers.

AKALMAND BANO, SAHI CHUNO.

RR KĀBEL
WIRES & CABLES

INDIA'S ONLY WIRE WITH
REACH • RoHS
CE • CPR Compliant

ANTI-RODENT ANTI TERMITE

HIGHER INSULATION RESISTANCE

MORE THAN 101% CONDUCTIVITY

100% ELECTROLYTIC COPPER

Email : digitalsupport@rrglobal.com | Website: www.rrglobal.com | Follow us

Transforming energy outlook with distributed generation and micro grids

The power sector entities ensure safety and security of all data and enhance cyber resilience.

Prabhajit Kumar Sarkar,
Managing Director & CEO, Power Exchange India Limited

Discussing the transformational trends in the power sector, Prabhajit Kumar Sarkar, Managing Director & CEO, Power Exchange India Limited, highlights various avenues where digitalisation have been augmenting and improving the overall capabilities of the poer providers and traders.

Considering the present trends in the power sector, how do you view the demand and growth of the power trading market in India?

There has been a growing shift towards utilising market mechanisms for power transactions. Market mechanisms have, after all, ushered in transparency of price discovery, allowed equal access to the marketplace for all participants and ensured information symmetry for all.

Since the power markets in the country have demonstrated benefits for all over the last few years, it has helped foster the shift towards deepening it further through new types of transactions and opening up of existing segments.

It is expected that all these efforts, visible through initiatives like MBED, green market development through GTAM, GDAM, introduction of longer tenure contracts, resolving market structure issues through market coupling and enhancing RTM, DSM, ancillary services etc would lead to transactions of around 25 percent of all electricity generated compared to 4-5 percent today.

What measures have been implemented by the industry to tap the potential of the renewable energy sector?

PXIL has introduced the 'Green Term Ahead Market Contract' that enables transaction in solar and non solar type of renewable energy. pxil has received approval to introduce Integrated Day Ahead Market, wherein price discovery for Renewable and Conventional segment is undertaken in an integrated manner. The transactions in GTAM and IDAM provide signals for future investments in Renewable sector. Liquidity in these segments also demonstrates to renewable energy project developers the benefits of accessing the market to sell power directly from their projects.

Further, after issuance of Judgement by Supreme Court on 6th Oct 2021, PXIL is developing longer tenure contracts in Green TAM wherein transactions for different delivery periods would be made available to participants i.e. monthly / quarterly / yearly / seasonal.

PXIL is also introducing contracts to cater to the hydro segment. This would allow specific benefits associated with buying hydro power to be passed on to the buyers and an appropriate price discovery to take place for Hydro power being sold.

The renewable energy sector is growing rapidly and the above steps are being taken to ensure a closer integration and aid in its continued rapid development.

What are the challenges being faced by the utilities in maintaining the grid efficiency and stability to provide uninterrupted power supply?

Most power utilities, specifically DISCOMs, in our country cater to a large and varied consumer mix across large geographical areas. This includes centres

GREEN ENERGY SHIFT IN ELECTRICAL AND POWER SECTOR

15 Years of Service in India

Be sure. testo

Now @
~~Rs 1,92,150/-~~
Rs 1,29,200*/-
only

The Cool tool for the hot spots.

Offer valid from 27th October till 31st Dec 2021

Grab the **FESTIVE OFFER** on **Thermal Imager testo868** and make this pro thermal imager yoursat a never before price.

For identifying energy-saving potential, detect malfunctions, thermal bridges and defects, test heating and installation systems and save money.

- High resolution and image quality.
- Many time-saving additional features.
- Connection to App and other testo measuring instruments.
- Intuitive analysis software testo IRSoft.

*Taxes as applicable. Terms & conditions apply

Enquire Now

Testo India Pvt Ltd

+91 20 2592 0000 | info@testo.in

MADE IN GERMANY

www.testo.com

of high demand including large cities and rapidly growing towns as well as vast hinterlands of farms and low consumption areas. The transmission and distribution network within the DISCOM area, including the quality of substations, distribution lines and transformers and continued capital investment for growth, safety and redundancy plays a significant role in maintaining low technical losses and high reliability.

In addition, given the portfolio of generation assets tied up in the long term that are earmarked for each DISCOM, the ability to access the market to reduce the cost of supply is also limited in most cases. This is evidenced from the 4-5 percent size of the power exchange market in the country.

Additionally, the limited ability to recover the full cost of supply from their consumers often leaves utilities with severe financial problems and therefore a difficulty to meet their supply obligations in an uninterrupted manner.

For all load serving utilities, demand-supply mismatch is thus a reality. To mitigate such a situation, participants access the power exchange platform for meeting their trading requirement. The set of contracts on power exchanges is being expanded rapidly to cover delivery duration of hours to days ahead. In addition to longer term policy measures to enhance the financial health of utilities, we feel that the complete set of contracts available on exchange would also go a long way in helping utilities manage their consumption vis-à-vis supply in a more efficient manner.

How do you view the demand and application for AI, automation and digitisation for efficient distribution in the power sector?

There are numerous use cases for AI, automation and digitisation in the power sector including in the power distribution space. Since electricity cannot be stored, therefore real time changes in demand require real time modification in supply. Power distribution requires connectivity with each and every consumer. Each consumer's demand change therefore reflects in the aggregate on the supply requirements of the utility. Thus, any utility that has efficient data collection, analysis and automated response systems in place would benefit immensely in reducing its costs, removing inefficiencies and enhancing its customer responsiveness manifold.

Digitisation of customer usage data, using AI to build predictive models of consumption behaviour and introducing IoT as well as automation for faster response is just one way of developing a more efficient grid at the distribution level. There are of course many other use cases for each of these technological developments which are expected to strengthen the power sector in the days to come.

How is the industry moving towards securing the grid and consumer data being stored in the cloud?

With the relentless march of digitisation and use of communication and software systems to manage customer interaction including metering, billing and collection data as well as transactional data, it is very important that the power sector entities ensure safety and security of all data and enhance cyber resilience.

The Central Electricity Authority has also recently issued the cyber security in power sector guidelines, which comprehensively deals with the issues related to data security and management. The provisions of such guidelines when implemented fully by all stakeholders would ensure security of grid and consumer data.

What are the latest and upcoming technologies for the next generation power sector?

The next generation power sector would thrive at the intersection of a few technologies that are rapidly achieving commercial viability and scale. These include large scale information exchange systems, low cost and high throughout communication technologies, increasingly efficient renewable generation technologies, cost-effective at scale energy storage solutions and increasing adaptation of market frameworks for providing access to both consumers and suppliers.

It would interest your readers to know that electric vehicles had been produced since the early days of automobile development in the mid nineteenth to early twentieth centuries. It was due to the high energy capacity of gasoline (greater energy per kg of mass) compared to batteries, among other reasons, which led to commercial adoption of internal combustion engine. With higher capacity batteries (cost effective at scale energy storage) and a charging infrastructure which allows for longer mileages, EVs are making a comeback!

Similarly, various renewable technologies have been tested over the years, and now with a combination of higher adoption, greater conversion efficiencies and concomitant fall in prices due to economies of scale, renewable energy generation is taking off across the world.

A similar set of convergences are also leading to rise of digitisation – reflecting in big data, cloud computing, IoT, smart appliances including smart metering as well as Grid scale battery storage – to complement renewables and therefore provide round the clock power supply from RE; distributed generation and microgrids and many other advances which is changing the way the power system would operate.

www.erda.org

TESTING OF TRANSMISSION & DISTRIBUTION COMPONENTS

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

Key Features

- India's Largest on Line short circuit test facility with 120kA, 570V
- 1600kVp, 80kJ Impulse Voltage Generator
- Thermo Mechanical Chamber & Salt Spray Chamber
- Vertical Bending Machine

Products tested at ERDA

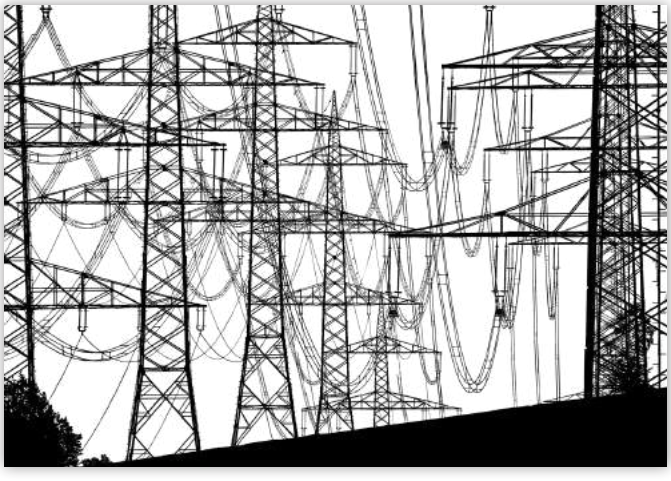
- Conductors (AAA/AA/ACSR/Copper)
- Insulators (Polymeric & ceramic)
- Dampers & Damper Spacers
- T&D Fittings

ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION

Toll Free : 1800 233 2668 **I Email:** bd@erda.org

India can halve electricity costs and achieve net-zero before 2050

The report shows that by 2050, thermal balancing power plants will have a relatively small, but crucial, back-up role, providing 1.1 percent of electricity generation.



India can cut its overall cost of electricity in half and reach net zero before 2050 by developing a 100 percent renewable energy power system, according to modelling by global technology company Wartsila and the Finnish Lappeenranta-Lahti University of Technology.

The modelling shows a clear, actionable pathway to achieve a net-zero electricity system that can bring enormous environmental and economic benefits to India, who is one of the world's largest and fastest growing economies:

- Increasing renewable energy from 25 percent today to 100 percent before 2050 cuts the cost of India's electricity by 48 percent; from US$88 megawatt hour in 2020, to US$46 in 2050.
- A flexible 100 percent renewable system provides large levels of excess power that can address India's increasing energy dependency forecast to double by 2030.
- Increasing renewable energy could also generate major new revenues from hydrogen production, creating a technology market worth US$ 39.8 billion.

The modelling makes a clear case for immediate action to accelerate the development of a 100 percent renewable energy system in India. By combining variable renewable power with energy storage and thermal balancing, power plants will be capable of using carbon neutral sustainable fuels in the coming decade. With this, India can dramatically cut its carbon emissions and halve the overall cost of its electricity.

Sandeep Sarin, Market Development Manager, Wartsila Energy - India, and co-author of the report, said "This year, India will become the world's fastest growing economy. Our modelling shows a path to a clean power system that will catalyse India's transformation into a global clean energy powerhouse; lifting millions from poverty, creating new jobs, insulating the system from energy shocks and simultaneously playing a vital role in limiting global temperature rises to below 1.5°C. India has a mountain to climb in reconfiguring its energy system for net-zero, but it's certainly possible with technologies that are already available at scale. With the right vision and planning, India can leapfrog developed nations into a sustainable future, but we must get into action before it's too late."

Wartsila's 'Front-loading Net-Zero' report sets out clear steps for India to decarbonise its power system:
Set ambitious clean energy targets over longer-term time horizons to attract investors.

- Increase climate regulation for companies, including mandating consumers and power producers to meet a certain percentage of their requirements from renewable sources.
- Strengthen flexibility solutions, such as thermal balancing power plants and battery storage that can raise the share of renewable.
- Launch an incentive programme for production of electrolysers (as capital costs are responsible for 30 percent of the cost of green hydrogen) and create new demand centres equipped to cost-effectively develop and transport green hydrogen.

As well as showing a path to an affordable clean energy transformation, the modelling also demonstrates the major planning challenge to cleanly meet energy demand as India's population rises to around 1.7 billion by 2050.

Power demand is estimated to increase by 340 percent by 2050 - from 1,345 TWh in 2020 to 5,921 TWh in 2050, with 1,023 GW of peak demand. The modelling confirms India can affordably meet this demand through renewable energy, aided by solar energy prices that are amongst the lowest in the world, averaging around $26 USD per MWh.

However, to serve this increased load through mid-day peaks and to charge energy storage resources such as batteries to offset intermittent renewable energy generation, the total system capacity must be scaled up to an unprecedented degree:

- 4,000 GW of installed capacity is needed for a 100 percent renewable system, a 10-fold increase on 2020.

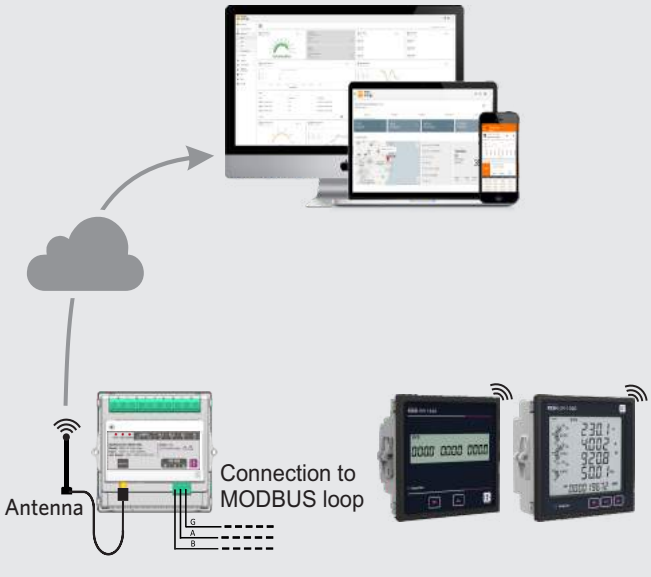
RISHABH

MFM with GSM Module

Wireless communication with GSM technology

Features

- Wireless connectivity - GSM interface
- Buffer memory of 16MB
- Master compatibility - LM 13xx and EM 13xx
- Salve compatibility - All Rishabh meters upto 31
- Long outdoor antenna with adjustable rate of data capturing



CE RoHS

Measure | Control | Record | Analyze

RISHABH INSTRUMENTS PVT. LTD.

Domestic (India): +91 253 2202028/99 | marketing@rishabh.co.in
International: +91 253 2202004/06/08/99 | global@rishabh.co.in
www.rishabh.co.in

- New solar installations must rise by 885 percent, from 7 GW a year today, to 69 GW a year by 2035, rising to 79 GW a year between 2035 and 2050.
- Solar would make up 76 percent (3,076 GW) of total capacity by 2050.
- This would also be supported by a total wind capacity of around 410 GW by 2050, combined with hydro and carbon neutral gas.

Wartsila's modelling shows that flexibility through energy storage is key to achieve the cost-optimal renewable base load system - to shift generation when it is surplus, during the day, to times when renewable are not available, during evening or night-time. Thermal balancing power plants, backed by battery energy storage must also be deployed to manage sudden surges in demand or drops in renewable generation.

To support a 100 percent renewable energy system in India we need -

- Energy storage capacity must increase from almost zero to reach 99 TWh of storage capacity by 2050.
- Storage output should cover 35 percent of India's total demand by 2050, with 99 percent enabled by batteries.
- 187 GW of fast-start load-following gas engines are needed to provide rapid grid balancing.

The report provides a wake-up call to leaders on the need for a comprehensive energy transition plan, underpinned by a long-term plan to deploy massively increased amounts of renewables, phase out coal, and dramatically scale up energy storage and flexible power system solutions.

Anish De, Partner, Global Sector Head, Power & Utilities, KPMG National Head - Energy Natural Resources & Chemicals, KPMG in India, said, "India's ambition and achievements on renewable are of an unparalleled scale. We have abundant resources for cheap and clean renewable energy blessed with more than 300 sunny days a year; and our geography provides world-leading wind power. With some inventiveness, the right mix of new renewable generation and flexibility can replace coal and gas-fired power, creating a clean and more affordable system. This leaves a key question: is India better off committing itself wholeheartedly to a renewable energy future? From every angle, the answer is yes."

Wartsila's report also lays out the shifting role of gas power in India. The modelling shows that by 2050, thermal balancing power plants will have a relatively small, but crucial, back-up role, providing 1.1 percent of electricity generation. Thermal balancing power plants will play a crucial role in decarbonising the power system by shifting to carbon neutral, hydrogen-based sustainable fuels, such as synthetic methane, to generate electricity and help decarbonise the final 10 percent of India's energy system. Wartsila engines are already capable of running on 25 percent hydrogen blends and the company expects to be capable of running 100 percent hydrogen by 2025.

Hakan Agnevall, CEO and President of Wartsila said, "Our modelling shows that it is viable for all energy systems to be fully decarbonised before 2050, and that accelerating the shift to renewable base load, coupled with flexibility, will help economies to thrive. We have all of the technologies that we need to rapidly shift to net zero energy. The benefits of renewable-led systems are cumulative and self-reinforcing – the more we have, the greater the benefits; so it is vital that leaders and power producers come together now to front-load net-zero this decade."

About the 'Front-loading Net-Zero' report

Wartsila's report models pathways to net zero power sectors in three key regions that are critical to the upcoming COP26 negotiations - Germany, India and California.

As well as the deep dive modelling on these power systems, the report also features key insights from Wartsila modelling in other countries, including Australia, Chile and the UK.

Across these vastly different energy systems, the modelling shows that by deploying flexible capacity, from energy storage and thermal balancing power plants, countries can 'level-up' renewable to fulfil a base load role.

Critically, these decarbonisation pathways do not increase the cost of electricity and can in fact cut costs, in comparison to today.

The report reveals that despite differing starting points, countries and sub-states have all the technologies that they need to rapidly shift to net-zero energy systems.

The findings from the report will be presented by Sushil Purohit, President of Wartsila Energy, at the Economist Sustainability Week: Countdown to COP on Wednesday, 6th October.

About the modelling

The modelling defined a cost-optimal energy system structure and operation mode for a given set of constraints in each region: power demand; available generation and storage and balancing technologies; financial and technical assumptions; and limits on installed capacity for all applied technologies.

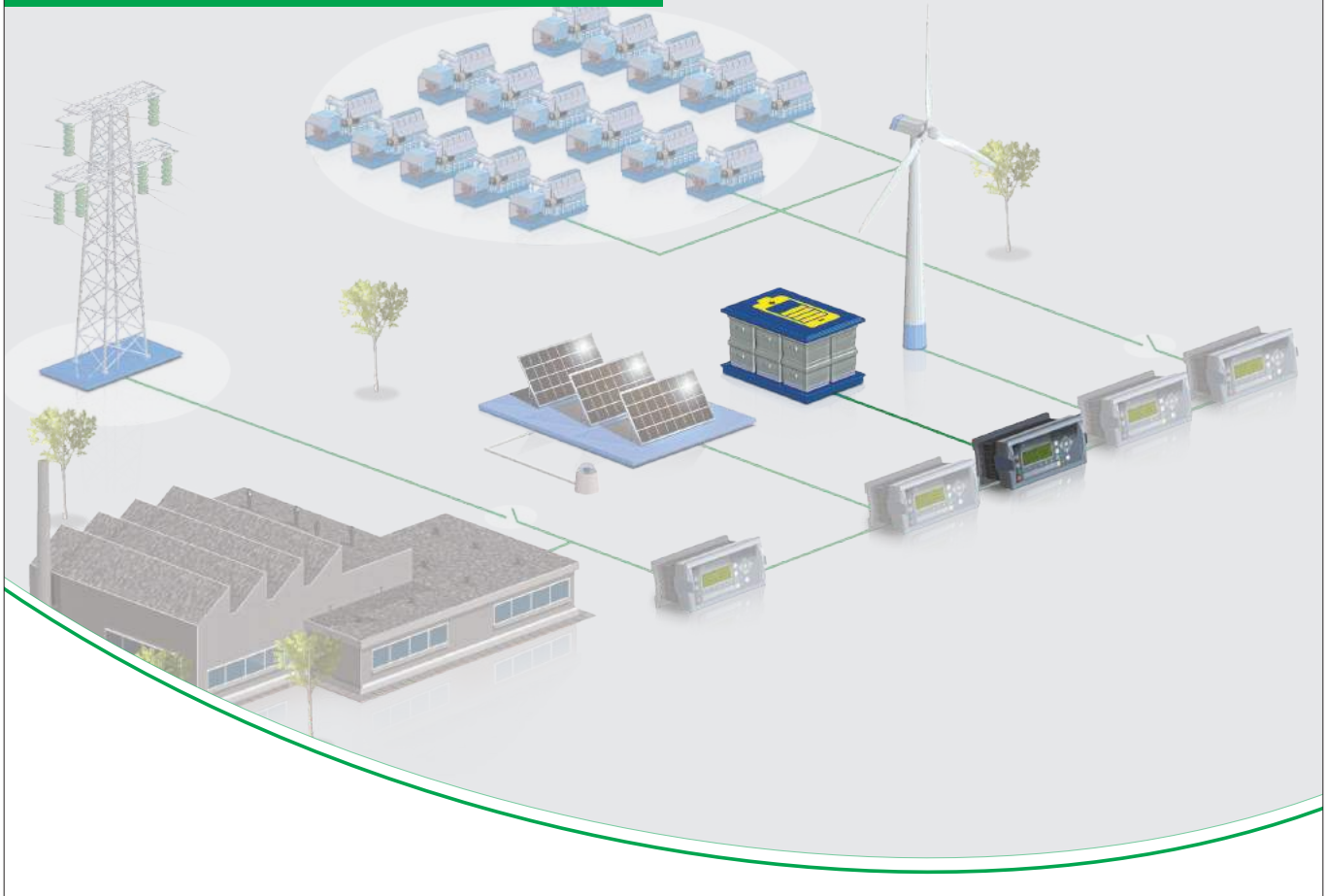
The model is based on linear optimisation and performed on an hourly resolution for entire years. The costs of the entire system are calculated as the sum of the annualised capital expenditures including the cost of capital, operational expenditures (including ramping costs), fuel costs and the cost of GHG emissions for all available technologies.

For further details, and to access the report Methodology, visit, www.wartsila.com/media/news-releases .

ASC-4 BATTERY

Automatic Sustainable Controller

- Automatic shift between grid forming/following operation
- Charging/discharging
- Power Conversion System (PCS) control
- Batter Management System (BMS) monitoring
- Control of breaker
- Simple graphical configuration



Designed specifically to serve as a reliable, fully integrated and optimising link between sustainable power plants and genset power plants, DEIF's automatic sustainable controller, ASC-4 Battery, offers seamless energy storage integration in hybrid microgrid applications.

Read more about ASC-4 Battery

www.deif.com/products/asc4-battery

DEIF India Pvt. Ltd.
602, 6th Floor Town Center – II, Andheri Kurla Road, Andheri (East), Mumbai – 400 059
www.deif.com - india@deif.in - Ph.: +91 22 42452000

Success story: Enhancing power plant performance with superior lubrication

As a rapidly growing economy, India's energy demands are many. The country's power sector is also one of the most diversified in the world, ranging from conventional sources such as coal, oil, hydro, etc., to viable non-conventional sources such as wind, solar, among others. Simultaneously, power plants today are in urgent need of augmenting output and enhancing efficiency to aid the country's energy transition, and fulfill its dream of energy autonomy. In ensuring improved capacities while attending to concerns of efficiency, the choice of lubrication solution to support equipment performance can make a monumental difference.

As an industry leader, Mobil™ Lubricants has been working closely with power plant manufacturers to support their equipment performance and provide quality care through dedicated servicing and monitoring. Mobil's association with Quippo Energy is one such instance of active industry collaboration.

Association with the energy industry

Quippo Energy Pvt. Ltd. is a leading power generation company based out of Delhi. It operates more than 25 gas engines for power generation across multiple sites in India. These engines were being lubricated with a market-general gas engine oil while its servicing and maintenance was being conducted by an in-house team of experts. Despite adequate monitoring, the engines were experiencing high component wear and a short oil drain interval (ODI) of 2,000 hours. This was escalating maintenance and operational costs, reducing profitability for Quippo Energy.

Seeking redressal, Quippo Energy approached Mobil's Field Engineering Services (FES) team for advice. After conducting thorough studies, Mobil's FES team recommended the use of Mobil Pegasus™ 1005, a high-performance gas engine oil. Simultaneously, service assistance was recommended through the Mobil Serv℠ Lubricant Analysis (MSLA) to monitor oil performance and check rate of engine wear.

As Quippo Energy began using Mobil Pegasus 1005, an optimal drain interval study was also conducted on the gas engine to review performance. The regular oil analysis and inspection indicated that the switch to Mobil Pegasus 1005 had resulted in reduced engine wear by up to 50 percent under similar operating conditions. It also improved safety in the workshop with reduced equipment interaction time of 208 hours. Due to excellent oil retention, ODI too was extended by 50 percent to 3,000 hours, resulting in reduced frequency of oil filter replacement and annual savings of US$ 22,319. Most importantly, the company reduced waste oil disposal by 9,646 litres, resulting in significant reduction in negative environmental fallout – a key concern for power plants today.

Innovation for assured results

In line with Mobil's goal of constant innovation, Mobil Pegasus 1005 is the latest addition to the Mobil Pegasus™ pedigree of proven natural gas engine oils with a balanced, durable formulation. Under this series, the Mobil Pegasus 1005 has been designed to provide high output and low emission in four-cycle gas engines with the highest levels of protection while maintaining superior performance in earlier model engines. It has delivered proven performance over the years with a balanced, durable formulation that helps reduce oil consumption and frequent top-ups, improves reliability by controlling deposit formation and helps minimise wear on critical engine components.

Mobil Pegasus 1005 uses high quality base stocks and advanced additive technology to deliver exceptional oxidation stability, nitration resistance and thermal stability. The product formulation is balanced to provide outstanding anti-wear characteristics that protect heavily loaded valve train components, pistons, liners, bearings, and gear trains while maintaining compatibility with catalytic converter materials.

Attending to the challenge of reducing negative environmental fallouts in power plant operations, the Mobil Pegasus 1005 is particularly known for its proven keep clean performance. Its detergent-dispersant system controls the formation of carbon and varnish deposits to minimise oil consumption and maintain engine cleanliness even during extended drain intervals. The Mobil

sidbi

उभरते सितारे
Ubharte Sitaare

उभरते सितारे कार्यक्रम के तहत निर्यातोन्मुख एमएसएमई इकाइयों को सिडबी की सहायता

SIDBI Assistance to Export oriented MSMEs under Ubharte Sitaare Programme

उद्देश्य / Objective:

- Term loans to Export oriented MSMEs for expansion, modernisation, diversification, technology / capacity upgradation, product R&D, etc., by investment in land and building, machinery and equipment, etc.

प्रमुख विशेषताएं / Key Features:

- Attractive RoI
- 20% promoters' contribution (30% for greenfield units)
- Facility of TL/FCTL available
- Technical Assistance for mentorship support, equity support, etc.
- Upto 25 bps performance / milestone linked interest incentive.

पात्रता / Eligibility:

- New units- Promoters having sufficient experience in the proposed line of business and major projected revenue from exports. For units co-funded by technocrats from premier institutions (like IIT, IIM, IISc, NIT, etc.) sufficient experience in the proposed line of business shall not be insisted upon.
- Existing units- Fundamentally strong export oriented small and mid-sized companies with satisfactory financials.
- Standard Norms apply (CIBIL / CMR, due diligence checks, etc.)

लक्ष्य समूह / Target Group:

- Future export champions with high potential
- Units having unique technology, products or processes
- High export potential sectors, i.e. Automobiles, Aerospace & Defence, Chemicals, Food Processing, IT & ITeS, Pharmaceuticals, Precision engineering, Textiles and allied sectors, etc.

ऋण राशि / Loan Amount:

- Need based financial assistance, subject to maximum of 80% of the project cost.
- Joint financing with EXIM Bank available.

ब्याज दर और चुकौती / Interest Rate and Repayment:

- Interest Rate- Based on MCLR of the Bank / Repo rate with applicable spreads (as per internal rating)
- Repayment – Generally upto 6 years (extendable upto 10 years)
- Moratorium-Upto 2 years

To Know more, visit our nearest branch. Locate us at: www.sibdi.in

Follow us on SIDBIofficial sidbiofficial sidbiofficial SIDBI Official

SIDBI (Small Industries Development Bank of India)

Email : bd.dcv@sidbi.in | Contact : 0522-4261642, 0522-4261674, 9811886384, 8080345526, 90828 67930

Pegasus 1005 is designed to control deposits in the combustion chamber and on pistons to maximise engine efficiency and reliability. Further, it controls deposits in heat exchangers to maximise heat production. The Mobil Pegasus 1005 also comes with extended oil life and low oil consumption, further contributing to clean performance and reduced environmental fallouts.

Timely service for maximum care

Along with its product solutions, Mobil's service expertise too has earnt customer goodwill for aiding productivity and profitability goals. Mobil's MSLA programme is dedicated to monitor, review and enhance equipment performance through oil monitoring and analysis. It aids in increasing productivity, reducing unscheduled downtime, improving equipment durability, and lessening lubricant consumption. By taking a proactive, predictive approach to maintenance, MSLA helps companies become safer, more productive, and more aware of environmental care practices.

With the combination of superior formulation under Mobil Pegasus 1005 and quality service maintenance of MSLA, Mobil has delivered safety and increased productivity. Most importantly, it has attended to concerns of environmental care through reduced oil waste disposal and long lubricant and equipment life.

For more information, please visit https://www.mobil.co.in/en-in/business/energy

(Exxon Mobil Corporation has numerous affiliates, many with names that include ExxonMobil, Exxon, Esso and Mobil. For convenience and simplicity, those terms and references to "corporation", "company", "ExxonMobil", "EM", and other similar terms are used for convenience and may refer to one or more specific affiliates or affiliate groups.)

Mobil SHC™ Gear Series

The Mobil SHC™ Gear Series is a line of exceptional performance, synthetic industrial gear oils designed to provide outstanding protection to gears and bearings and extended oil life even under extreme conditions, further enabling problem-free operation of equipment and increased customer productivity. These scientifically engineered synthetic lubricants are formulated from synthetic base fluids that have exceptional oxidation and thermal properties and excellent low temperature fluidity. The high viscosity index of these oils minimises change in viscosity relative to temperature, enabling wider operating temperature range and improved low temperature startup.

Mobil SHC Gear Series lubricants contain an advanced additive system designed to provide excellent protection against conventional wear modes such as scuffing as well as a high level of resistance against micropitting fatigue. In addition, compared to conventional gear oil chemistries, it offers the potential for improved lubrication of gearbox rolling element bearings. Mobil SHC Gear Series products offer outstanding rust and corrosion protection relative to conventional gear oils, even in the presence of seawater contamination.

The Mobil SHC Gear Series lubricants are part of the Mobil SHC line of products that are recognized and appreciated around the world for their innovation and outstanding performance. These synthetic products, pioneered by our research scientists, symbolise the continuing commitment to using advanced technology to provide lubricants with excellent balanced performance.

Modern Hiring Service popularly known as Modern, has been extending its rich experience of providing Uninterrupted & Reliable Power Rental Solutions to a widest range of clientele in India and globally. We specialize in providing Power & Temperature control Equipment's on rental basis for short term as well as on Long term basis very as per the need of the client. We at Modern provide assured rental power for planned results during unavailability of power from state grid or unreliable existing power source.

RENTAL EQUIPMENTS

DG Set: 40 KVA to multi megawatt in any voltage
Gas Generator: 500 KW to 1500 KW
Air cooled Chillers: 60 to 1000 TR
Compressor: 300 CFM to 1100 CFM
Mobile Lighting Tower: (4X200 W), 7-8-meter height
Transformer: Low, mid & high voltage
Welding Rectifier
Load Banks:1266 KW to 5 MVA

ABOUT MODERN HIRING SERVICE

- ISO 9001:2015 Certified Company
- Over 3 Decades of experience in Temporary Power Business
- India's Largest fleet owner of Rental Generators
- Latest & Newest State of the art Cummins Generators
- Over 500 Highly skilled personnel
- Flexible contract Duration
- Rapid Availability
- Turn Key Execution
- Round the clock Service Support
- Value for Money
- Strategically located in multiple locations to deliver equipment & dispatch staff

RENTAL APPLICATIONS

Supplemental Power | Emergency Power | Event Power | Load Standby | Commissioning Power | Grid Optimization
Flexible Connectivity Mode | Peak Shaving | Stop Gap Power | Fuel Flexible Gensets Rental-Diesel/Gas/HFO

MODERN HIRING SERVICE

OFFICE ADDRESS:
MODERN HIRING SERVICE,SAM HOUSE, Plot No. 136, D'Lima Street, Dockyard Road, Mumbai-400010, Maharashtra, India

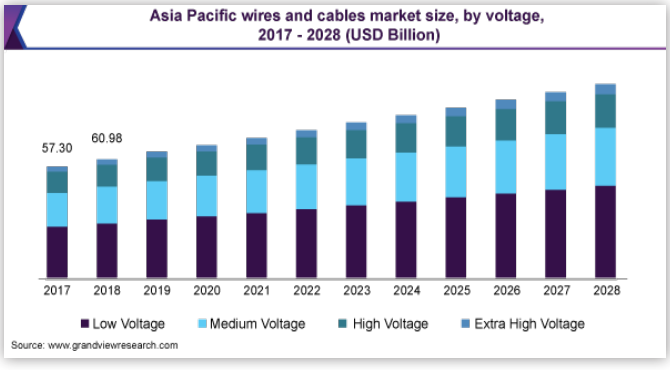
CONTACT DETAILS: Narsing Agrawal, General Manager-Sales | Mobile: 7045457770 | Email: narsing@modernhiring.in, Direct Line: +91 22 23707799 | Fax No: +91 22 23711453

MODERN
Dependable Power Partner

For further information visit: www.modernhiring.com | **E-mail:** enquiry@modernhiring.com, sales.support@modernhiring.in

Urbanisation and infrastructural demands are driving market for cables and wires

Factors including infrastructure development, economic growth in developing countries, and increasing internet penetration, the wire and cable market is anticipated to expand in the coming years.



The global wires and cables market size was estimated at USD 183.14 billion in 2020. It is expected to expand at a compound annual growth rate (CAGR) of 4.4 percent by 2028. Rising urbanisation and growing infrastructure worldwide are some of the major factors driving the market. The said factors have impacted the power and energy demand in commercial, industrial, and residential sectors. Increased investments in smart upgrading of the power transmission and distribution systems and the development of smart grids are anticipated to drive the market growth. Implementation of smart grid technology has met the increasing need for grid interconnections, thus resulting in rising investments in the new underground and submarine cables.

The smart grid is an electric grid that includes controls, automation, computers, and innovative equipment and technologies that function together and offer efficient electricity transmission. The functioning of the entire globe depends on the timely delivery of electric supply. Further, the increasing population leads to rising demand for power. Technological advancement in grids is necessary to reduce the frequency and duration of storm impacts, power outages, and restore service quickly after outages.

Increased energy demands in the Asia Pacific, Middle East, and South America have resulted in rising investments in smart grids in these regions. This will fuel the demand for low voltage cables. Urbanisation and industrialisation are the major reasons for increasing the overall market growth. The need for power grid interconnections in areas with a dense population is creating a demand for underground and submarine cables. The underground cables reduce the space required and offer reliable transmission of electricity.

The COVID-19 outbreak has impacted the wires and cables market growth due to a few minor shifts that occurred in communication technologies. The telecommunications industry has highly benefited from the situation as the pandemic has highlighted the true value of connectivity. 5G progress in connections and deployments has continued despite the pandemic and resulting economic downturn.

Voltage insights

The low voltage segment accounted for the largest revenue share in 2020, with around 43 percent market share, owing to the high usage of low voltage cables in building wires, LAN cables, appliance wires, distribution networks, and others. These wires and cables support the smart grids in delivering superior electric supplies and offer an improved provision of electric supply for end-use consumers. The energy and power sectors across the world are experiencing a rapid alteration. Most of the developing and developed countries are experiencing heavy demand for electricity and are moving towards the incorporation of large-scale renewable resources.

The high voltage wires and cables are used for transmission of electricity from 1,000 volts. These cables are coated with paper and oil, to avoid direct contact of the cables with an individual or any other material. The quality of high voltage cables depends upon the insulation material type used. The high demand for these cables from the end-users such as power distribution, oil and gas, telecom, aerospace, and defense is the major factor responsible for the growth of the high voltage cable market over the forecast period.

Installation insights

According to the research conducted and published by 'Grand View Research', "The overhead installation segment accounted for the largest revenue share in 2020, with around 64 percent market share. This technique is the widely used approach across the world and is the easiest and cheapest form of installation, and is mostly adopted in countries with a lower population." However, countries with a high risk of natural calamities such as earthquakes and floods tend to have overhead cable installation.

The underground installation segment is expected to expand at the highest CAGR over the forecast period. The underground cable installation lowers the maintenance costs, incurs fewer transmission losses, and hence, effortlessly sustains the power loads. The developing countries such as India, China, Vietnam, amongst others are spending a significant portion of their GDP on infrastructure development.

End-use insights

The energy and power segment accounted for the largest revenue

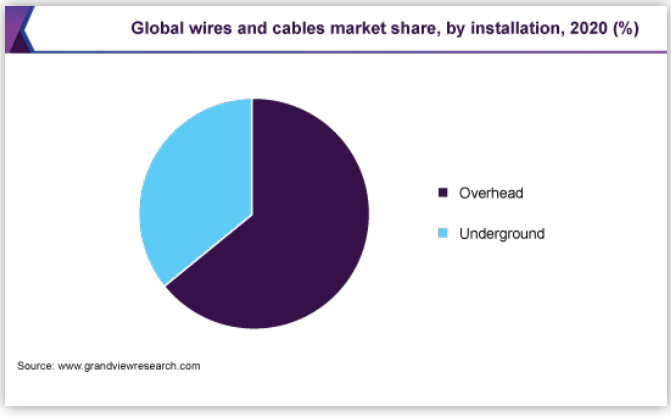
share in 2020, with around 37 percent market share. Several technological upgrades such as shifting the old transmission lines to high/extra high voltage lines to avoid the transmission losses are been made in the electricity T&D ecosystem. These changes aim at making the ecosystem stable in contradiction of the alternating nature of renewable sources of energy. Moreover, the introduction of new methodologies such as synchronised charging of electric vehicles and net metering for solar homes have aggressively affected the utilities sector. However, the growing renewable power capacity and energy generation have further augmented the need of countries to interrelate their transmission systems.

Owing to factors including infrastructure development, economic growth in developing countries, and increasing internet penetration, the wire and cable market is anticipated to grow over the forecast period.

Regional insights

Asia Pacific accounted for the largest revenue share in the wires and cables industry in 2020, with a 37.2 percent market share. The demand for wires and cables is observed to be stable in North America; however, the European region is expected to grow over the forecast period owing to initiatives such as Digital Agendas for Europe 2025.

The market in Asia Pacific region is anticipated to expand at the highest CAGR of 4.7 percent over the forecast period. The growing demand for light, power, and communication is anticipated to fuel the market over the forecast period. The government initiatives such as "Make in India", and "Go Green" policy is expected to drive the market in India. According to the Indian Electrical Equipment Industry Mission Plan 2012-2022, the government of India has planned to make the country one of the electrical equipment producers and obtain productivity of US$ 100 billion by matching the exports and imports, hence driving the demand for cables over the period 2012-2022.



Aakash Powertech is Manufacturers Authorised Business Associates / Channel Partner & Stockist of Electrical and Renewable Energy Products.

aakash powertech
power channelling solutions
AN ISO 9001:2015 & CRISIL RATED COMPANY

YOUR IDEAL PROJECT PARTNER

AUTHORISED CHANNEL PARTNER

POLYCAB
Connection Zindagi Ka

- EHV Cables (220KV)
- HV/MV Cables
- LV Cables
- Instrumentation Cables
- Solar Cables
- Elastomeric Cables
- PVC Flexible Cables
- Fire Survival cables
- Fire Alarm cables
- Oil Rig Cables
- Uninyvin Cables
- Other Specialty Cables
- Thermocouple Cables

MUMBAI (H.O.) : 501/505, A Wing, Express Zone,
W. E. Highway, Malad (East), Mumbai - 400 097, India.
Tel : +91-22-6144 1600 | Email : info@aakashpower.com
www.aakashpower.com

We believe in designing energy-efficient, low smoke and sustainable wires

Industries are setting standards and norms which must be followed in terms of product features and manufacturing.

Bhushan Sawhney,
Executive President & CBO (LDC), Polycab India

Discussing the government's push towards boosting the concept of green wire in Indian electrical and power sector with EPR Magazine, Bhushan Sawhney, Executive President & CBO, (LDC), Polycab India talks about initiatives taken by Polycab, in achieving the same.

How are the present energy trends impacting the demand for green/sustainable wires and cables?

India may be staring at electricity shortages in the coming months, because of coal stocks at most of its power plants. This can be taken as a gentle warning from nature to reduce our dependency on non-renewable source of electricity production - Coal. The entire electrical infrastructure will slowly shift to green and renewable resources. India is going to see a power surge in the coming future due to the sharp GDP and economy growth. There has been a rise from 620 units per capita in 2010, to 1340 units per capita in 2021; and it is expected to grow at a sharper rate in the coming future. To be able to withstand this rise, the infrastructure will have to be of the utmost quality, and we can't have a huge quantity of non-sustainable and hazardous products in our system. All these factors combined with increase the demand for green wire.

The government is planning to promote green transmission. What are your views on this?

Government has taken various initiatives to promote and support green transmission and production in India by investing in renewable energy sources. The vast solar field established in Andhra Pradesh is a standing example of this feat. The government has planned for several nuclear plants, windmill fields, hydel plants, and solar fields to reduce dependency of coal operated thermal power plants.

Similarly, the government has come up with IGBC norms, which has set several mandates and requirements for a building to be sustainable, eco-friendly, and safe. Apart from IGBC, we have LEED certifications, which have set several international standards for green and eco-friendly buildings and constructions. It would not be wrong to say that the government has gone all in to promote and support green transmission and production.

What measures are being taken by the industry to ensure the maximum application of green cables for safe transmission?

Industries are setting standards and norms which must be followed in terms of product features and manufacturing. A few industries are already moving towards green and sustainable operations, while others are being made to do so by government standards and regulations.

The approval list that the industries follow for selection of products and vendors, are being edited to accommodate only those products who leave the least carbon footprint over the ecosystem. Additionally, the wires and cables industry are phasing out old, and hazardous commodities. Polycab India Ltd. already took the lead by developing green wires, the concept of green wire is built on the fundamental premise of mitigating environmental damage enabling sustainability and ensuring consumer safety. They are all eco-friendly, lead-free and RoHS (Restriction of Hazardous Substances Directive) & REACH compliant (Registration, Evaluation, Authorisation and Restriction of Chemicals). These best-in-class wire are designed to be energy efficient, recyclable, emit low smoke and emit fewer toxic gases.

What are the opportunities and challenges in promoting/increasing adoption green wires/ cables for efficient supply?

The recent international steps taken for climate control and to reduce the global pollution will serve as a bright

GREEN ENERGY SHIFT IN ELECTRICAL AND POWER SECTOR

BALAJI SWITCHGEARS

- *Distributor & System Integrator of Industrial Automation & Switchgear Products.*
- *Globally Renowned Brands.*
- *Strong Sales/Technical/Accounts/Logistics Support.*
- *Over 9,000 Satisfied Clients Across the Globe.*
- *Over 25,000 Business Transactions Every Year.*

Redefining Electrical Distribution Since 1990

LV SWITCHING & CONTROL GEARS

Schneider Electric | socomec Innovative Power Solutions

ACB | MCB | MCCB | RCCB | RCBO | MPCB | Contactors | Relays | Changeovers ATS | Distribution Board

CONTROLLING & SIGNALLING

Schneider Electric

Tower Lights | Pushbuttons | Pilot Lights | Foot Switch | Buzzer | Pendant Station | Joystick

INDUSTRIAL PLUG & SOCKET

Schneider Electric

Insulated Plugs | Insulated Sockets | Metal Clad P&S Enclosures with P&S | Receptacles Combinations (Kaedra)

ENCLOSURE SYSTEMS

RITTAL

Wall Mounted | Floor Standing | SS Enclosures | Cooling Units | Filters

METERS & CAPACITORS

Schneider Electric | socomec Innovative Power Solutions

Meters | EMS Systems | APFC Panels & Relays | Detuned Reactors | Capacitors

AUTOMATION

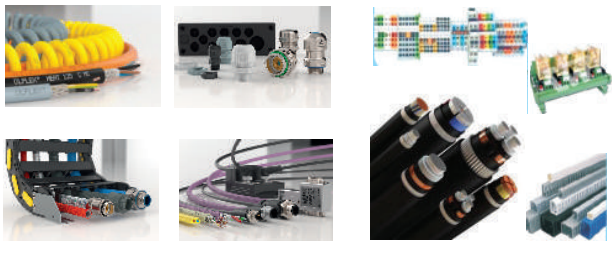
Schneider Electric | OMRON

PLC | Drives | HMI | Power Supplies | Servo | Encoder | Timer | SSR | Limit Switch | Level Controllers | Soft Starters

WIRES, CABLES & ACCESSORIES

KEI | LAPP | TRINITY TOUCH | connectwell Terminal Block & Accessories

Wires | Cables | Conduit Pipes | Glands | Terminal Blocks | Din Rails | Wire Ducts | Relay Cards | Tools & Accessories



MARKETING OFFICE:
Plot No. 70,
Building A-13,
Rama Road,
Najafgarh Road,
New Delhi-110015

Contact :
+91-11-25910803,
25910804
25910986

HEAD OFFICE :
2006,
Katra Lachhu Singh,
Bhagirath Palace,
Delhi-110006

Contact :
+91-11-23860986,
23874519,
23873969

E-mail: mktg@balajiswitchgears.com

Website: www.balajiswitchgears.com

follow us on:

opportunity for products like Green Wires. After the Paris Agreement, all countries are moving hand in hand to reduce their carbon footprint by 30 percent by 2025. Old wires and cables may create land and air pollution however green wire are eco-friendly recyclable and hence it can be reused.

The biggest challenge is awareness. People are not aware of the danger the entire environment is facing. Though countries are organising meets and agreements on climate change, citizens are still not awareofthe serious issues and hence just ignore the fact and benefits of green and eco-friendly commodities.

How do you view the pricing difference and benefits of switching to green cables and sustainable wires?

The green wire is up to 20 percent energy efficient owing to the heat retardant capability of the wire. At the time of purchase, the green wire may incur a marginal cost, but the operating cost of green wire in long run would be much lesser than a normal wire and overall, it will prove to be cost efficient. Additionally, every individual should be responsible to take care of the planet and educate the coming generation, to adopt eco-friendly products and services. It may be expensive today, but it will save energy in long run and will givebetter future.

What disruptions do you foresee in achieving a decentralised model of energy with green cables?

Wires and cables are simple yet technical products. Simple in terms of raw materials used for green wire is almost 100 percent pure copper. I don't expect a disruption in case of the conductor because copper has been the most common conductor since inception, and it will continue to do so. However, as the copper prices are on a very steep rise, researchers are trying to develop alloys with the same conductivity as copper. If their quest becomes successful, it will be a huge disruption, considering the insulation, the field is vast to explore. Synthetic compounds arebeing fabricated and tested. A new insulation with better flexibility, lower dielectric constant may prove to be a disruption.

Digielec Bharat 2021 showcases new technologies for indian electrical industry

The event's focus was primarily on future trends in energy, green hydrogen, electric vehicles, e-mobility and carbon net-zero.

Digielec Bharat 2021, a virtual exhibition by IEEMA showcased the capabilities of Indian Electrical Industry in the Global Marketplace. It will be spread over 7 days with 10,000+ visitors, 100+ buyers, 60+ participating companies, 50+ eminent speakers and 7 conference sessions.

Vipul Ray, President, IEEMA expressed, "India has committed to net zero carbon content by 2050. What it means for the industry and the business opportunities that it provides, will be discussed and put on the table for the first time. The electrical industry has the capability of meeting the sourcing requirements of the Electric Vehicles ecosystem. Eminent experts shall discuss the emerging business opportunities in the EV Supply Chain; EV Charging Infrastructure, Green Hydrogen and Energy Storage."

Vijay Karia, Chairman, Digielec Bharat articulated, "The world is changing. The business and the mode of doing business is changing, and most importantly technologies are changing. We want to bring about this realisation into the minds of the Indian electrical industry, where they need to upgrade their products to match international standards, and meet up with the expectations of newer demands and upgraded technologies. We are seeing the huge advent of electric vehicles and therefore requirement for electric charging stations, apart from the electrical components of the vehicles. Most companies are focusing on renewable energies and are moving away from fossil fuels. The climate change across the world has led to a realisation that we no longer can afford to emit Carbon into the air, as this will be a disaster for the world. Digielec showcases future trends like Green Hydrogen, e-Mobility, EV Charging technology."

Charu Mathur, DG, IEEMA stated, "There are so many companies around the world wanting to set up their manufacturing facility in India. This exhibition will give them that platform to converge and invest in India."

AXIS™ TESTED PRODUCTS EFFICIENT SERVICE TRUSTED BRAND

Electrical Fire Safety starts with certified Earthing & Lightning Protection, Use our 360°

Earthing & Lightning Protection Solutions for High Quality Protection you can trust.

Earth Rods

Materials:
- Copper Bonded Steel
- Pure Copper

Features & Benefits:
- Withstands 25Kamp Short Circuit Tests.
- Electrical Resistivity according to IEC Standards
- Corrosion & Climatic Aging tested
- Lasts Longer than 30 years

Lightning Arresters

Materials:
- EC Grade Copper & Aluminium

Features & Benefits:
- High Conductivity
- Resistant to Corrosion
- Easy to Install

Earth Pits

Materials:
- Plastic Earth Pit & Concrete Earth Pit

Features & Benefits:
- Available in variety of sizes
- Withstands upto 5000 kgs
- Light Weight Plastic Earth Pit

Earth Enhancing Compound

Features & Benefits:
- Available in varied pack sizes
- Advanced formula to meet IEC Standard requirements
- No Maintenance Required

For more information, contact us at sales@axis-india.com

AXIS CELEBRATES 25TH ANNIVERSARY

AXIS ELECTRICAL COMPONENTS (I) P. LTD.

Registered Office: AXIS House, Plot No. 104 C
Administrative Office: Plot No. 149 BCD

Kandivali Co-op Industrial Estate Ltd., Kandivali (W), Mumbai – 400067, Maharashtra, India.
Tel: +91-22-67756000

www.axis-india.com

Addressing fire security risks is the need of hour

Rather than promoting or developing flame-retardant or flame resistant wire, we should be focusing more on zero-smoke wires.

Shreegopal Kabra,
Managing Director, RR Kabel Group

ShreeGopal Kabra, Managing Director, RR Kabel Group, in an interaction with EPR Magazine, highlights the challenges and myths towards safety in wires and cables.

How are the present energy trends impacting the demand for green/ sustainable wires & cables in India?

There is a positive and growing demand for wires and cables. But when it comes to green, my question is how many people are familiar with the concept. When we talk about green wires and cables, RR Kabel are the only group of companies that provide 100 percent rich and green wires. Moreover, rather than focusing on or talking about Green, we must also look at the safety aspects. So, green might be the trend, but safety remains to be a critical concern.

What kind of measures are in place to ensure safety through cables and wires?

Before talking about the safety norms, we must recognise and get aligned with the present scenario and developments taking place in India, and in the world. Today, globally, if we look at the high-rise residential and commercial buildings, they use Low Smoke Zero Halogen (LS4s) wires, whereas in India, we are still using PVC wires. PVC is not suggested to be implanted in electrical products whether residential or commercial premises, because it's hazardous and harmful for human lives, due to the smoke that follows the fire accident; and PVC wires tend to produce great amount of smoke resulting into loss of visibility, gas emission which further create difficulties in vision, and in breathing.

Apart from LS4s, people also prefer to use Flame Retardant Low Smoke (FRLS) Wires. I would like to highlight that, we are one of the largest manufacturers for cables and wires. While talking about fire safety, there are wires such as FRLS wires, and building wires. FRLS is nothing but modified PVC. If an FRLS wire will generate 70 percent smoke whereas a PVC wires generates 100 percent smoke. So although there is a percentile difference, but the impacts remains to be the same, whereas, the LS4s wires, the smoke non-toxic, non-corrosion and release 4 percent smoke only.

In a nutshell, when it comes to safety, it's imperative to look into these aspects and prefer to have installed LS4s wires in electrical premises.

What are the existing challenges in promoting these wires for appropriate application?

We, RR Kabel, as a company are promoting these wires, but we need more support from the industry as well, as other companies' claim that wires usually don't catch fire. We must understand that no wire exist which can't get a fire. There are some wires in the market that generates less smoke, but they too can experience fire instances and fire accidents. Here, a wrong myth is being promoted which itself is a huge challenge for us to deal with, and we, as a company are making possible efforts in promoting the safety aspects into the consumer group and among the industry. Cost is another concern for the consumers.

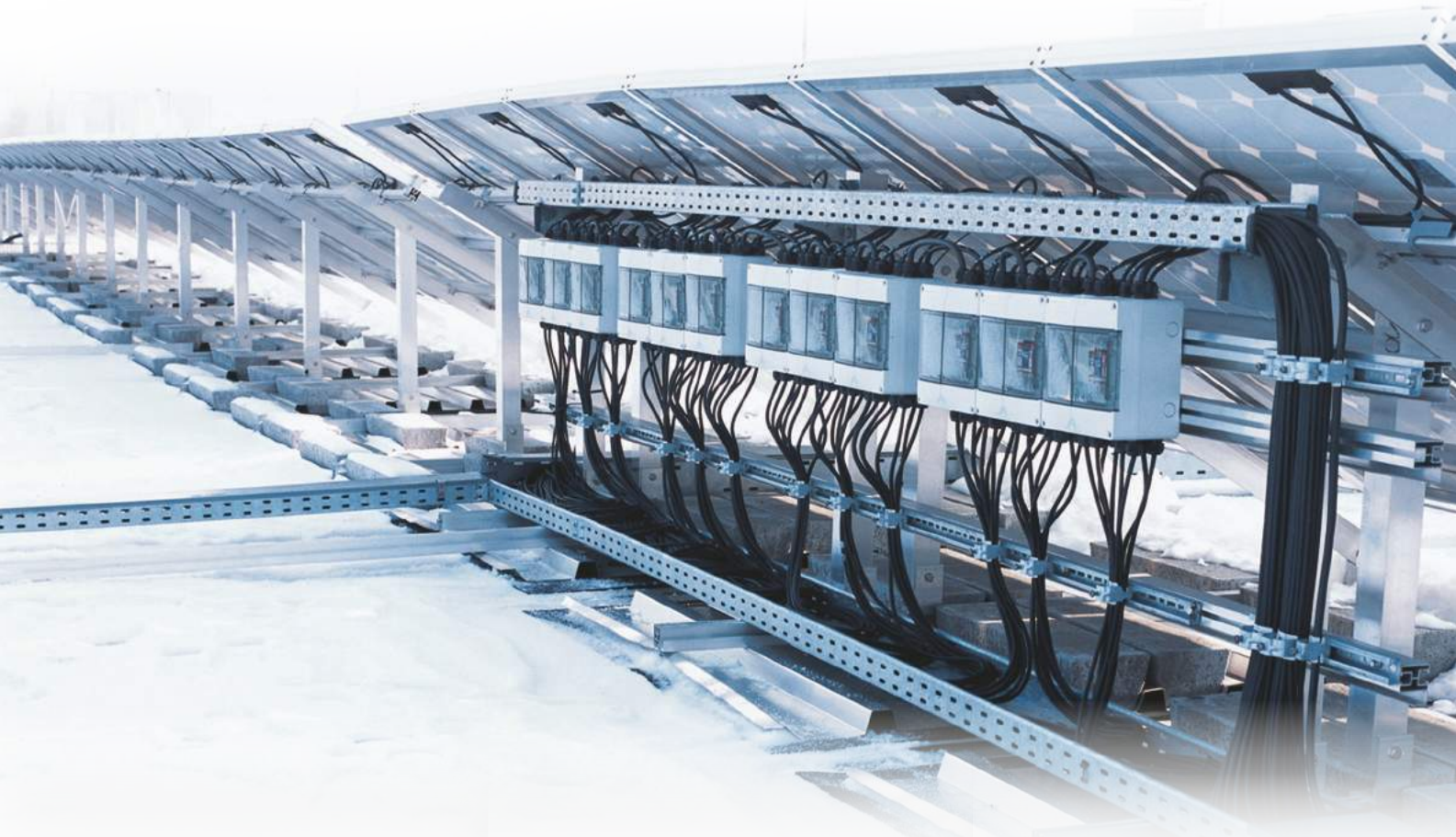
But, that should not be a major concern as the pricing difference is not much. If you look at the primary cost, any project or any building costs, ₹ 2,500 to ₹ 3,000 per Sq. Ft., of which 10 percent (₹ 300) is towards the electrical cost; so, what, will

GREEN ENERGY SHIFT IN ELECTRICAL AND POWER SECTOR

Your Partner

For Cable Support, Cable Routing and Earthing Solutions

OBO BETTERMANN



Engineered Cable trays

Surge Protection & Earthing Systems

Cable Routing & Support Systems

+91 89399 04000 | info@oboindia.com | www.oboindia.com

Building Connections

be the ideal cost being allocated for the installation of cables and wires. Here most of the people ignore the quality and safety aspect as this product is usually assembled behind the walls as a part of interior construction.

These issues are a result of lack of awareness and lack of knowledge, and increased awareness pertaining to the safety and the critical and vital aspects of them will further allow the consumer to acknowledge and install quality wires cables in any building. This applies to the consultants, HVAC engineers, MEP engineers, architects and the builders. An owner who visits the job sites to verify the lighting, switches, paints, walls, etc; but nobody really looks at the wires. So, this is the critical challenge.

Panel wires are used in the electrical panel board, and building wires are used for installations in a residential or commercial building. These panel wires and the house wires do not have a single steller. If you look at the panel wires of UK and the US, they are BS63 compliant, and their building wires are BS606 compliant; whereas, in India, we have only IS-694. If you look closely, people in India are making Class-V conductors for panel wires. Since copper infusion in those wires is less cost of the same is reduced by 4 – 5 percent. So, even if your energy cost is less and the risk of fire accidents is more, people are still opting it and the companies are producing them.

By we, at RR Kabel don't sell or market any such wires which are harmful and has risks. But when we talk about projects, we started using Class-V conductors as our clients demanded to have them installed in their project premises; so, we are not really looking at the safety aspects. I was in discussions with the BIS and convinced them to look at the safety aspects, to which they agreed, but then again there wasn't any additional support. And this is a concurrent challenge, as the concept of flexible wire itself is wrong as the term doesn't really exist in the world's electrical industry. In India, we have the lowest standards for electrical products, and not just in the wires and cables but also in any electrical equipment or accessories.

How do we address the difference and create awareness about flame retardant and flame resistant wires?

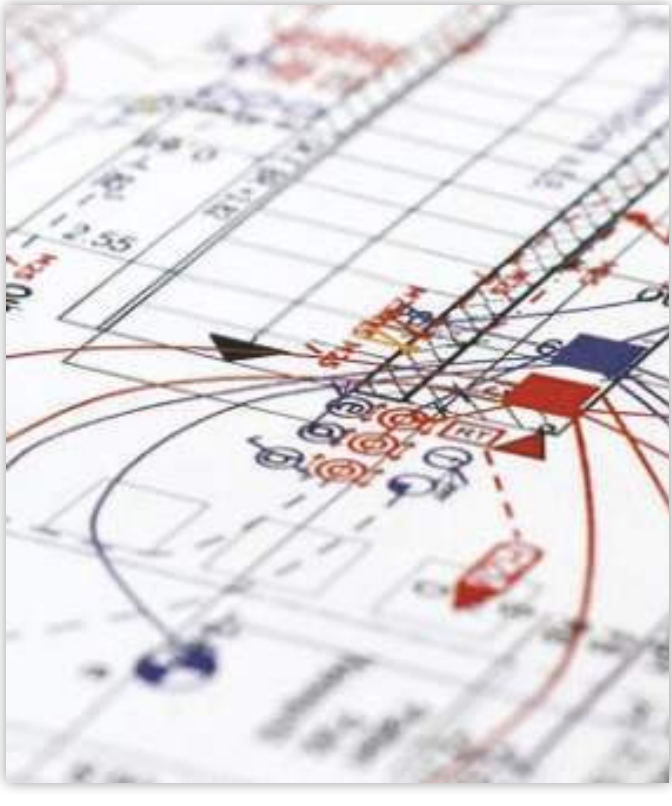
Terms like frame retardant and flame resistant are the marketing terms. Any wire, has to have capabilities of zero-smoke. Smoke is the biggest challenge to deal with, especially after the fire incidents and accidents. Any wire can fall prey to fire, but we need install wires that cause or release minimum smoke or zero-smoke, and wires like PVC and FRLS tend to release maximum amount of smoke after a fire incident or accident. So, rather than promoting or developing flame-retardant or flame resistant wire, we should be focusing more on zero-smoke wires.

What can be the solution to meet these challenges?

There's only one solution that the government should create laws to address these issues on a regular basis. An appropriate and stringent law and regulation in place, along with specific norms will further ensure that these specifications are thoroughly followed.

How is RR Kabel moving ahead in bringing in new products?

We are constantly growing as a group of companies, and in terms of businesses, we are experiencing very good exports. We are making best possible attempts to maintain a balance, and believe that may be in some years, or in a decade or two people will comprehend to critical safety aspects and will prefer to have them addressed in an appropriate manner.



PROFAB ENGINEERS PVT. LTD.

Joint Venture with PUK Werke KG, Germany

Smart Cable Management Systems

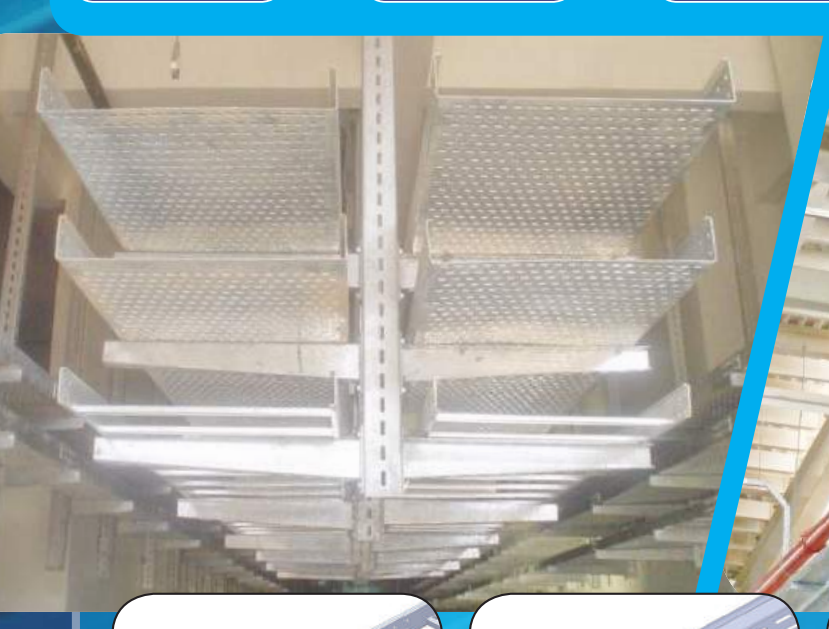
ISO 9001:2015 Certified

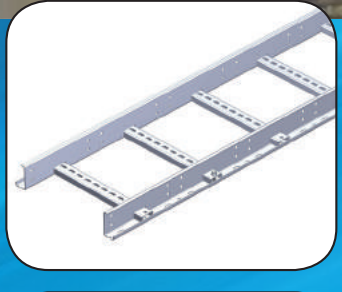
Tested in accordance to IEC 61537

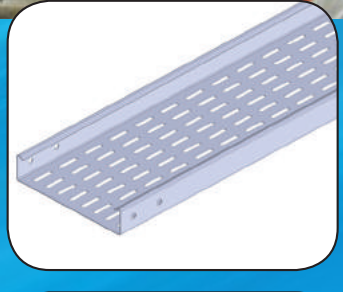
CE

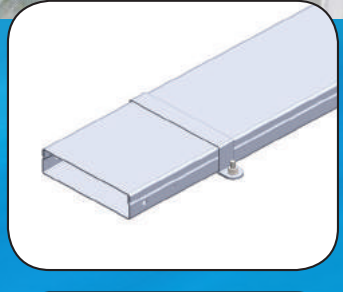
EURO CERT

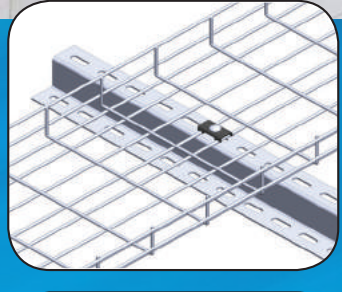
PUK PROFAB

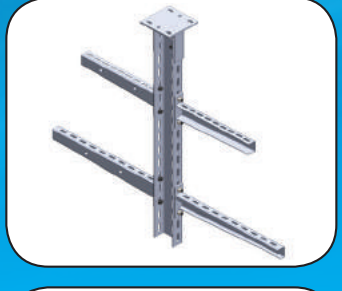


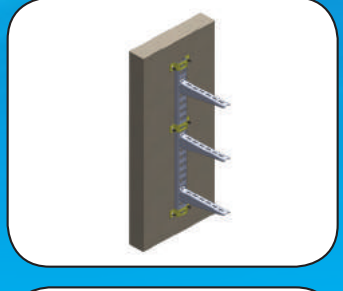


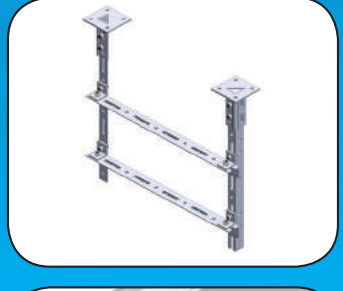


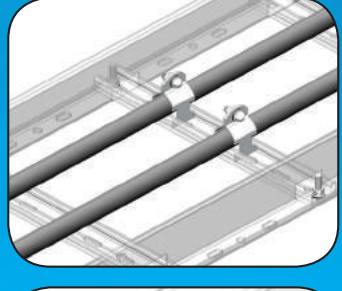


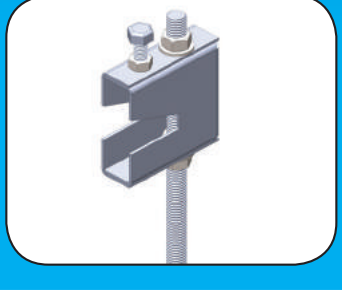


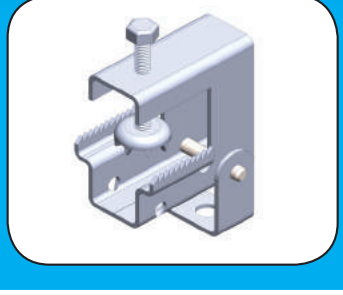


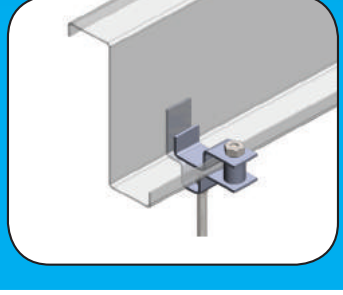


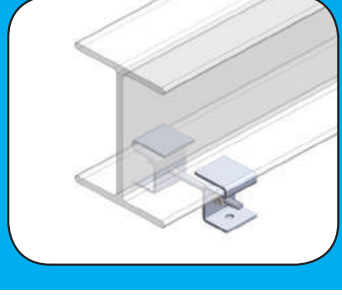












Head Office: W-310,T.T.C. Indl. Area Road, Service Road Adj. to Water Pipeline Road, Opp. Anthony Garage, Rabale, Navi Mumbai - 400 701.

• Mob: +91-70456 99102 /70456 99103 •

• Email: enquiry@profabengineers.com •Web: www.profabengineers.com

Promising developments in utility-scale batteries and green hydrogen

The overarching ambition to commercialise a green hydrogen economy in India will soon need to be shaped by concrete policy and funding support.

Introduction

In August 2021, India crossed a milestone of 100 gigawatts (GW) of installed renewable energy capacity. Solar (45GW) and wind power (40GW) comprise the majority of the installed renewables capacity. A transition in India's electricity sector is under way with growth of low cost renewable energy capacity, targeted to be 450GW by the end of this decade.

The challenge of installing 450GW of variable renewable by 2030 will be accompanied by another big challenge of integrating them into the grid.

In our report from February 2021, we highlighted three key technology solutions that should be looked at to support integration of large-scale variable renewable, flexible operation of coal-fired power plants, battery storage and green hydrogen.

The flexible operation of the coal power fleet is a solution that would make optimal use of the country's existing coal-fired generation resources of 210GW, whilst implementing batteries and green hydrogen would entail the setting up of entirely new industry value chains.

But IEEFA observes a very positive trend of the declining cost of battery storage globally. The cost curve in battery storage globally has come down dramatically, from US$1,100/kWh in 2011 to US$137/kWh in 2020 for a stand-alone lithium-ion battery system. It is further projected to drop by another 55 percent to US$58/kWh by2030.

Although for India the cost of utility-scale battery storage has remained prohibitive in the absence of a domestic manufacturing value chain and the right price signals in the electricity market, there are strong indications that the market is shaping up for utility-scale batteries.

Momentumin Battery Development

Tata Power's 10MW/10MWh (1-hour storage) battery in its Delhi distribution network is currently the only grid-scale battery operating in India. During a recent visit to Tata's battery storage facility, Delhi's Power Minister, Satyendra Jain, talked about a plan to create storage capacity of 600MW in Delhi in the form of 'power banks'. This would be a huge step up from the city's existing 10MW/10MWhbattery storage capacity.

Tata Power bagged another big battery storage project in the city of Leh (in the newly formed Union Territory of Ladakh) comprising 50MWh of storage capacity co-located with 50MW of solar capacity. Planned to be commissioned by March 2023, this will be India's largest grid-scale battery. Tata's 50MWh battery will be part of the planned mega 13GWh grid-scale battery storage system in Ladakh.

India's state-owned entities have now also come into the fold for facilitating grid-scale battery storage development.

In the last couple of months, the Solar Energy Corporation of India (SECI) and NTPC has rolled out tenders for developing 2,000MWh and 1,000MWh of battery storage capacity, respectively. SECI and NTPC have built strong track records as credible counter parties by enabling renewable energy capacity development of more than 40GW. IEEFA deems the involvement of credible government-owned counter parties vital to enabling capital deployment in the development of battery storage.

R.K. Singh, the Indian Power Minister, talked about doing a mega 4,000MWh tender for battery storage in Leh and scaling the capacity to 12,000MWh in future. The Minister previously also indicated that 4,000 MWh of storage will be used for ancillary services at four Regional Load Dispatch Centres (RLDCs)–1,000 MWh each for grid balancing and frequency regulation requirements.

The first few utility-scale battery storage projects will incur material teething costs. These include the costs of learning from the testing, deployment and commissioning aspects of the projects. Also, there will be important lessons to be learnt from the contracting side of battery storage systems. Contracts will need to be designed to incorporate equipment degradation, temperature concerns and associated liquidated damages (LDs). On the testing side, the system will need to

EATON

Powering Business Worldwide

What Matters:

Delivering safe, reliable and efficient power where it is needed

"Innovative and market-leading power distribution, circuit breaker, Bussmann series fuses and power backup solutions **From Eaton electrical manufacturing facility in Pondicherry."**

Rugged and innovative MV switchgear solutions

Type-tested and automation ready RMUs upto 36kV

Vaccum circuit breakers designed for every application

630A to 4000A with 50 KA STC in Fixed type and Drawout type

High quality MCBs range for DC applications

PLS6 DC & PL10-DC-IN MCBs in 1P, 2P and 4P

World-class MCBs with innovative functions

Rating 1A to 125A
Breaking capacity
10kA,15kA & 25kA

Widest range of Eaton RCDs - RCCB, RCBO and add on RCD modules

2P, 3P, 3P+N and 4P RCDs with rating upto 125A

Best in class DBs which blends with all interior

SPN, TPN, TPN with MCCB incomer upto 250A, Flexi, 7 segment and customized DB

Best-in-class circuit protection solutions by Bussmann

LV MV HV EV PV range and combiner box for solar applications

Designed and proven for Indian working environment

UPS solutions from 600VA to 9.6MW range

Efficient, modular, scalable and resilient with lowest TCO

EatonElectricalIndia@Eaton.com

893 983 7756

be tested for Automatic Generation Controls (AGC), up frequency support, down frequency support and voltage protocols.

Working through these things will potentially lead to some delays and additional costs for the developers or solution providers. Accelerating the first few projects inour grid would enable a more robust set-up for the Indian market. However, the initial projects might require flexibility on foreign content in terms of equipment for the first few projects and localization of the industry could then follow.

The government of India is progressing towards creating a localised value chain for the battery industry. Battery manufacturing is critical to the battery value chain, is now aided by the government's production-linked incentive (PLI) scheme. In May this year, the government approved an outlay of ₹ 18,100 crore (US$2.5bn) to facilitate battery manufacturing capacity of 50 GWh.

In another policy development, the Central Electricity Regulatory Authority (CERC) aims to reform the frequency control and ancillary services (FCAS) market by bringing battery storage and pumped hydro storage (PHS) into the ambit of FCAS regulations. This will value the speed and accuracy of grid balancing services that batteries and PHS could provide at competitive market prices, allowing a clear revenue stream for the asset owners of these storage systems.

Also, interstate transmission charges have now been waived for battery storage and PHS systems commissioned until June 2025, in addition to solar and wind assets. This will allow storage systems to operate viably to support inter-state grid networks.

India's market potential, aided by the government's ambition and policy support to decarbonise India's power sector, is driving momentum in battery manufacturing in India.

Energy Storage Tenders Need Regulatory Framework

In countries that have successfully developed Battery Energy Storage Systems (BESS), like the U.S., the UK, Europe, Australia and Japan, policy and regulatory interventions by governments have played a pivotal role in developing the battery storage industry. Specifically, the interventions of the Federal Energy Regulatory Commission in the U.S. and the Australian Energy Market Commission (AEMC) helped create demand for BESS services and a level playing field for BESS alongside the conventional resources available in the sector.

The lack of proper regulatory framework in India for BESS prevents development to battery storage. To remedy this, the Ministry of Power and regulatory bodies of India need to establish regulatory measures that clarify the commercial contract framework, the medium- to long-term roadmap for BESS requirement, inclusion of BESS in power and network planning, proper bid/ tender frameworks, etc. Such anintervention from the Indian government and regulators would enable sustained development of the battery energy storage sector.

Financing remains a key challenge

On 15 August 2021, Prime Minister Modi of India launched the National Hydrogen Mission with an ambition to make the country a hub for green hydrogen. The overarching ambition to commercialise a green hydrogen economy in India will soon need to be shaped by concrete policy and funding support.

FTI Consulting's policy brief recommends creating a national hydrogen transition fund for national projects using carbon transition taxes that could provide subsidy or incentive funding. A leading example of state funding for green hydrogen is the Australian Renewable Energy Agency (ARENA). In May 2021, ARENA topped up its ongoing funding for commercialising green hydrogen projects by AU$100m (US$72.3m) for three projects with 10MW electrolysers. This is in addition to 16 R&D projects, as well as feasibility studies into large-scale projects and smaller-scale demonstrations looking at renewable hydrogen production, power-to-gas (PtG), and hydrogen mobility.

The Indian Renewable Energy Development Agency (IREDA) could look to play a similar role in the proliferation of green hydrogen projects by supporting pilot projects and eventually to commercial scale-up.

Indian renewable energy developers have successfully raised debt funding through the international green bonds market. As numerous developers look to derive value from the synergy of renewables and green hydrogen, the international green bonds market will remain a key avenue for funding.

Sustainability-linked bonds, which force issuers to pay higher coupon rates if they fail to achieve pre-set company-wide targets, are emerging as an alternative instrument to green bonds. Enel of Italy and Total of France are two leading European developers that have accessed green debt funding using sustainability-linked bonds. Both these prominent global energy companies along with numerous others are actively playing a part in India's energy transition – a promising sign for the clean energy sector.

There is substantial activity in the Indian battery storage and green hydrogenmarkets – both of which are critical for India's clean energy future and energy security. And they could scale up rapidly as has happened in other global markets in the last couple of years.

Expertise shared by:
Kashish Shah,
Energy Finance Analyst, IEEFA
Website: www.ieefa.org

इस परिवर्तनशील समय में निर्यात के लिए दोहरा बीमा

Double assurance for exports in these volatile times.

निर्यातकों के लिए ऋण जोखिम बीमा
Credit Risk Insurance for Exporters

एवं /&

बैंकों के लिए ऋण जोखिम बीमा
Credit Risk Insurance for Banks

आर्थिक अस्थिरता के इस समय में निर्यात के अनुकूल ईसीजीसी के साथ ऋण जोखिम का बीमा कराएं।

In these times of economic instability, insure against credit risk with ECGC's export-friendly credit risk covers.

अधिक जानकारी के लिए ईसीजीसी के निकटतम कार्यालय से संपर्क करें।

For more information contact your nearest ECGC office.

ई सी जी सी लिमिटेड
(भारत सरकार का उद्यम)
पंजीकृत कार्यालयः एक्सप्रेस टावर्स, 10वीं मंजिल, नरीमन पाईन्ट, मुंबई–400 021 टेलीः 6659 0500 / 6659 0510, वेबसाइटः www.ecgc.in

ECGC Limited
(A Government of India Enterprise)
Registered Office: Express Towers, 10th Floor, Nariman Point, Mumbai - 400 021, India. Tel : 6659 0500 / 6659 0510.
Website: www.ecgc.in

IRDAI Regn. No. 124 | CIN No. U74999MH1957GOI010918 | @ecgclimited

ADVT. NO. : NMD/197/214

आप निर्यात पर ध्यान केन्द्रित करें, हम जोखिम से रक्षा प्रदान करेंगे. • You focus on exports. We cover the risks.

Indian electrical industry is on a cusp of solar revolution

"India may have successfully addressed the quantitative gap in demand-supply, but the qualitative gaps are far from resolved."

Manas Kundu,
Director – Energy Sources,
International Copper Association India (ICA India)

Discussing the trends that are enhancing the demand supply scenario in India's energy sector, Manas Kundu, Director – Energy Sources, International Copper Association India (ICA India), highlights the critical role of renewable and EVs in shifting towards the Green energy in India.

How do you look at the present demand-supply trends of power in India?

India's energy story in recent times is no less than an extraordinary success, but sustaining the benefits of this success remains to be a key concern. Purely, in terms of availability of power, in recent years, hundreds of millions of Indians gained access to electricity; dedicated programs have helped rapid adoption of highly efficient LED lighting in most households; there is a massive expansion in renewable sources of energy, predominantly led by solar power. No doubt, there has been a tangible improvement claimed in areas of electricity supply to citizens. However, there are quite a few cracks in the graph that need to be fixed if the graph must continue the trajectory.

India is a service economy. As compared to other countries in its league, India's rate of urbanisation has been noteworthy only now. However, the absolute numbers are huge with about 270 million people who will join the urban areas in the next decade. Given this, the rate of energy demand is likely to grow at about three times the global average.

Lack of quality, reliable and safe supply of power is the key concern in rural as well as urban areas. Financially weak power distribution companies, the gaps in the implementation of key regulations and standards, along with low awareness and capability gaps at all levels in the power sector pose challenges to the sustainability of growth in power generation and efficient distribution.

GREEN ENERGY SHIFT IN ELECTRICAL AND POWER SECTOR

What are the emerging trends in the power & RE sector for energy efficiency?

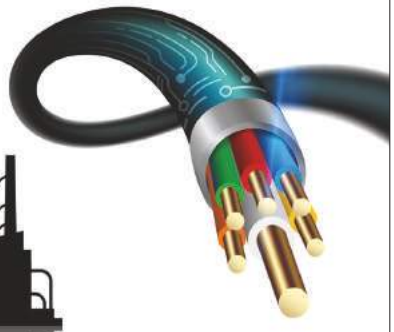
In the case of power generation, the next decade is that of Solar. The solar PV market in India is set for an explosive growth. The non-conventional energy sector in India received an FDI of US $10 Bn, between April 2000 and March 2021. As of today, solar accounts for less than 4 percent of India's electricity generation as opposed to coal which accounts for 70 percent of India's power. India's policy suggests a target to reach 450 GW of renewable capacity by 2030. While the rise of utility-scale solar projects, supported by manufacturing and tariff incentives, may help to increase generation, but the availability of pairing technologies for storage and efficient distribution will drive sustainable growth. Concerns on land acquisition, regulatory approaches, capital availability will have to be addressed to drive the large-scale implementation. The Ministry of non-renewable Energy has undertaken the Phase II of implementing Roof Top Solar with an aim to add 4000 MW in residential areas by 2022. Installed renewable power generation capacity has gained pace over the past few years, posting a CAGR of 17.33 percent between FY16-20.

To reap the benefits of efficient and green power, we must pay attention to building a strong foundation which is the standards, regulations, and quality of infrastructure we are building. Power distribution is a key pivot in "minimising of carbon emissions". AT&C losses of the electrical grid are a major contributor to carbon emissions. The use of energy efficient low-loss transformers for buildings, solar and wind energy farms are key to helping green power ecosystems reach their full potential.

Energy efficiency is driven essentially by greater awareness and the adoption of better technologies. The cost-first mindset of buyers, whether industrial or in the consumers market, is a key hindrance. This is further slowed down by the lack of enforcement of certain key standards to drive energy efficiency. Over the next decade, we will see greater awareness leading to a change in mindset and thereby, driving energy efficiency in every area. In fact, the trends of

100+
LEONI
ISO 9001 and 14001 : 2015, ISO 45001:2018 Certified

LEONI
The Quality Connection



LEONI Cable Solutions (India) Pvt Ltd, is a leading manufacturer of Wires, Cables, Cable Systems and related services for several market sectors like Transportation, Solar Energy and Process Industry. LEONI India is proud to bring state of art cable manufacturing facility which is an **ISO 9001 and 14001:2015, ISO 45001:2018 certified company.**

LEONI India factory manufacturers ICON brand products with application in Instrumentation, Control, Data and LV Power which finds usage in Industry such as Oil and Gas, Building and other Infrastructure. LEONI is the leading solution provider for Solar Power Generation for the Domestic & Exports market with the brand name SOLAR Energie Konnect 128 FLEX. With the state of Art Ebeam facility, it provides products for the Solar and Transport Industry.

Head Office:

Indospace Rohan Industrial Park
Gat No. 428, Village Mahalunge
Off Chakan Talegaon Road
Taluka: Khed, District: Pune, Pin – 410 501 India.

7030963540 leoni-cables-india@leoni.com www.leoni-india.com/en

miniaturisation, use of storage cells as a primary power source, longer life, and recyclability are further going to drive the innovations and commercialisation of energy-efficient technologies. However, energy efficiency must be coupled with reliability, quality and safety to achieve a meaningful value for the customers, as efficient equipment or kilowatt of power is of no use if it's not reliable and safe.

What are the major green initiatives happening in the conventional power sector?

Green initiatives in the conventional power sector are mostly centered on the effective and smart distribution of power. The focus is on reducing the T&D losses for power, which are among the highest in the world, to acceptable norms. This is also crucial for the survival and good financial health of DISCOMs. Upgradation of power distribution technology is a key challenge. The Transformer failure rates in India remains among the highest, while the life of the transformers being the lowest.

What are the challenges in implementing copper as an essential part in power / RE sector?

Smart Grids, Solar PV, Electric Mobility or Data Centers-the modern infrastructure demands reliability, safety, and sustainability of the new order. It is here the superior properties of Copper are complementary to our goal. From superior performance to high recyclability, Copper outperforms most other alternatives on every front. A change in mindset that values standards, quality, longer life, sustainability and better performance over lower upfront costs is crucial to sustaining India's growth in the future. Copper is an essential element to making sustainable gains in India's growth.

While the standards and regulations in India can be called upon as equivalent to some of the best, the adoption remains largely voluntary. Enforcement of standards, even in critical aspects such as electrical safety, continues to remain weak and largely unaccountable. Unless the gaps in regulatory policy and on the ground reality are addressed effectively, India's green energy infrastructure risks being built on a weak foundation.

With the government's push for sustainability and energy efficiency, how is ICAI regulating standards to have a safe and efficient shift towards green energy?

Over the last decade, ICA India has been working closely with the Central Electricity Agency (CEA), BIS, Forum of Regulators, Ministry of Power, Energy Efficiency Services Ltd (EESL) and many other regional and local organisations to create and implement standards.

In solar PVs, the layout, sizing, and transmission ability of cables is critical to the safe and efficient functioning of solar PV modules. In India, the wiring layout and management is guided by the National Electrical Code, and the guidelines provided by the Ministry of Renewable Energy. ICA India has been working closely with both the organisations in enabling better standards for safe and green building and power infrastructure including balance of systems in solar area.

Commtel launches CN-SHIELD, 360-degree protection for critical national infrastructure

CN-SHIELD is an AI solution that aims at bridging the security gap in the cyber-physical/cyber-critical systems.

Commtel, an engineering and technology solution provider recently launched its new integrated platform that leverages big data analytics to provide actionable intelligence for robust end-to-end protection to any Critical National Infrastructure (CNI).

CN-SHIELD is an artificially intelligent software solution that integrates all assets, monitors, assesses the data, and implements faster and cohesive 360-degree protection. It aims at bridging the gap in security in the era of cyber-physical systems. CN-SHIELD is implemented on Nybl's AI platform. It is an engineered system deployment that is customised, and purpose-built for a specific customer site. Using its unique C6Ai architecture it provides the customer with the power to collect data from myriad devices and systems on a single data processing platform.

"Today, when we are witnessing an increasing convergence between the digital and physical worlds, it is crucial for any CNI to detect physical manifestations of cyber events as well physical events that may impact the security and safety of their assets. CN-SHIELD will enable a CNI to achieve that objective. This offering demonstrates our capabilities in building software solutions based upon our accumulated domain knowledge", says Shriprakash R Pandey, CMD, Commtel.

CN-SHIELD is the first in a new line of AI-based solutions from Commtel for protecting the CNI and its ecosystem. The solution uses advanced ML/AI technology for timely delivery and action of threat intelligence, allowing CNI to optimise and secure its mission-critical assets and communications networks amidst the complexity of rapidly digitalising operating environments. CN-SHIELD will help CNI stay secure, enable them to tap into the power of their organisational data, manage their operations and security fundamentals. This significant development is a natural progression for Commtel, as over two decades, we have catered predominantly to customers in the CNI sectors. It is one more step in furthering our vision to help build a smarter, faster, and safer world."

ALTANOVA
GROUP
Advanced testing and monitoring solutions

TECHIMP isa IntelliSAW

Global Transformer Monitoring System

Smart Condition based Maintenance system GTMS analyzing the healthiness of most valuable asset in the Power System

GTMS is capable of:

Bushing Monitoring

- Absolute & Relative Tan Delta and Capacitance
- Leakage of each bushing

Dissolved Gas Monitoring (DGA)

Detected Upto 9 gasses

- Hydrogen (H2)
- Methane (CH4)

Partial Discharge Monitoring

- Partial Discharge
- Pulse shape
- Localization on arrival time

Generic Parameters Monitoring

- Line currents
- Oil temperatures
- Core and windings temperatures

ALTANOVA INDIA PRIVATE LIMITED
(Formerly ISA ADVANCE INSTRUMENTS (I) PVT LTD)

+91 120 478 5545
info.asia@altanova-group.com
www.altanova-group.com
C-33, GF, Sector-2, NOIDA-201301, UP, India.

Digitalisation in substation will lead to new horizons

By partnering and collaborating with OEM knowledge during review and implementation, it is possible to maximise the technology's potential.

Chhaya Bhonsale,
Chief - Technical Service, T&D, Tata Power

Explaining us the benefits of digital tools and technologies in a power substation, Chhaya Bhonsale, Chief - Technical Service, T&D, Tata Power highlights very interesting points and facts that will create new horizons in the Indian energy sector.

How are the present energy trends impacting the substation automation?

Energy consumption globally is increasing rapidly which is visible especially in the recent and present scenario how post Covid energy demand has gone up in India and globally. Substations are crucial nodes of a power system. Substation automation provides protection, automation and communication capabilities as a part of comprehensive substation control and monitoring solution.

Migration toward the future transmission and distribution substation is taking place; because of the desire to bring more automation and intelligence to the power grid network, to address many utility concerns; like as how to reduce operational expenses to meet new regulatory requirements, increased reliability, early detection of faults and quick diagnosis and restoration, improved worker safety, and enhanced utilisation of grid infrastructure. This significantly drives the demand and growth of substation automation in the coming period.

Owing to the need for upgradation and replacing an aging energy infrastructure, substation automation is best solution as it allows automatic and quick restoration of supply during any equipment failure, and minimise outages and its effects. These requirements are expected to drive the market growth for substation automation further.

Further, digitisation and automation have been the focus areas for the Indian power grid over the last decade. During this period, the utilities in India, deployed IEC 61850-based grid substation automation as initial phase and now migrating towards-fully digitalised substation.

What will drive the demand for digitalisation of substation in India?

The growth of the digital substation in Transmission and Distribution network can be attributed to growing infrastructural development in smart cities, increasing power demand with limited space availability, increasing demand for replacing traditional substation infrastructure, and increasing interoperability and safety.

Automation within the substation brings more visibility on the electrical network to the grid operator on real time basis. The more digitalisation in the substation level provides situational awareness of the equipment to operator/maintenance team for faster power restoration during fault and for data analytics post occurrence for further grid improvement to avoid such occurrences.

The digitalisation provide both tangible benefits such as reduction in space, reduction in copper cabling, less environmental impact (CO_2 foot print) and optimisation in resources as well as non-tangible benefits like improved personal and equipment safety, improved asset performance, lower fire hazards due to reduction of conventional wiring reduction in project commissioning time and least forced outage. These benefits will certainly drive the demand for digitalisation of substation in India.

Reliable power output and minimum T&D losses make the power sector stronger. What kind of digital products and solutions will help us achieve this?

Substation automation refers to using data from intelligent electronic devices (IEDs), control and automation capabilities within the substation and control commands from remote users to control power system devices. The features of substation automation are monitoring and controlling of substation devices using modules such as intelligent electronic devices) (IEDs), RTUs, GPS receiver for Time synchronisation with two-way communication through Station Gateway/SCADA from central

GREEN ENERGY SHIFT IN ELECTRICAL AND POWER SECTOR

remote-control centre. The aim is to monitor and control the substation instruments to reduce the incidence and duration of power outages.

Implementing IEC 61850 standard at process and station bus level with digital protection and automation scheme through latest communication technology which will enhance the response within the substation as well as between substations. However, integration of technologies and additional systems like Smart Metering (AMR), Substation Automation System which covers Intelligent Electronics Devices (IEDs), SCADA System for remote Monitoring and Control, GIS (Geographical Information System) of network DAS (Distributed Acoustic system) for health monitoring of network; will help in attaining a reliable power output and reduce T&D losses.

How can digitalisation help smart grid operations and maintenance through substations?

In the energy sector, digitalisation is playing an important role in the smart electric grid. Digitalisation creates various opportunities to enable smart energy generation, transmission and delivery through a smart grid, as it is about information exchange and data availability to interested parties.

Moreover, digitalisation brings unprecedented benefits for O&M team and equally to the consumers for energy flexibility by making real time data available. The availability of data has provided opportunities for Operation and Maintenance team, for using data analytics to support and enhance the grid operations through capacity planning and peak power shaving, and facilitate deployment of new energy services such as energy audits, demand response programs.

Moreover, availability of real time data through digitalisation at Substation level will enhance the grid operation efficiency and availability and also facilitate the condition based maintenance

How are the state DISCOMs, utilities and government agencies responding to digital substation?

IEC61850 process bus based digital substation in widely accepted now and implemented by many utilities at least on pilot basis. Every utility may adapt this technology as per their operation philosophy. This technology reduces the risk of electrical hazards to operators, creating a safer work environment. However, few key challenges listed below are to be addressed jointly by OEM and Utility through methodical approach from design to delivery.

While progressive utilities including government utilities like PGCL are embarking on the journey of digital substations, state owned utilities (DICOMs), due to their poor financial health, face challenges in implementing the digital solutions owing to high initial costs involved. Privatisation of state distribution utilities may help to improve financial conditions of DISCOMs and progress towards digitalisation. However, suppliers should focus on R&D to reduce the costs down and build in interoperability among various supplies.

Protect your Control Panels with Environment Friendly Clean Agent ELPRO-20S Fire Suppression System

Feel the Fire extinguishing magic of UL listed FK-5-1-12 (Akronex-1230) / HFC 227ea and make your life tension free about the safety of your critical control system

ELPRO-20S
Automatic Clean Agent Fire Extinguishing System

UL Listed Clean Agent
UL Certified Detection and Dischar

The system is designed and manufactured as per NFPA - 2001, using UL listed clean agent and detection tubing. It is a self-contained detection and protection system and does not require any external power supply for actuation. It directly attacks the seat of fire and extinguishes the fire instantly.

Most suitable for HT, LT panels, electronic control systems, instrumentation and process control panels, server racks and other expensive electric and electronic equipments and systems.

A Premium Product From:
Smith & Sharks Projects (India) Pvt. Ltd.

Regd. Office :
201, New Sonal Link Heavy Indl. Estate, Link Road, Malad (West), Mumbai - 400 064, India.
+ 91 22 2888 7878 / 2888 7979 / 2880 6801
info@sharksindia.com

Factory :
D-9, Sharks Centre, Ksquare Indl. Park, Padgha, Bhiwandi, Dist. Thane - 421 101, India.
+ 91 88796 94294
bhiwandi.factory@sharksindia.com

45001 14001 CERTIFIED
SharkS FIRE PROTECTION • SECURITY • SAFETY
www.sharksindia.com
CERTIFIED

Energy-efficient technologies will drive us towards carbon neutral future

To reduce fuel dependability, we need to look at ways to convert the conventional to either electrical or other non-emitting alternatives.

Ganesh Kothawade,
Sr. Vice President, Electrification- Distribution Solutions,
ABB India Limited.

Discussing the need to move towards sustainable technologies, Ganesh Kothawade, Sr. Vice President, Electrification-Distribution Solutions, ABB India Limited., emphasizes on increasing awareness among the customers and users will further help us reduce dependency on follsil fuels and move towards green technologies.

How are the present global trends impacting the demand for electrical and power sector?

Presently, we have various ongoing trends like digitalisation, urbanisation, globalisation, demographic shift that are impacting the health of people and the industries, especially in a Covid era. Let's not forget the overall impacts on the climate change and on the environment across the world. When we talk about India, we have humungous young population, and with the number of young populations, India can impose pressure to build required additional infrastructure, further opening several avenues for employment opportunities. This will further boost Indian government's plan to make India a manufacturing hub.

This push will also augment the demand for power, along with advanced electrical equipment. If we compare a data per capita consumption in India, is hardly 1200 kWh per person, and if we compare it to the developed country which is 10 times more. So, you can imagine even to just reach a world average, our per capita consumption is likely to triple in the next 10 years.

This generates enormous opportunities for an electrical manufacturer in this growing economy, but at the same time, if you really look at the data, today, what power we are producing 65 percent power is getting generated from the fossil fuel and if we see leave alone the carbon which is anywhere harmful, but the power industry is one of the highest contributors to very dangerous gases like $H_2O$and NO_2. Managing this economic growth, meeting an exploration and need of the society without harming the environment will be a challenge, and electrical equipment manufacturer will play a critical role into the same.

How is ABB contributing to reinvent the electrical equipment sector, and in minimising the environmental impacts?

Being a recognised and a responsible organisation, ABB, along with other electrical manufacturers and the allied electrical equipment manufacturers own this responsibility and comprehend to the need to find ways to manoeuvre from this situation. ABB is also one of the UN driven initiative, 'Sustainable Energy for All', and we are one of the 50 leaders combating climate change. As a manufacturer, we want carbon neutrality in our own operations. Secondly, we are trying to supporting our suppliers, and our customers to reduce their carbon emission and its footprints. So, within our own operations we are directing emissions that are generated from the factory, and the vehicle, along with another is the heat generated from the electrical usage. We are using our own energy-efficient technologies to reduce the electrical energy consumption with these technologies.

We must also look at maximising use of renewable energy either by investing into the renewable itself, or purchasing the renewable energy from the generating company. And the third is, converting

GREEN ENERGY SHIFT
IN ELECTRICAL AND POWER SECTOR

KUSAM-MECO®

An ISO 9001:2015 Company

THINK SAFETY
THINK KUSAM-MECO®

HIGH VOLTAGE MEASURING INSTRUMENTS

HIGH VOLTAGE
MULTIFUNCTION
PHASING STICKS
PC SERIES
7/11/22/33/44KV

TELESCOPIC
HOT STICKS UPTO
5 METERS FOR 275HP / 500HP
MODEL - HSR 120 / 120A / 120B /
120C / 121 / 122

TYPE TESTED

SINGLE / THREE PHASE
HIGHLY INSULATED
FRP EARTH /
DISCHARGE ROD
VOLTAGE RATING -
11 / 33 / 44 /
66 / 132 / 220 / 400KV

Other Models Available For
PERSONAL SAFETY DETECTOR :

- **286SVD - Range :** 110V ~ 11.4kV
- **287SVD - Range :** 110V ~ 22.8kV
- **288SVD - Range :** 110V, (240V ~ 50kV)
- **388SVD - Range :** 240V ~ 69kV

**MULTI-PURPOSE DIGITAL
HIGH VOLTAGE PHASING METER
MODEL KM-MPS-50K**

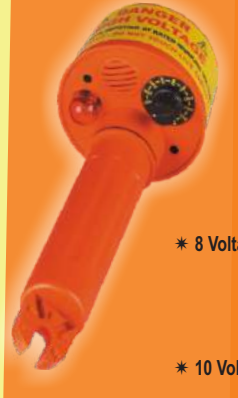
FEATURES :

- **AC 50kV and DC 50kV measurement with direct reading.**
- **4000-count LCD display.**
- **Input impedance :** 400 MΩ
- **Auto-ranging :**
  AC : 4.000kV / 40.00kV / 50.0kV
  DC : 4.000kV / 40.00kV / 50.0kV

**36KV / 81.5KV
HIGH VOLTAGE DETECTOR (NCV)
MODEL - 230HD / 290HD**

FEATURES :

- **Display :** Light : Flashing red light;
  Sound : intermittent sound 50dB apart 3m.
- **Overall length :**
  Retracted : 893 ± 50mm (Model **230HD**)
  Extracted : 1520 ± 50mm (Model **230HD**)
  Retracted : 1370 ± 50mm (Model **290HD**)
  Extracted : 2450 ± 50mm (Model **290HD**)
- **Measuring Voltage range :** 3kV ~ 36.5kV (**230HD**);
  6kV ~ 81.5kV (**290HD**)
- **Operating start Voltage (to ground) :** 1.35kV
- **Leakage Current :** 100mA or less than 100mA at withstand voltage test



**230KV / 275KV / 500KV
HIGH VOLTAGE
PROXIMITY DETECTOR (NCV)
WITH TELESCOPIC HOT STICKS
MODEL - 278HP / 275HP / 500HP**

FEATURES :

- **8 Voltage Settings :** 240VAC, 2KV, 6KV,11KV, 22KV, 33KV, 132KV and 275KV. **(275HP)**
  240VAC, 4.2KV, 15KV, 25KV, 35KV , 69KV, 115KV, 230KV **(278HP) (IP65)**
- **10 Voltage Settings :** 240VAC, 3.3KV, 11KV, 22KV, 33KV, 66KV, 110KV, 220KV, 330KV and 500KV. **(500HP)**

TO VIEW THE FULL DETAILS OF EACH PRODUCT VISIT : www.kusamelectrical.com

Shop no.18, 1st Floor, CIDCO Shopping Complex, Plot # 9, Sector-7, Rajiv Gandhi Marg, Sanpada, Navi Mumbai - 400705.
Tel.: 022-27754546 / 27750662 / 27750292 Email : sales@kusam-meco.co.in

the conventional to either electrical or other non-emitting alternatives so as to reduce the fuel dependability and minimise the carbon footprints, as an attempt to attain zero-emission target by 2030.

Which strategies are in place to reduce the carbon emission and enhance the clean energy scenario in India?

Our government has set a very ambitious target to go for renewable energy and EPC in the last 8 to 10 years, and the amount of progress we did give an optimism to attain the a quite appreciative portion of the set target. If you see closely, people are slowly shifting towards rooftop solar even into their personal and household premises. So the momentum is clearly visible and acceptance for the same is deepening.

Also, there is a need to increase awareness among the people and the users about the reduction in environmental impacts in the society. Today, our children force us to keep the environment clean and safe by not destroying plastic items on a public place or at non-climate friendly places. We need to start imposing same pressure on the society to reduce plastic usage and stop dumping plastic. This awareness, aligned with the compulsion will further compel us to bring the carbon neutrality idea into real existence.

And I think we are already moving in the right direction; we only need to make attempts to increase education, awareness, incentivising such initiatives, and bring intense sensitivity in the society to achieve the same.

What challenges are you facing in implementing them implementing or implementing advanced technology?

We need to create awareness among the consumers and customers and educate them with the benefits of these energy-efficient products and technologies. Most of the time we introduce new products and experiment them in the market; but we then we realise that the user/consumer is not familiar with a lot of things related to that product and its services. These experiences sometime lead to failure. But someone has to start, and in our own culture or specification, when you offer proven technologies, builds a confidence among the customers. For this we would need bold buyers who are also willing to experiment with new technologies. So, it takes really a time to convince the people to really experiment and use the latest technology. So, if we develop this type of culture of being bold in using the technology experimenting and even if it gets pills is fine, but not really going for it, then we will be followers, we will never be leaders.

With the increasing demand for electricity and rapid shift towards green energy, wow do you see India's future?

This entire transition is going be a big challenge, as converting the entire process from fossil fuels production into generating renewable and sustainable energy is a critical task. And with the growing economy and increasing population, we need to comprehend to the ever growing demand for efficient power supply and accommodate relatable consumption to the users.

So, 100 percent shift from fossil fuels seems unlikely, but yes, the dependency will definitely be reduced. But getting little more on to the nuclear side, and with more focus on the renewable and hydro, I believe we have various natural resources available particularly in the hilly regions which can expand, if provided some additional investment. Even the power generation companies are making all possible measures to reduce the impact on the environment. So, their own, age old operation that used to emit a lot of carbon dioxide, are now reducing the CO2 release. Electrical equipment manufacturers are really creating a lot of innovative ways inside their own factories supporting their suppliers and bring in innovative products which will be more environmentally friendly, energy efficient and digitally enabled; so that we really support this carbon footprint reduction going forward.

RISH GSM – wireless Gateways for multi-functional meters

RISH GSM Gateway for Multifunction Meters, acts as a wireless Gateway between a group of Multifunction meters or Energy meters connected in RS-485 daisy chain and MARC Cloud server to log all the important parameters of the meters on the cloud.

RISH GSM Gateway reduces the complexity by avoiding long communication cables; LAN ports availability on-site, Ethernet switchers & routers. Thus, saving installation time and cost. RISH GSM Gateway is a ready solution for easy and cost-effective meter data monitoring.

For more details
0253-2202028
marketing@rishabh.co.in
www.rishabh.co.in

IoT enabled remote monitoring T&M solutions is the new trend

"Periodic, predictive testing of key devices in the T&D sector is most essential aspect to keep the system up and running."

Narendra Goliya,
Chairman Managing Director,
Rishabh Instruments Pvt. Ltd.

Explaining the onging digital trends in the T&M sector, Narendra Goliya, Chairman Managing Director, Rishabh Instruments Pvt. Ltd. tells EPR about their Power clamp meter with bluetooth communication and Android app for remote ad online monitoring services in T&D sector.

How do you see the importance of effective testing and measurement in the T&D system?

T&D sector is a very crucial sector, rather it's a back bone to keep things running and powered up all the time. Hence it becomes all the more vital to effectively test the devices used in T&D sector! The devices used in the T&D sector are generally capital devices like Transformers, CT/PTs, Circuit Breaker, and Isolators etc. Hassle-free functioning of these devices helps in ensuring all-time availability of critical power. The damage of any device due to the poor quality or life deterioration over a period of time can cost huge losses. Therefore, periodic, predictive testing of key devices in the T&D sector is most essential aspect to keep the system up and running.

Let's consider an example wherein insulation resistance of a distribution transformer is to be measured and the customer is using a low quality, unreliable Insulation Tester. The wrong reading indicated by the unreliable Insulation Tester would lead to a wrong assumption and eventually the transformer would go under the breakdown. It would defeat the whole purpose of the testing and it can also cause a danger to human life. Hence the necessity is not only to have a periodic testing but to have it with most accurate and reliable devices.

What are the new solutions trending in T&M in power transmission and distribution?

Many solutions have been trending in T&M in power transmission and distribution sector. One of the new trends is IoT enabled devices helping in remote and online monitoring of the power sector devices. The hand held and desktop instruments with the bluetooth technology is also an upcoming trend to avoid the physical contact with the devices under test.

The data logging and data analysis with the help of software is the way forward. Touch screen displays on the measurement instruments are gaining more acceptances over the conventional displays due to their user friendliness, reliability and aesthetic appeal.

What are the products and solutions from the company?

Rishabh products are well known in the field of Test and Measurement due to their unmatched reliability and ruggedness. Rishabh has recently come up with the next generation 5kV/10kV digital insulation testers. These products are completely suitable for field testing and have proven their mettle in the worst test conditions. Today they are one of the most reliable devices when it comes to the Insulation Measurements in the high induction areas. The products before launch have gone through rigorous field testing

GREEN ENERGY SHIFT IN ELECTRICAL AND POWER SECTOR

so they become completely compatible up to 765kV levels. These new insulation testers are complemented with 8m. A noise rejection current and filter to remove the noise effect during the testing. These devices offer a touch screen facility and an audio read out facility that announces the results making the instrument user friendly like never before! Also it comes with a mobile app facility, which allows the user to operate instrument via mobile phones. This enhances the safety of user. Along with this Rishabh is planning to come up with a Power clamp meter with Bluetooth communication and Android app which makes power measurement safe and easy. The state-of-the-art Solar Clamp meter having 1500V and 1500A AC/DC measurement range is just around the corner.

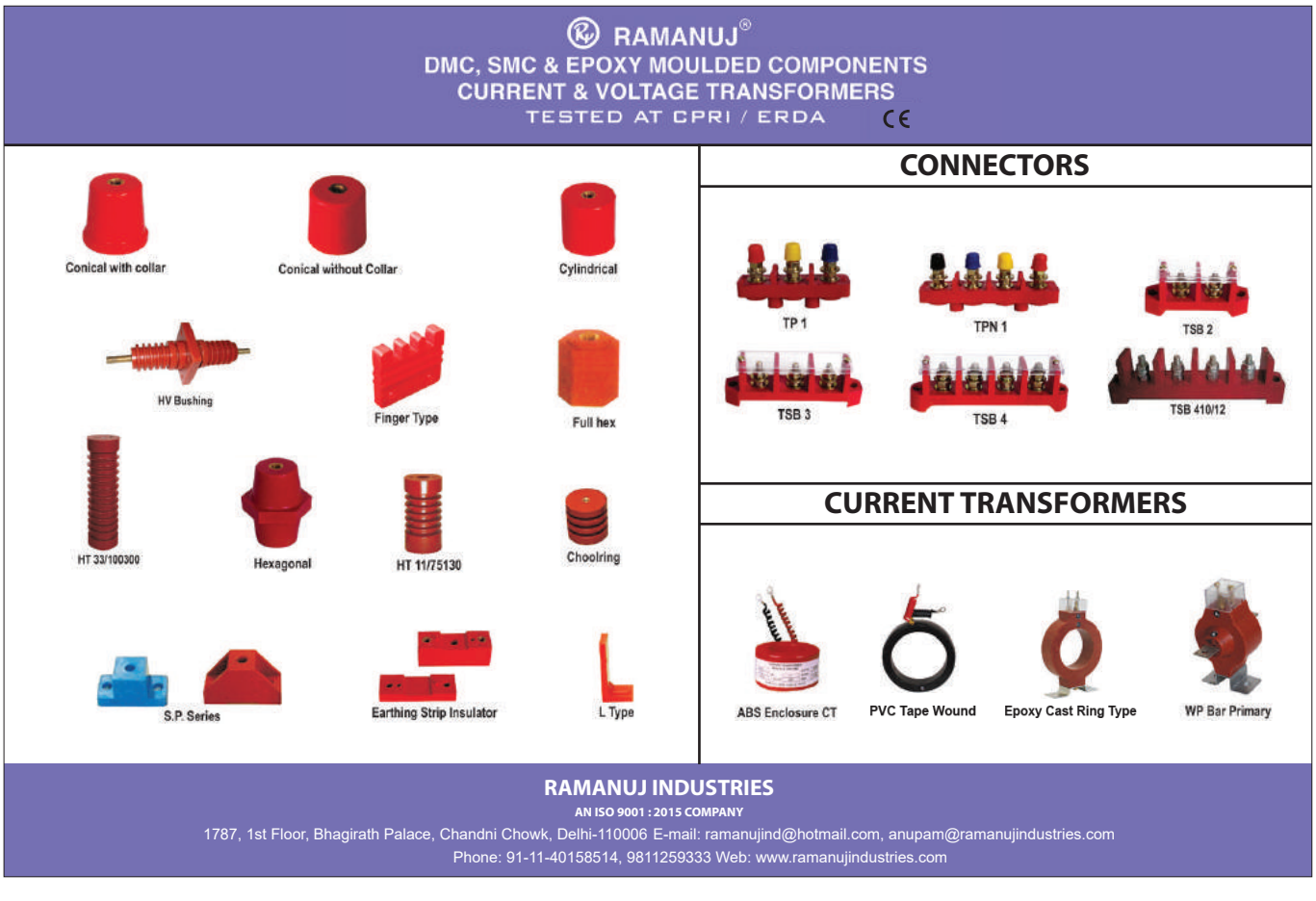
We have plans to come up with more products required by T&D sector so as to cater the requirements of this sector and become a prominent choice for the customers. Apart from this, we also have a concrete product roadmap till FY-2025 to consolidate our position in this market.

What opportunities do you see for advanced T&M solutions in the future for the T&D sector?

The customer requirements are changing very fast due to changing needs and applications. This brings lot opportunities on the table to develop the new products as per the changing market needs. We believe in providing the products as per the customer needs but at the same time to bring something extremely new or path breaking which shall change the way we operate the instruments today! This thought process opens the doors for the new and advanced solutions.

There are many opportunities coming up since the government recently announced huge investments and expansion plans in this sector. Also with increasing demands, this sector has become very progressive in adapting the modern and sophisticated solutions offered by different T&M companies. Yet there are various areas especially user and installation safety, losses reduction, reduced break down costs, etc. need an attention.

IoT enabled solutions, data logging and data analysis (as mentioned above) are the future growth avenues with more and more emphasis on key aspects like product reliability, ruggedness, safety, compliance to international standards and easy user interface. At Rishabh we are committed to be the prominentplayer of the future growth story.



We need stringent emphasis in managing and recycling electronic waste: RIL

We need to look into ways to recycle and reuse the electronic waste that is piled up every year and is also hazardous.

Sanjeev Prasad,
Vice President & Plant Head – Power & Utilities, RIL – DMD

In a discussion with EPR Magazine, Sanjeev Prasad, Vice President & Plant Head – Power & Utilities, RIL – DMD, explains the significance of re examining the need to create wide access for e-waste recycling and enable a clean environment.

What's your idea of going green?

Going green is still a distinct dream for us. Although it isn't an impossible dream, but it has wide specifications to it. We have various means that will help us to achieve the same. Today, people are moving more towards eco-friendly substitutes, technologies, and products as a pay back to the environment and for the next generation, the way we have received from our predecessors. That is, we have to use things in an environmentally friendly and non-hazardous manner, without creating an imbalance in climate aspects.

There's a need to include environmental lessons in education system. We need to look at three aspects, namely: improving the environment, reducing its uses, reuse, and recycling. How do you improve the environment, reduce the uses, reuse, and recycle? We are not great recyclers as our recycling capacities are not that good. But we need to look at ways to recycle and reuse the electronic waste that is being piled up every year and is retarded, which again is hazardous.

As an industrial and a domestic user, I feel that there is something called reliability that we can work on at least which prolongs the life till the time we are ready to recycle or reuse the equipment that doesn't require high maintenance and still can be reliable in terms of functional operations.

India has very few government-approved e-waste recycling systems. What are the major challenges in increasing the infrastructure and adding more e-waste recycling centres?

First is accessibility. Secondly, we are driven by laws. So, we have to comply with the given regulations, which will further drive us towards sustainability. It's also important for the business to become profitable, otherwise nobody will come forward to invest, and we will again be dependent on the government. These are the only two ways in which a business will get recycled. The recyclers and the government need to ensure that all the relevant information is available online and on other platforms that allow us to get through those providers.

What are as the strings attached to it? Is it lack of awareness, lack of willingness, or lack of consciousness to follow the regulations?

In a way, yes, we are accustomed to living in this pattern. We usually don't follow or believe anything until we have force or pressure from the regulations. Also, consciousness is another key aspect; we usually do not accept anything that's safe and secured for us, hence there are regulations enforced on us to ensure our own safety. We destroy or waste things we believe are useless to us, but what we fail to recognise is that electronic waste, if recycled and reused on time, is essential waste.

What is the mechanism followed for constant verification in industrial premises to find whether the regulations in place are comprehended?

If you are talking about conducting regular inspections, I think that's difficult; particularly under present circumstances, it's not really feasible to find out the kind of activities being carried out in large-scale industrial premises with a humungous amount of manpower to take care of. Managing e-waste and recycling should be taught as a vital part in our education so that the new generation can find ways to recycle the electronic waste being generated in the industry on a regular basis and further take care of the environmental impacts.

GREEN ENERGY SHIFT
IN ELECTRICAL AND POWER SECTOR

EPR
electrical & power review

connecting you with **power audience**

www.eprmagazine.com

I-TECH MEDIA

For Participation, Write us:

ads@eprmagazine.com

/ENPREVIEW /EPRmagazine epr-magazine EPR Magazine EPRMagazine

Digitalisation in electrical equipment is key to sustainability

There should be one design, one quality, one specification and one standard to make green energy mission a reality.

Anil Saboo,
Chairman & Managing Director, Elektrolites Power Pvt. Ltd.

Indian technology will be far superior to foreign technologies, but at this juncture, we should adopt the technologies that are already in place abroad, says Anil Saboo, Chairman & Managing Director, Elektrolites Power Pvt. Ltd.

How do you evaluate the demand and impact of the green energy shift on the electrical industry?

There is no doubt that power reliability in most nations in the world has increased. Over the years, electric power has grown beyond providing utilities and has become a fundamental part of civilisation and smart products. The demand and consumption of electricity is increasing day-by-day. Even countries receiving coal power finance are witnessing substantial socio-economic and environmental risks associated with the newly commissioned carbon-intensity assets. To sustain power for the future, many renewable sources like rain, solar, hydroelectric, and biomass generation have been explored till now, so we are now exploring green hydrogen as a new source of energy. These environmentally friendly and sustainable energy sources account for more than half of global electricity generation, which is expected to rise further in the near future.

Moving forward, we must design smart, efficient and economical products. With a growing emphasis on green energy, the Indian electrical equipment market is currently worth US $48-$50 billion.

How do you see manufacturers approaching their manufacturing process in terms of upgrading their products to a level where energy efficiency will be their first priority?

Today, it's a mandate for all manufacturers to reduce their costs, and with the adoption of digitalisation and newer technologies, they will be able to reduce their production costs as well as carbon emissions. So, this pandemic has really done a lot of good for all of us, because it has manufactured everybody else's way of reducing their costs, and they are adapting. For example, I invested a lot of money in the construction of my factory building, which is 150,000 square feet, and can you imagine that you do not even need to turn on the light for 12 hours as its built smart, which that is saving me the cost. So, like that, even on every machine, people are putting energy metres in just to see how much consumption is going on at the same time. If the consumption is more than they can take care of that motor, okay, then there must be some fault. So, both ways they are saving energy, as far as they are monitored. As a result, manufacturers are installing such systems everywhere so that they can see all the costs which ones can be passed on to customers.

Which kind of investments is being done to attain energy efficiency and sustainability in products and equipments?

The awareness has increased and most of the manufacturers of transformers as these are medium-voltage and high-voltage products that are being purchased by electricity boards. So, actually most of the electricity board power plants are buying their equipment, and all are aware of that now, which is the energy-efficient transformer. So, like CRGO, the right kind of raw material, they're using CRGO and the losses. They even calculate their costs. So, we suggested for investments in people and processes as a priority, in addition to new equipment and technology under various schemes, because they will deliver efficiency and cost effectiveness in the power system. So, transformer losses are also one of the major criteria. The other thing that can be done cost effectively is the standardisation of production systems. This needs to be implemented in the design specifications and related to the distribution of power. They should really optimise the costs and performance. There should be one design, one quality, one specification and one standard for the entire mission, so, that will really give that effective quality as well as cost reductions there.

GREEN ENERGY SHIFT
IN ELECTRICAL AND POWER SECTOR

What do we understand what the existing challenges are when we talk about implementing these advanced technologies in critical conditions?

The challenges are specifications. You see, there has to be one mechanism for the entire mission to adopt one specification, and they will provide the specification. They will say, "No, you should not buy this equipment. If you buy this equipment, then there has to be one provision which can be added later." Like in the lighting aspect, surges are there, but the monitoring system has to be there, otherwise, it is of no use. Because otherwise, if you don't know when it is going to fail, then you will have to replace it and that is a huge cost. So, in my opinion, for all the products, there has to be one standard specification. And every manufacturer should follow that in which they can build in their provisions.

How do you see the availability of technology for energy-efficient products in India? Do we have an indigenous moment here?

You see, the first revival addresses that research and development aspect which there is. For R&D, we should be ready to fail. Failure is the prelude to success. We should not be afraid of failure. So, there they are in these charts. We should be ready to fail 90 times before there will be success. So, regarding energy-efficient products in India, there are a lot of activities going on by ESL, TERI, and some of the departments. Even nowadays, the Department of Science and Technology, Government of India, has come up with many educational institutes like IIT Delhi, IIT Bombay, and the students are coming forward with start-ups to enter this issue. I'm sure that in one year or two years, Indian technology will be far superior to foreign technologies, but at this juncture, we should adopt the technologies that are already in place abroad, because that is the fastest route where we can adopt them and it will save a lot of money for us. So, it is there that we should go for some new technology abroad and adopt it quickly, and then we can deny that.

Digitalisation of electric equipment is key to sustainability. Digitisation can enable switchgear or power transformers, for example, with sensors and communication capabilities. Sensors can continuously send a wealth of status information and operational data to the asset management system through their cloud. So, we need to provide training to people for effective use of this technology, or adopt this technique. Industries need to collaborate and take consultancy, collaborate with other developed countries for R&D, and adopt this new technology. Now, hydrogen is the next era for electricity. We have to make India a green hydrogen hub, and this will also lead to a clean energy transition. The national hydrogen mission and the green hydrogen sector will give us a quantum jump in meeting our climate targets. I would like to suggest that new energy or electrical information and skills should be taught to students from the beginning, and even for colleges, that will really help them when they grow to adopt these systems right from the beginning.

WORLD'S LEADING

BRANDS

AUTHORISED CHANNEL PARTNER

CITROEN SWITCHGEARS PVT. LTD.

ABB

legrand

Bussmann by EATON

MOELLER EATON Powering Business Worldwide

PHOENIX MECANO

socomec Innovative Power Solutions

SCAME electrical solutions

HARTING

www.citroenswitchgears.com

147, Tavawala Building,
Office No. 2, 1 Floor, Lohar Chawl,
Mumbai 400 002, India
Ph.: +91- 22-402234442 / 48
Email: sameer@citroenswg.com
Web: www.citroenswitchgears .com

A unique facility for evaluation of High Temperature Low Sag (HTLS) conductors

Indian transmission companies including utilities are adopting HTLS conductors.

With increased private participation in power generation & distribution in India, alongside that of public sector, there is a robust demand for bare overhead power conductors. The challenges faced by the transmission companies are to accommodate the necessary generated power over their network. This can be accomplished by laying extra lines – which is an expensive proposition or resources can be used for re-conductoring by HTLS conductors, which can increase the power transmission capacity.

Indian transmission companies including utilities are adopting HTLS conductors. However, at present, for independent testing, the manufacturers have to go abroad.

It is, therefore, planned to set-up test laboratory for HTLS conductors at ERDA. Once this facility is created at ERDA, manufacturers and users will be able to carry out complete type and acceptance tests under one roof at ERDA as per latest international/national standards.

Specifications for evaluation

Facilities are being installed as per following mentioned specifications -

- Power Grid specification II
- Draft of IEEE standard P####/D1.0, January 2009.
- CIGRE report No. 426 on guide for qualifying High temperature conductor for use on overhead transmission lines.

Types of HTLS conductors to be evaluated

- Conductor composed of a steel core and an envelope for which the high temperature effect is controlled by means of thermal resistant aluminum alloy (GAP, TAL[Thermal Alloy Conductor Steel Reinforced]; ZTAL [Ultra Thermal Resistant]
- Conductor composed of a steel core and enveloped for which the high temperature effects are controlled by means of annealed aluminum or aluminum alloy (e.g. ACSS)
- Conductors composed of non- metallic core, and an envelope for which the high temperature effect are controlled by means of thermal resistant aluminum alloy (e.g. ACCR)
- Conductor composed of a non - metallic core are controlled by and an envelope for which the high temperature effect are controlled by means of annealed aluminum or aluminum alloys (e.g. ACCC)
- Thermal Aluminum Conductor Invar Reinforced (e.g. TACIR)

Tests to be carried out on HTLS conductors -

On complete Conductor

- DC resistance test
- UTS test
- Stress- strain test conductor and core at Room temperature
- Stress-strain test on conductor and core at elevated temperature
- High temperature endurance & creep test
- Conductor thermal expansion test
- Sheaves Test
- Axial impact test
- Radial crush test
- Torsional ductility test
- Aeolian vibration test
- Temperature cycle test

On Conductor Strand/core

- Bending test
- Coefficient of linear expansion
- Strand brittle fracture test
- Torsion and Elongation tests
- Glass transition temperature test
- Flexural strength test
- Salt spray test

AMAR INDUSTRIES

MANUFACTURER, SUPPLIER & EXPORTER OF:

- PVC DIP MOLDING PRODUCTS
- POWER CABLE ACCESSORIES
- BUS-BAR INSULATING SHROUDS
- WILDLIFE PROTECTORS
- GLAND HOODS
- FLEXIBLE BUSHING BOOT
- CABLE TERMINAL BOOT
- CABLE END CAPS
- HEAT SHRINK SLEEVES
- THIN WALL TUBING
- HEAT SHRINK WRAP AROUND SLEEVES ETC.

FOR MORE DETAIL CONTACT

AMAR INDUSTRIES

Address : 2, Sarvodaya Industrial Estate, At. Khatamba,
Po. Ankhol, Waghodia Chokadi,
Vadodara - 390019, Gujarat, India

Email : info@amarind.net

Mobile no.: +91 9221926417/ +91 9227426417

www.amarind.net

Demand for Mica insulation materials is boosting our business: Ruby Mica

Growing electrical sector is directly proportional to increase in robust Mica based insulating material demands.

Ankit Bagaria,
Director, Ruby Mica Co. Ltd.

Discussing the demand for Mica insulation in the electrical industry, Ankit Bagaria, director, Ruby Mica Co. Ltd., says that they expect a pumping demand for Mica materials in the electrical sector in the coming years.

Kindly walk us through your company's profile and offerings.

Ruby Mica was established in 1968 with the only intend to manufacture and supply world class Mica based electrical and thermal insulating materials. Today, we are a global market leader serving over 35 countries, catering to 12 different industry segments.

Mica Tapes enable the electric cables to function reliably under harsh high-temperature working environment, whereas Mica Sheets in their various forms and sizes ensure safe working of a Submerged Arc Furnace used to make Ferro-Alloys. Mica Folium and Tapes prolong the service life of the Induction Furnace equipment commonly used in the foundry industry, etc.

As a strong initiative towards supporting the "AtmaNirbhar Bharat Abhiyaan", we have import substituted critical Mica Tape insulation required in HT traction motors for the Indian railways and Turbo-generator HT Conductor Coils for the power generation equipment manufacturing and servicing companies like BHEL.

Demand trends impacting businesses

The increasing energy demands have positively impacted our business. Being a manufacturer and supplier of critical insulating material (Mica Tapes) to the power generation sector, we are experiencing a surge in Mica insulation material orders. Wind generator OEM's have made an interesting comeback. A growing trend is clearly visible for both the energy demands and energy generating equipment.

GREEN ENERGY SHIFT
IN ELECTRICAL AND POWER SECTOR

Market for Mica products in Indian electrical sector

Coal / Oil / Gas based systems used in the manufacturing / mobility sector are on a decline. All kinds of fossil fuels add to the pollution; and stringent emission norms are pushing these systems to oblivion. Sooner or later, everyone has to switch to a greener option, which is none other than electricity.

Where there is heat and electricity there will be Mica. Mica is a mineral which is truly versatile in nature, offering a unique blend of electrical and thermal properties that no other material can match.

Hence, growing electrical sector is directly proportional to increase in robust Mica based insulating material demands, coupled with an ample amount of innovation happening in this sector makes the future outlook very positive.

Challenges in promoting insulation in electrical sector

Lack of new Mica mining operations in the region is a serious threat to us. Imported binding resins are in short supply due to a crippled logistics system, which is yet to make a full recovery owing to the ongoing pandemic.

Latest product and offerings in this segment

We have come up with a lot of advanced Mica based shields/ insulation for the Electrical Vehicles. Lithium is highly reactive and flammable element, hence Mica must always be used to safeguard vulnerable automotive parts as well as contain and stop the propagation of fire. Mica based sleeves can completely encapsulate individual Lithium Ion cells. Mica Sheets with self-adhesive can be pasted to isolate the battery pack from the vehicle body etc. Electronic circuits, resistance boxes etc. are isolated using Mica punched parts. We have engineered excellent low cost Mica based insulating material for the ground insulation of coils in the EV motor.

RUBY MICA CO. LTD. +91 94311 44955 info@rubymica.com www.rubymica.com

QUALITY SYSTEM CERTIFICATION DNV·GL ISO 9001

Ruby Mica®

Insulating Lives. Worldwide.

50 Glorious Years

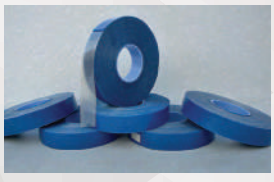
1968-2018

HIGH VOLTAGE MOTOR/ GENERATOR COIL INSULATION


GLASS MICA TAPE


POLYESTER MICA TAPE


KAPTON MICA TAPE


RESIN RICH MICA TAPE


GLASS MICA POLYESTER TAPE


MICA V-RING/SLEEVE

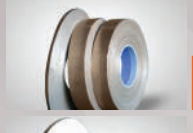

MICA SEGMENT


POLYIMIDE FILM


H. V. Coil

FIRE RESISTANT CABLE INSULATION


GMCAB


GMPCAB


GCMCAB


GCMGCAB TAPE


TRAVERSE SPOOL


COMMUTATOR INSULATION

ELECTRIC VEHICLE BATTERY INSULATION

Battery Casing / Battery Tray
Cable Conduit / Battery Bus Bar
PCB Enclosure

EEPCINDIA ENGINEERING THE FUTURE · ieema your link to electricity · EASA The Electro-Mechanical Authority · RESPONSIBLE MICA INITIATIVE · EXPORT HOUSE by Government of India · UL · intertek Total Quality. Assured.

• Power Generation • Power Transmission • Power Mobility •

Advantage:

- Over 50 years industry experience • Close proximity to Mica Mines
- India's largest state of the art manufacturing facilities • 2000TPA Mica Paper
- 300TPA Mica Rigid Sheet • 600TPA Mica Folium/Tape
- Mica/Fiber Glass Machined Parts in all forms, shapes & sizes

Standardisation and regulation put emphasis on safety

Panasonic Life Solutions' solar division has grown in leaps and bounds in the recent years.

Sunil Narula,
Vice President – Marketing,
Panasonic Life Solutions India Pvt. Ltd.

Highlighting the latest addition to their product profile Panasonic Uno Plus, Sunil Narula, Vice President – Marketing, Panasonic Life Solutions India Pvt. Ltd., walks us through their commitment on moving towards green energy.

How do you see your products complementing energy efficiency?

Energy efficiency is one of the most important things that we are focusing on. In fact, the UNO Plus range brings numerous things when it comes to energy efficiency. This is the range that could allow us to reduce power consumption by nearly 30 percent. These are the levels of features we have embodied in our products.

What is your organisation's commitment towards green energy?

Panasonic Life, as an organisation, has a very long-term commitment towards energy efficiency, green and renewable energy. If you look closely, Panasonic Life Solutions already has a solar division and a solar business that have been growing in leaps and bounds over the last couple of years. To be more specific, earlier we used to have imported modules under the Panasonic brand known as HIT modules, and now we have also started initiating tie-ups with large and established Indian vendors. We are also looking at adding investments in expanding the channel and amplifying our solar footprints across the country.

What are the major challenges in implementing your ideas and commitment, and barriers in convincing the customers/market to enhance the green energy shift?

When it comes to the end consumers or the targeted industries, we already have an alternate power supply. So, I think the barriers are typically in terms of the alternatives that are already available. Moreover, the government is already undertaking all significant and necessary actions by bringing the required mandate towards the same. By doing this, we are creating restrictions for the end consumers, whether residential or commercial, which further helps the government to push their idea of a green energy revolution in India and across the world.

Do you see that a lack of implementation strategies is creating difficulties for the market in absorbing branded or standardised products?

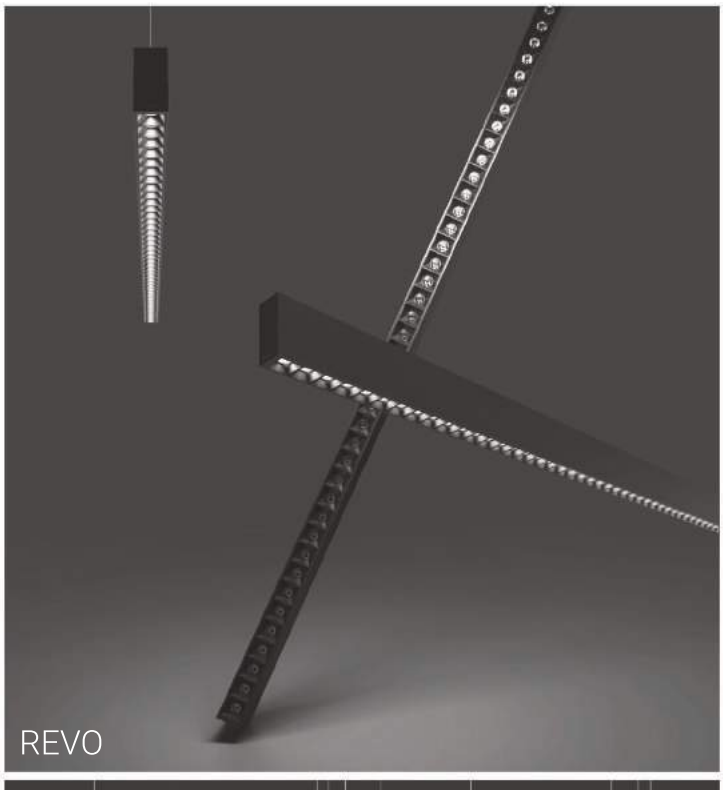
I think the government has done a fantastic job over the last decade in terms of putting in regulations, which are important for safer and branded products. This has definitely enabled companies like ours to basically focus on the safety and comfort of consumers, and deliver the best possible products to end consumers. So, I believe the government has been doing it and there have been many initiatives that have been taken, whether it is about greener products or even about the regular products that we bring in on a regular basis.

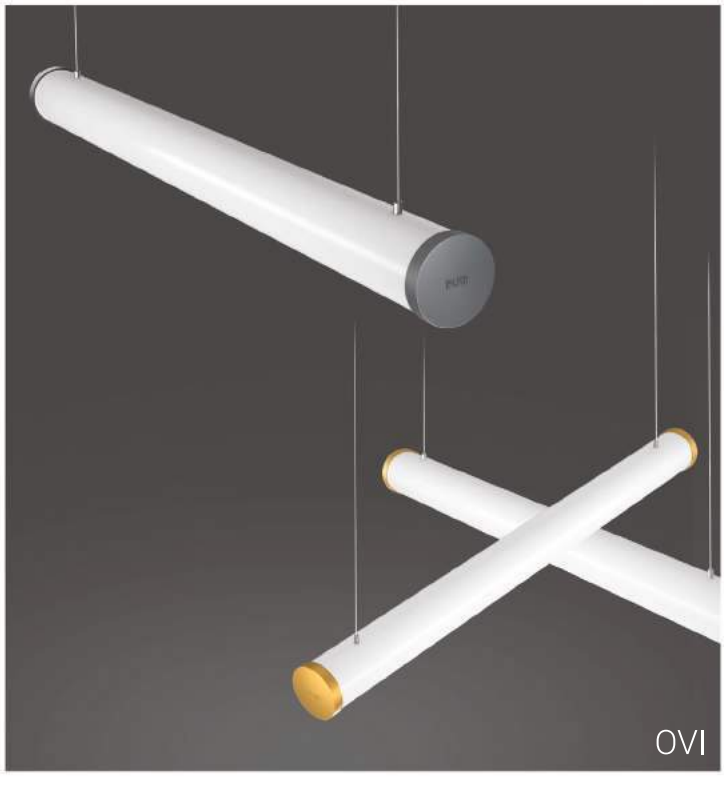
What is your experience in the solar business? And how is India responding to it?

Solar energy is something that is already gaining potential momentum across the country. We have a good presence across the industrial space where we are targeting B2B customers. Also, simultaneously, we have recently launched some B2C products, including hybrid inverters, which will help us pay additional attention and care in the B2C space for solar business.

GREEN ENERGY SHIFT
IN ELECTRICAL AND POWER SECTOR

K-LITE-PRO





ARCHITECTURAL PROFILES

E : info@klite.in, W : www.klite.in

Facilitating smart opportunities with advanced smart lighting

India's demand for automated lighting equipment will be boosted by the availability of automated and digitally addressable dimmable lights.

Sharmila Kumbhat,
Director, K-Lite Industries

With the government's plan to have 100 smart cities in India, how do you view the demand for smart and efficient lighting in commercial and residential segment?

Globally, lighting as an industry is growing at an alarming pace with projected value of around US$ 2000 million. This decade is going to witness phenomenal changes in the field of lighting. The last decade's thrust was energy saving measures, which gave rise to the LED lighting to replace all other conventional lighting. Application of solid state devices as a source of lighting has given way to new concepts in lighting control and automation. Gone are the days when our options were just limited to the lighting with GLS lamp or FTL lamp with just one off control. Now, the general public are well informed and have started prescribing the lumen requirements, watt per lumen, lighting control, and above all IOT (Internet of things) compliance etc., The order of the day is smart (green) concept in every field viz., smart home, smart city, smart pole, smart lighting , etc. With regard to lighting, smart lighting is a lighting technology designed for energy efficiency. This may include high efficiency fixtures and automated controls that make adjustments based on conditions such as occupancy or daylight availability through lighting control system with an intelligent networked system of devices. These devices may include relays, occupancy sensors, photocells, light control switches or touch-screens, and signals from other building systems.

With the government's plan to have 100 smart cities in India, the demand for smart and efficient lighting in commercial and residential segment is going to be a major challenge. The availability of automated changes with the digitally addressable dimming interface, drivers with CCT tuning capability and many other devices, will drive the consumers in smart cities to demand for automated changes in lighting levels to affect mood, emphasise architecture, illuminate art, and influence action.

How are IT, IIoT and automation enabling the industry to meet the demand of energy efficient lighting for smart cities?

Smart cities use Internet of Things (IoT) devices such as sensors, lights, and meters to collect and analyse data. The cities then use this data to improve infrastructure, public utilities and services, and more. Smart cities ensure that their citizens get from point 'A' to point 'B' as safely and efficiently as possible. IOT usage has facilitated for (a) Smart parking (b) Smart street lighting control, (c) waste management, etc.

Transformation of all cities (Tier 1 and Tier 2 to start with) has potentially increased bulk orders to the manufacturers and in particular the lighting business and the demand are expected to grow fast in the years to come.

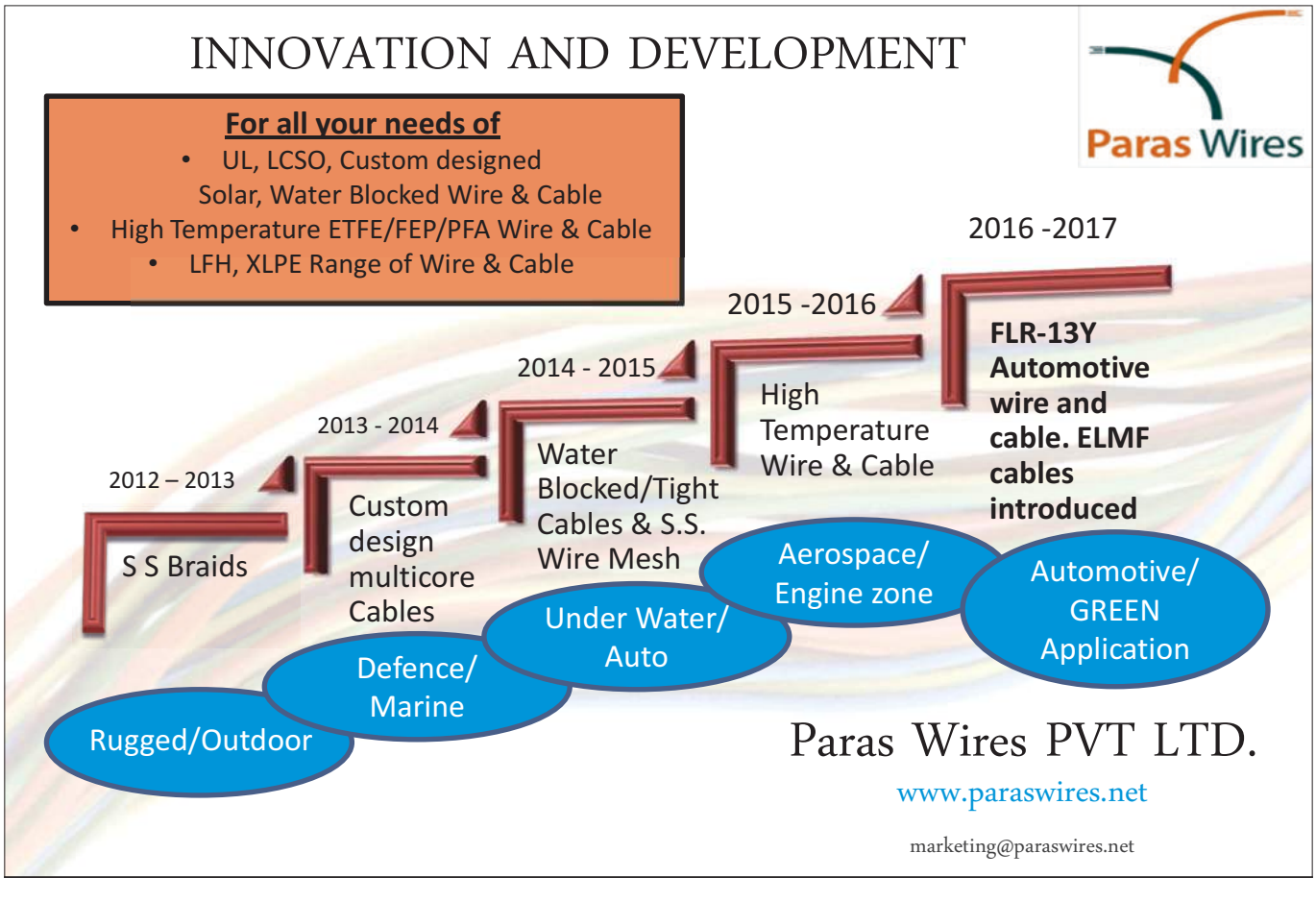
How is the lighting sector contributing in cutting down the environmental impacts and CO2 emissions?

It is only after energy crisis / global warming due to various factors including environmental degradation etc., and the absolute need for energy saving measures were tightened, the possibility of substituting LEDs as a light source in the place of conventional sources like mercury vapour/SV/

GREEN ENERGY SHIFT IN ELECTRICAL AND POWER SECTOR

MH/FTL/CFL lamps etc., was thought of. With LED-lighting we eliminate the pollution caused due to mercury in the conventional lamps, reduction of power demand (for getting the same light output from conventional sources) and thereby reduction of carbon emission in coal based power generation and above all, saving of natural resources which are being exploited disproportionately causing ecological imbalance.

Ecological balance ensures the stability of the organisms and environment. How the excessive uncontrolled artificial lighting known as light pollution contributes to the ecological balance is being highlighted everywhere. Light pollution is excessive, misdirected, or obtrusive artificial (usually outdoor) light. Too much light pollution has consequences; it washes out starlight in the night sky, interferes with astronomical research, disrupts ecosystems, has adverse health effects and wastes energy. Research on insects, turtles, birds, fish, reptiles, and other wildlife species shows that light pollution can alter behaviours, foraging areas, and breeding cycles. In disrupting ecosystems, light pollution poses a serious threat in particular to nocturnal wildlife, having negative impacts on plant and animal physiology. It can confuse the migratory patterns of animals; alter competitive interactions of animals, change predator-prey relations, and cause physiological harm. The main causes of light pollution are (A) Poor Planning. (B) Excessive Use of Light. (C) Streetlamps, (D) Light From Houses and Garage Lamps, and (E) Night time-lighting. It is in such a context that LED luminaires with digital controls have all the provisions for a controlled environment and reduce / eliminate the light pollution



It's time to build strategic measures to enable energy-efficient lighting

IoT and automation play a key role in terms of enabling the smart and energy efficient lighting.

Varinder Bhatia,
Associate Vice President, Havells India

Communication technologies for sensing and transmitting real-time data that enables quick computation and optimal decision-making to enable smart lighting, says Varinder Bhatia, Associate Vice President Havells India.

How do you view the demand for smart and efficient lighting in commercial and residential segment?

Implementing solar power as an alternative to thermal power is a step in the right direction. Globally, India is emerging as a prominent leader in generation of renewable energy. Along with the government's initiatives to promote solar power, our country will lead towards sustainability more rapidly. These days the percentage for acceptance of solar rooftop panels is speeding up. There are various reasons that draw one's attention on the many advantages of installing solar rooftop panels in buildings. The biggest advantage of installing rooftop solar panels is they offer massive cost savings. The tariff rates for rooftop solar in comparison to industrial and commercial tariff rates are cheaper by 25 percent and 35 percent respectively and in some states, it is even 50 percent. It is a secure investment as the price of power generated by solar rooftops will be fixed as compared to fluctuating/increasing tariff from state DISCOMs. It reduces carbon footprint and serves as an affordable source of electricity. It entails extremely less maintenance.

How are the present renewable energy trends impacting the demand for energy-efficient lighting?

Lighting is used extensively in daily life. It is a major factor contributing to our wellbeing and productivity. It enables people to work in homes, offices, buildings and factories. However, lighting equipment consumes resources at every level, while being manufactured, transmission, even while being utilised. At the same time, the ever-growing population and economies will only increase the demand of lighting. Hence, strategic measures that transform markets on the road to higher energy efficiency are required.

Hence, several countries and economies promote energy-efficient lighting solutions by using a combination of regulatory actions, supporting policies, and financial mechanisms. Many countries have effective lighting strategies in place in the form of policies to phase-out inefficient incandescent lamps. Effective lighting is going to directly contribute to the reduction of carbon emissions, resulting into a more sustainable environment and a cost-effective transformation alternative across markets. It is also instrumental in promoting accelerated adoptionof more efficient technology and itreduces peak loading as well.

How are IT, IoT and automation enabling the industry to meet the demand of energy-efficient lighting for smart cities?

IoT and automation play a key role in terms of enabling the smart and energy efficient lighting. It offers a wide number of applications in the energy sector, i.e., in energy supply, transmission and distribution, and demand. IoT contributes majorly to preserving energy as it employs sensors and communication technologies for sensing and transmitting real-time data, which enables fast computations and optimal decision-making. The optimal usage ensures that the lights are aligned with its requirement.

Significant data collection and use of smart algorithms for real-time data analysis can help to examine energy consumption patterns ofdifferent users and devices in various time scales and keep a check on the consumption accordingly.

How is the lighting sector contributing in cutting down the environmental impacts and CO_2 emissions?

It is essential for the companies to focus on manufacturing high-quality products which entails minimal impact on the environment. In continuation to the previous response, technologies have enabled smart products which are vital to ensure sustainability. It's easier to drive sustainability through innovations and smarter technologies, the 'smart' lighting enables minimum wastage and optimal usage. Also, ensuring maximum safety standards and resource efficiency. The product responsibility begins at the conception and design stage and continues throughoutthe product's lifecycle.

GREEN ENERGY SHIFT
IN ELECTRICAL AND POWER SECTOR

HPL Electric & Power Ltd. secures ₹ 179 crores order for smart meters

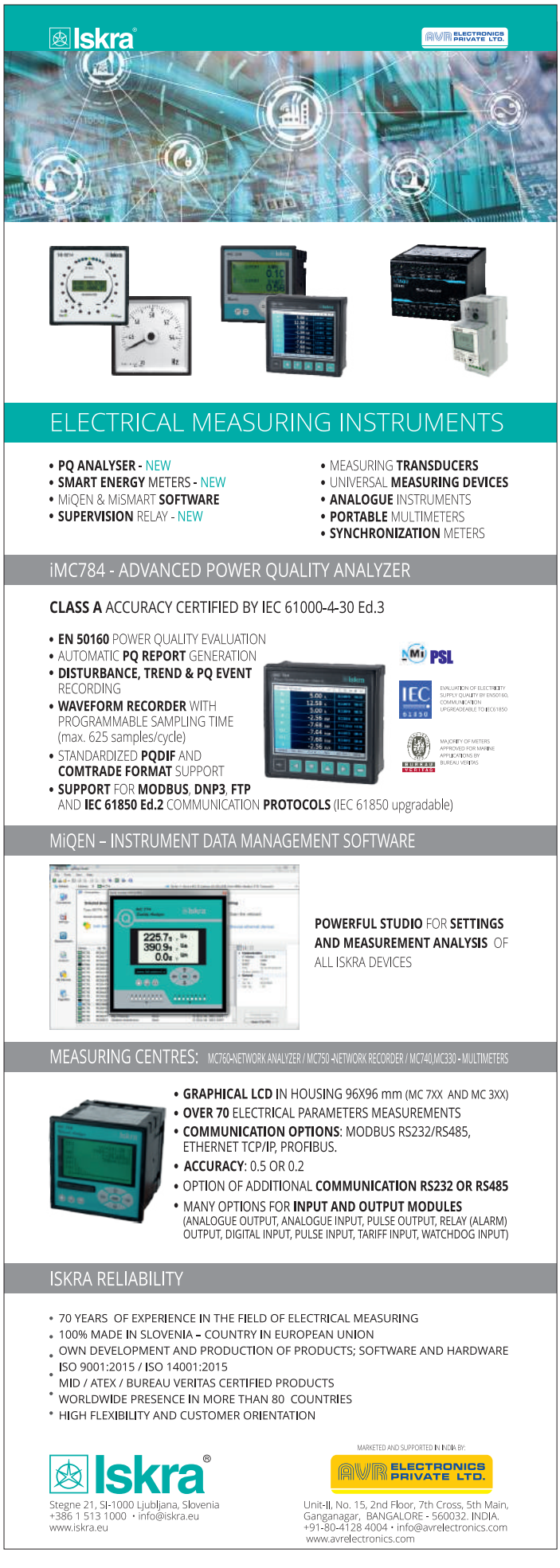
The newly launched range of smart meters with NB-IoT communication technology has been developed in-house at HPL's new R&D facility at Gurugram.

HPL Power & Electric Ltd. reinforces its prowess in the smart metering technology field by receiving an order of ₹ 178.90 crores from the largest private utility of a state in Eastern India. This further strengthens HPL's leadership position in the smart meter manufacturing sector across Indian Markets. At a time when reports of power shortages are making headlines, smart meters will definitely reduce distribution losses, remove theft and pilferage of power. This prestigious order has been secured amidst stiff competition.

Commenting on winning the order, Gautam Seth, Joint Managing Director, HPL Electric & Power, said, "This is a big win for us, fortifying our leadership position in smart meter technology once again. HPL has a whole range of best-in-class metering solutions to meet the requirements of the power industry. This is the start of a positive cycle for smart meter technology adoption leading to a growth in demand across power utility companies. Our recently launched new range of smart meters with NB-IoT communications technology has been developed in-house at HPL's new R&D facility at Gurugram."

At a time when the country is facing several challenges due to the present scenario, this project comes at a crucial juncture when the Indian government has earmarked a sum of ₹ 22,500 crore as the central government grant for the installation of 25 crore smart prepaid meters across the country under the ₹ 3 lakh crore scheme for power distribution entities. This project will work in tandem with realising India's goal of overhauling the power infrastructure towards a better future.

Gautam further added, "We are elated to maintain our front runner position in the smart metering technology manufacturer market and our commitment to Indian government's overhaul of entire power industry deepens."



Digital integration in smart lighting to drive future of smart cities

Demand for smart and efficient lights at public places is encouraging the smart city concept and is fostering the growth of LED lighting.

Rajesh Uttamchandani,
Director, Syska Group

Rajesh Uttamchandani, Director, Syska Group, walks us through the challenges, opportunities, and the future prospects of LED smart lighting in India.

Demand for smart and efficient lighting in the commercial and residential segment?

With the rapid population growth, the need for advanced technology that can help preserve energy resources has become a vital subject. With people being homebound due to the ongoing pandemic, they are investing in upgrading their homes with the latest technology for added convenience and a better work from home experience. Since smart technology is the norm, the smart lighting market is likely to benefit from this demand. Smart lighting solutions have provoked the smart home revolution and the COVID pandemic has given a further boost to this revolution. With people continuing to work from home, there will be a need for integrating smart lighting solutions that are energy-efficient, long-lasting and designed with a simple user interface. Furthermore, the development in the home automation segment has also boosted the use of IoT based lighting systems.

How are the present renewable energy trends impacting the demand for energy-efficient lighting?

With increased awareness of the climate issues and the need for sustainability, we are witnessing an increased trend for products that are both energy-efficient and environmentally beneficial. In the future, the lighting sector will continue to focus on smart lighting technologies that meet consumers' sustainability needs. The Indian lighting sector is on a fast track growth mode to replace basic and inefficient incandescent, halogen, and fluorescent lamps with modern LED lights that provide energy savings and control via digital technology integration. In order to stay up with ever-changing consumer needs and behaviour, smart home products are expected to adopt a human-centric design approach.

Challenges and opportunities for smart and energy-efficient lighting in India?

With the current situation and significant population expansion, the need for improved technology that can aid in the conservation of energy resources has become a hot topic. Cities consume high power and resource expenses. Practicing small yet effective measures such as adopting sustainable products such as LED bulbs that help decrease pollution and IoT-equipped smart home LED lights that offer leisure with a focus on sustainability can bring a significant change. At Syska, we have been encouraging our customers about the various advantages of shifting towards the adoption of sustainable and energy-efficient products and solutions. Owing to the availability of affordable data connectivity services, which is making products easily accessible, we are observing tremendous demand for smart lighting products not only from metro cities but also tier 2 & 3 cities. One of the most revolutionary breakthroughs in the world of AI/IoT is voice command. Now, the world is speeding toward a new era of intelligent products that can be controlled just by using voice from any location with internet connectivity. Syska offers a diverse product line under the smart home appliances category that includes bulbs, tubes, panel lights, downlights, strip lights, and much more, all of which can be controlled via an app or voice assistant.

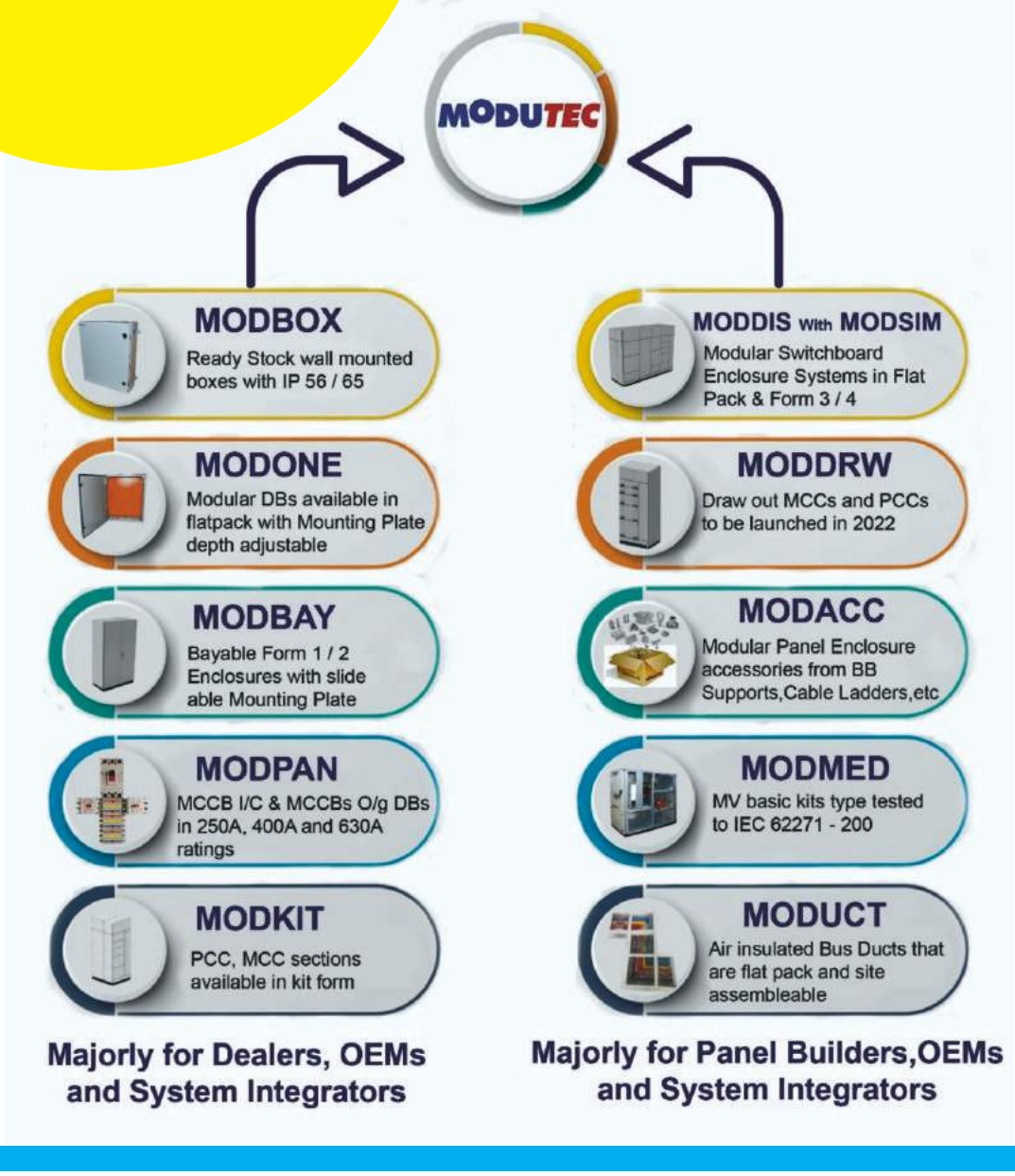
How are IT, IIoT and automation enabling the industry to meet the demand of energy-efficient lighting for smart cities?

The needs and preferences of consumers in terms of lighting have changed dramatically. The COVID pandemic has sparked interest in IoT-based smart products that provide a touch-free experience. Smart lighting with sensors and AI-driven software provide an ease of access, allowing users to operate the product at any time and from any location, which is not only environmentally friendly but also protects users by eradicating the need for physical access.

GREEN ENERGY SHIFT IN ELECTRICAL AND POWER SECTOR

A RANGE THAT GETS YOU CREATIVE!

MODUTEC Enclosures for so many applications !!



MODUTEC READY PANELS PRIVATE LIMITED

No 4, Ashwath Industrial Estate, Uttari Road, Off Kanakapura Road, Kaggalipura,Bengaluru 560116 India

Email : sales@modutec.net Check Out : www.modutec.net

Call Us : +91 9845040837

We are looking for Dealers, Panel Partners, OEMs & System Integrators

Exploring potential of India's manufacturing capabilities

PLI scheme needs to be extended to the electrical industry as well, for us to compete effectively against imports.

Sriram Ramakrishnan,
Managing Director, Fuji Electric

Discussing trends in the electrical equipment sector, Sriram Ramakrishnan, Managing Director, Fuji Electric highlights the benefits, challenges, and expectation from the government to augment's localisation in India.

How are the energy trends impacting the electrical equipment and accessories market?

Energy efficiency is a major trend which is re-shaping the electrical equipment industry. Customers are looking at the total cost of ownership, which includes both capital cost efficiency and lower operational costs based on higher energy efficiency. In addition, many of our customers are increasingly opting for sustainable and green infrastructure.

Fuji Electric is a pioneer in innovating energy technology and our core DNA is to address and solve today's and upcoming challenges to propel our customers into an efficient and scalable future by providing the highest-quality energy and automation solutions.

Fuji Electric products leverage the latest in power semiconductor technology like IGBT, designed and manufactured by Fuji Electric in many of its power electronic platforms, like energy-efficient UPS and variable frequency drives. Fuji Electric is also a pioneer in renewable energy solutions with comprehensive offerings of Solar Inverters, Fuel Cells and Geo Thermal Power Plants.

How do you view the demand and application for AI, automation and digitisation for efficient distribution in the power sector?

The power sector is one of the many that are experiencing deep and lasting changes to business models and operations due to AI, automation, and digitisation.

We have seen a lot of transformation in this sector, and the industry does not look like it was a few decades ago. A Smart Grid is the norm today, especially with the increasing amounts of highly variable renewable power being connected to the grid. The implementation of AI, data automation, predictive analysis, and machine learning (ML) is in the early stages of adoption, but awareness is growing.

Smart metres will become essential for all consumers of electricity, and sensors along transmission lines will be able to constantly monitor demand and supply to ensure stability of the electrical grid. Many industries are opting for AI technology to reduce overall power consumption, which will result in large savings, especially for power-hungry industries like steel, cement, and data centers.

What are the challenges present in the market, especially in terms of cost and obtaining raw materials?

We are facing an unprecedented global supply chain challenge on a variety of commodities that are impacting availability and costs in the electrical industry. Many of the metals used in electrical equipment, like copper, aluminium, steel, and electrical steel, are now trading at historic highs due to an increase in demand globally post-Covid. In addition, there is a global shortage of semiconductors used to provide intelligence to electrical equipment, leading to extended delivery periods and higher procurement costs. In addition, freight costs have increased multifold due to the limited availability of containers.

GREEN ENERGY SHIFT
IN ELECTRICAL AND POWER SECTOR

WORK SAFELY AT HEIGHTS
GET YOUR WORK DONE
FASTER

MACO
Building Relationships

- ✓ SALES
- ✓ SERVICE
- ✓ RENTAL

TELESCOPIC BOOMS

ARTICULATING BOOMS

AWP40SDC

SCISSOR LIFTS

Authorised Distributors of Genie industries (USA)

MACO CORPORATION (INDIA) PVT. LTD. 701/702, Midas Saha Plaza, Andheri Kurla Road, Andheri (E), Mumbai - 400 059
Maharashtra, India | T: +91 22 2835 2337 / 2822 0352 / 2825 9670 | M: +91-93222 20430 | E: access@macocorporation.com

KOLKATA | DELHI | MUMBAI | CHENNAI | BANGALORE | HYDERABAD | PUNE | VADODARA | USA | UAE | BANGLADESH

Genie

Energy

UPS | Servo Stabilizer | AHF
Solar Inverter | Energy Storage Systems
Static Transfer Switches | PDU

The supply chain volatility is expected to continue for another 12-18 months before supply can meet the global demand. In this situation, many suppliers have increased lead times and are also passing on the cost increases to the market.

How are the increased imports of electrical equipment and accessories impacting the market players?

After two deadly waves of the COVID-19 pandemic, our economy needs a strong manufacturing push. India has huge untapped potential to become a global manufacturing hub, but growth in manufacturing has been abysmal despite the availability of cost-effective and skilled labor.

The government needs to provide incentives and the infrastructure to level the playing field with other countries. The Production Linked Incentive (PLI) scheme needs to be extended to the electrical industry as well, for us to compete effectively against imports from China and other countries. In addition, the government needs to support the development of a local supply chain eco-system by securing the availability of raw materials and components used by the electrical industry.

How are government policies helping the industry to increase localisation and domestic manufacturing in this sector?

The 'Make in India' initiative has been in focus and adopted by various industries for some time now. However, as global businesses look to diversify their supply chains, the spotlight is back on the government's 'Atmanirbhar Bharat' (Self-Reliant India) campaign.

Localisation can truly bear fruit when industries and governments come together to keep pushing forward this agenda. Various efforts by the government, such as the Skill India program, the Ease of Doing business policies, Production Linked Incentive scheme (PLI), focus on Foreign Direct Investment, etc. are all steps in the right direction. By combining government and industry efforts, everyone stands to win.

With the global energy sector going green, what kind of efficient equipment can be expected in the coming years?

Climate change is a reality, and the push for carbon neutrality and going green is becoming the urgent need of the hour. The decreasing cost of renewable energy is accelerating the rollout of renewable energy generation power plants, and they are increasingly becoming the major power generation source in many countries. With the expected growth of electric vehicles, electricity is increasingly becoming the most important energy source in many economies, and this is spotlighting the need to reduce energy consumption by increasing the energy efficiency of all electrical equipment.

Today, we see that energy is climbing up the corporate agenda due to sweeping environmental, social, and business trends, including climate change and global carbon regulation, increasing pressures on natural resources, rising expectations about corporate environmental performance, innovations in energy technologies and business models, and plummeting renewable energy prices. This also provides a platform for innovating more and more energy-efficient products for better utilisation of energy. These megatrends impacting the global energy sector change the context in which businesses operate and open companies up to innovation and new paths for value creation in the future.

Automation

AC Drives | Motion Control
Factory & Process Automation
DCS, HMI, PLC | Instrumentation

EPR
electrical & power review

Subscription Form

Subscribe to

India's most comprehensive magazine on electrical and power sector

Subscription Period	Subscription Amount
3 Years (36 issues)	(₹7,200) (USD 150)
2 Years (24 issues)	(₹4,800) (USD 100)
1 Years (12 issues)	(₹2,400) (USD 60)

☐ 1 Years (₹2,400) ☐ 2 Years (₹4,800) ☐ 3 Years (₹7,200)

Name : _____

Designation : _____

Company : _____

Type of Activity : _____

Address : _____

_____

City : _____ State : _____ Pin Code: _____

STD Code: _____ Phone : _____ Mob: _____

E-mail : _____ Web: _____

Payment detail: Cheque/DD No: _____ Dated: _____

Drawn on: _____ for Rs.: _____

In favour of I-Tech Media Pvt. Ltd.,

_____

Signature

(Pls. add Rs.25/- for non-Mumbai Cheques)
For outsude India, Subscription charges In USD

Contact :

I-Tech Media Pvt Ltd.

604, Surya House, Road no.7, Vidyavihar East,
Mumbai-400077, INDIA.

Tel: +91-22-25018601/32682215 Fax: +91-22-2563203

Email: subscribe@eprmagazine.com • Website: www.eprmagazine.com

Taking Advantage of Multiple Brands for IEC 61439 Compliance

A question I've been asking Panel Builders is: "What do you do when you receive an Enquiry that specifies IEC 61439."

The A-category panel builders are usually confident in replying that they are either aligned with a Schneider Blokset or Prisma, others with ABB Artuk and yet more with Siemens Siepan and so on. Well, in the rare case, I do get a response that we have our own certification with XYZ brand of switchgear, with a sense of pride in it.

Most of the B&C category panel builders, however, declare that they do not quote as they are disadvantaged here. How sad. Some say, they opt to use Rittal enclosures. However, they quickly follow through in complaining, that they get out-priced here.

The fact is that hardly a year ago, for every 10 enquiries a panel builder would receive, only 2 or 3 had IEC 61439 specified. Today these numbers have gone up to 6 or 7.

And then earlier, this standard was mostly for oil and gas and power segments. Today, even buildings, industry and PSUs have started making this the minimum requirement.

This trend was hitherto known in major cities in India only. Today, even Tier-II cities this specification is finding its way to project tenders.

And, why do we need this standard and how does it benefit the end user? Well, fires are not uncommon in electrical installations due to an electrical short circuit or bad workmanship, right? So what does an end user do to protect his investment as well as keep his people safe? He generally relies on an electrical consultant.

When the brief is given to the consultant that the client needs the best possible electrical installation without compromise on reliability, convenience or cost, he has the responsibility to differentiate the men from the boys. This is where IEC 61439 comes to his aid.

And, when a consultant specifies the approved list of makes in his tender, he normally gives a choice of 3 to 5 switchgear makes. Why? Because the project should never be dictated by a single make. Electrical distribution in any project has the switchboard as the heart, from which all the power flow takes place. The client in most cases likes to define the makes, based on what has already been used in his projects, as carrying spare inventory of a number of makes would get cumbersome. This of course would also depend upon his past experience with this switchgear brand.

And then there are the considerations of availability of the switchgear to meet project deadlines and the after sales service provided. Now, as a panel builder, it would be a shame if he is pushed out of the race, just because compliance to IEC 61439 with multiple brands is not available with him, isn't it? And the customer can, will and should exercise his preference. Modutec ensures in most cases, the panel builder is able to satisfy his customer requirement and go forward in a win-win-win approach, alignment and accomplishment.

No wonder, Modutec is a trend that is catching up. We guide you through these "No Go' situations and help you serve your customers faster, smarter and greener. The point is, are you as a Panel Builder partnering with us and availing of these benefits. This edge is only the tip of the iceberg. Talk to us and we will be happy to share more ways to Simplifying Panel Building.

For more details, contact –
Ramani Mani,
Managing Director,
Modutec Ready Panels Private Limited.
Email id: ramani@modutec.net

Rose + Bopla industrial enclosures by Citroen Switchgears

ROSE aluminium enclosure

Aluminium enclosure for automation and mechanical engineering

- Provision for fitment of DIN rail and mounting plate
- IP66 protection, powder coated enclosure with seal (normal or EMC), stainless steel captive screws and earthing screws

Rose ALUFORM enclosure

- Aluminium die cast enclosures for MCR and automation engineering, HMIs
- Front membranes and keyboard can be fitted on the lid
- Rectangular dome sequence in cover and base
- IP66 with optional seals Chloroprene (PU, CR) or Silicone (VMQ)

Rose stainless steel enclosure

- Universal industrial enclosure for hygienic areas
- IP66 high pressure cleaner resistant version IP 69K, on request.
- Seal silicone or EMC

Rose polyester standard enclosure

- Robust plastic enclosure for automation engineering
- Provision for fitment of DIN rail and mounting plate
- IP66 protection, glass fibre reinforced polyester enclosure with seal (normal or EMC), stainless steel captive screws and earthing screws

Bopla Euromass ABS and PC enclosure

- Light plastic enclosures for industrial application
- Enclosures with standard or transparent lid
- Light grey shade
- Plastic enclosure with lid, seal, stainless steel captive screws, base with two self shaping fastening screws for internal fitting

BOPLA Uninorm Control Panel Mounting Enclosures acc to DIN IEC 61554, are the Enclosures with standard front frame, rear lid and screws.

BOPLA COMBINORM classic DIN rail mounting enclosures

- CN(S)22AK 2x4 Pole, CN(S)45AK 2x8 Pole, CN(S)55AK 2x10 Pole, CN(S)100AK 2x19 Pole

BOPLA enclosures for electronics instruments

- Desktop Enclosures
- Hand Held Enclosures
- Console Enclosures
- PROFILE Enclosures
- Enclosures for Switch Cabinets
- 19" Enclosures

For more information,
Visit - www.citroenswitchgears.com
mail to - sameer@citroenswg.com,

Innovative solutions for reliable, efficient, clean and combined energy needs by using natural gas genset

At Modern Energy Rental Pvt Ltd (MERPL), we provide several options for equipment rentals. Our strategic warehouse locations allow generators to be distributed generally two to three times faster than our competitors. Our customers choose MERPL rental units for the mobility, reliability and our industry leading support and service network.

A single project manager is responsible for your entire project, minimising the demands on your time and resources. This individual coordinate all of the design/ build work and helps put the system into operation.

Why rent natural gas generator from Modern Energy Rental Pvt Ltd?

Flexible, modular design of gas generators (1500kw and above) and CHP'S

- MERPL provides compact and efficient units of power gensets and combined heat and power units throughout India
- Our gas engine genset range is designed modular. Hence with standardised modules the individual energy demand of any project can be satisfied in any voltage in any capacity
- We have the technical capabilities to deliver combined heat and power (CHP) solutions, enabling you to generate power, heat, steam or hot water by utilising waste heat from the engine's exhaust or high temperature coolant. This gives you extra cost savings, especially in processing environments.
- Whether you need gas generators to run in parallel with the grid supply, or in island mode– our team will design a solution that fits. We also offer a wide range of supporting ancillary equipment, including transformers and power distribution.

Green power solution by using natural gas genset

With significantly lower nitrogen oxide (NOX), carbon monoxide (CO) and particulate matter (PM) emissions, MERPL gas generators are a greener alternative to diesel. Our low emission gas generators run on a wide array of gases, including natural gas, biogas, lpg, lng, cng, apg, flare gas, coalbed gas, shale gas and wellhead gas.

Reduce overhead

Renting cuts costs by eliminating the need for storage, maintenance, repair parts, a service area, and maintenance technicians.

Trusted and comprehensive equipment knowledge.

With a rental generator from S, you can be sure that you're connected to a network of technical and industry professionals ready to answer all your questions.

Performance guaranteed

Rental equipment from MERPL comes with a certified guarantee. We assure you that your rental equipment will be serviced and properly maintained.

Logistics and delivery to your job site

At MERPL, we can eliminate the hassles and costs of transporting equipment to your location.

Support when you need it.

Renting from MERPL provides 24/7 support for your equipment related needs after hours.

Project flexibility

Renting allows you to perform seasonal, temporary or specialised work.

Keep projects on schedule

Renting helps reduce downtime from equipment maintenance and the cost of parts and labour.

For more details contact
Modern Energy Rental Pvt. Ltd.
Phone: +91 22 23707799
Mobile: +91-9820106165
Email: sales@modernenergy.co.in

www.eceindia.com

Sun for Everyone

info@eceindia.com

ECE INDIA

First company in central India
to be certified with BIS
(Bureau of Indian Standards) and IEC

State-of-the-art module manufacturing
capacity of 100 MW

More than 10000
installations of ECE India Energies
solar panels nationally

Highly Efficient & Best-In-Class
Solar PV Modules

POLY & MONO RANGE:
20 W TO 525 W

DCR Module available
at special price

CE IEC ISO #startupindia MSME NSIC ISO 9001 : 2008

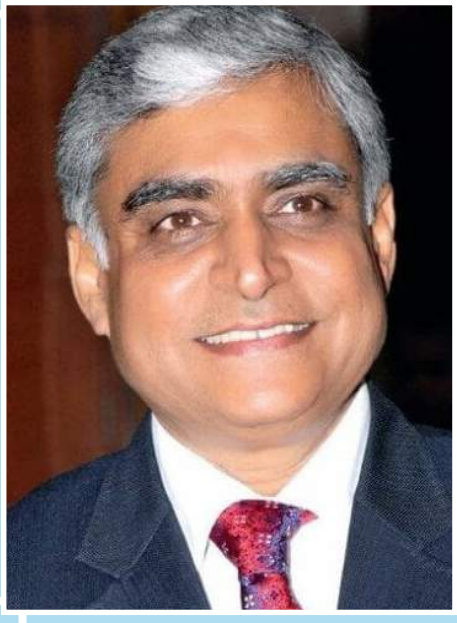
MAKE IN INDIA

Plot No. F – 27, Amravati MIDC Area,
Express Highway NH – 06, Amravati – 444 607(M.S.) India
0721-2520922 |+91-7774092701 @eceindiaenergies

Ongoing coal trend might reroute PV manufacturers to Hybrid systems

Industry might move towards Mono PERC to TOPCON or direct to HJT route for cells to achieve higher efficiency with n-type wafers with bigger size cells and modules.

Rajinder Kumar Kaura,
CMD, Bergen Solar Power and Energy Ltd.



Discussing the changing trends in the Solar sector, Rajinder Kumar Kaura, CMD, Bergen Solar Power and Energy Ltd walks us through the key significant factors that will impact the growth prospects of Solar PV manufacturers in the coming years.

How are the present energy trends impacting the demand for solar PV Modules and mounting structures in India?

The V-curve revival of the economy after the Corona Pandemic is receding; there is a trend of higher consumption of energy compounded with the festival season. However, the EV market will increase demand at an unusual growth rate. Interestingly, the power demand is expected to augment in the coming 7 years, and will be almost double what it is today, at around 360GW after 75 years of independence will become 1000 GW plus in 2030. The size of wafers, cells from M0 to M12 sizes, half-cut cells and new sizes of modules coming on the market even beyond 600W have put new challenges on the structure.

New technologies like Topcon and HJT, offering bifacial modules require new mounting structures. The designers have to look into new designs to offer best output out of the panels. Also, most importantly, the conventional tilt angles need to be relooked and reconsidered, when reflecting surfaces are available.

How are PV manufacturers responding to India's ever-increasing demand for reliable energy supply?

There is a buzz word about the expansion of PV manufacturing. Technology is changing; the supply chain specs are getting changed. Cells of larger sizes are available. P-type to n-type wafers, Multi to Mono Cells, Full size to half cut-cells all has put new challenges to PV manufacturers. As a result, changes to existing cell and module lines will be required. Mostly, module manufacturers are also getting into scaling up their capacities in the 500MW to 1GW capacity range.

For uninterrupted power supply, installations of solar PV need to have storage as a mandatory requirement. The coal shortage may make PV Manufacturers to go in for Hybrid systems. Even the bigger power plants with big capacities will have to be firmed up flow batteries or Hydrogen gas as storage media.

Also, we need look at the stand of Government on the capital goods for electronics and solar sector. I always believed in collective approach in putting the energy to build national resources. We at Bergen have supplied 90 percent of the cell line in India. We have a team of more than 80 engineers who rigorously work towards enabling new technologies. Now we are working on convergence of PV & Hydrogen technologies.

Talking about the capital goods requirements, I think the government need to focus more on the capital goods to be manufactured in India. We have been the suppliers of the capital machine for the industry for the last 37 years. These machines were initially started for the electronics industry. I would like to highlight two different aspects to become independent. One is supply chain; in the supply chain we must first see our stand. We are only manufacturing cells and modules. Cells are being

GREEN ENERGY SHIFT
IN ELECTRICAL AND POWER SECTOR

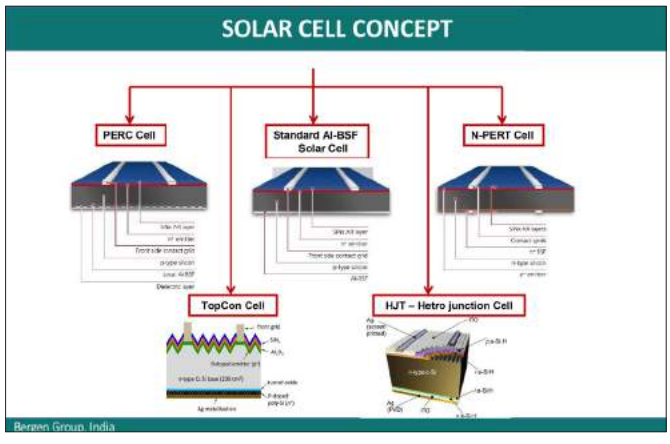
manufactured at a capacity of 2.3 GW and the modules are manufactured with a capacity of 8 GW, whereas the domestic requirement is of 30 GW. This is a huge gap which must be mitigated with time. And I guess the primary reason for this gap is, India never thought about the actual investments required for supply chain made available locally.

What are the opportunities and challenges for the Solar PV manufacturers especially in terms of cost and obtaining raw materials in India?

Firstly consumables and raw materials need to be started manufactured in India. Flux, Silver Paste, EVA, glass, Junction Box, sealing paste, tabbing, screens etc. However to match the GW scale of new plants-supply chain must be encouraged for local manufacturing. PLI type schemes must be also introduced for supply chain items. The Challenge is the technology know-how and stopping dumping by China.

How are the government's policies helping the industry to increase localisation and domestic manufacturing in this sector?

The PLI scheme for the complete supply chain, right from poly-silicon to modules has attracted almost 4 bidders. The government must also ensure that new and latest technologies are encouraged where Opex and LCOE are reduced. Till the complete supply chain is not there, China will continue to arm-twist the Indian players in manufacturing, especially cell and module manufacturers.



What kind of technologically advanced solar modules do you offer for this sector?

Either the industry will go Mono PERC to TOPCON route for cells and try to achieve higher efficiency with n-type wafers with bigger size cells and modules. Or, the industry should go straightaway with the HJT technology which will give more than 25 percent efficiency, and next phase to go in for Tandem Cells. India needs FROG JUMPING through technology to compete with China. Therefore, we see a bright future for HJT cells which will bring lower LCOE for Solar farms.

Leading Manufacturers of
LED Lights & Solar Products
FEVINO
illuminating life, intelligently
Solar Street Light All In One
Solar Street Light Semi Integrated
TOTAL STREET LIGHTING SOLUTION FOR GOVERNMENT PROJECTS
Fevino Industries LLP
Sr. No.36/1/1, Near Lokmat Press, Sinhgad Rd, Vadgao Khurd, Pandurang Industrial Area, Pune, Maharashtra 411041
Mob No.: 8421585960 | 7066844563 Mail: info@fevino.in
Website: www.fevino.in

CSR project implementation using solar energy has long-term impact

This project will create a direct impact on 1000+ Maa Badi's stakeholders and an indirect impact on the parents of the school students as well as villagers.

India is still facing issues related to lack of infrastructure such as electricity, clean water and sanitation, where grid-connected power is still not affordable to many rural areas. Green India Initiative Pvt. Ltd., a for-profit social enterprise, took the initiative to deal with this scenario in India while developing expertise in rural electrification through solar energy projects since 2014. It aspires to bring effective change in rural India by being a reliable sustainability partner for corporate, to execute their corporate social responsibility projects, assuring valued efficient energy solutions.

Today, many corporate are working on healthcare, education, skills development, livelihood, environment, wash, women empowerment, rural and infrastructure development through their CSR fund. A gap between electricity infrastructure, and access and affordable electricity was observed by India Infoline Foundation, under their corporate social responsibility program re-development of Maa Badis at Sarada, Udaipur and Bali, Pali, Rajasthan. They have envisioned supporting the underprivileged communities by providing a modern infrastructure at 30 Maa Badis from Rajasthan. IIFL Foundation did not just aspire to support underprivileged communities for their electricity need but also committed to their growth by implementing new innovative technology for sustainable and impactful projects. The foundation collaborated with GIIPL as a project partner as they have a mission of enlightening 1000 villages till 2025.

The foundation has provided a modern energy infrastructure to 30 Maa Badis with a two kW off-grid solar system for electricity and water lifting through a solar water pump. Team Green India Initiative played a crucial role in supplying material, installation and commissioning to execute this project in 28 Maa Badis of Rajasthan in 200 sq. km. 28 villages concerning thousands of beneficiaries reached.

This project will create a direct impact on 1000+ Maa Badi's stakeholders and an indirect impact on the parents of the school students as well as villagers from nearby areas of Maa Badis. All stakeholders will get a comfortable environment when they visit Maa Badi. With the availability of contact electricity with the help of solar energy Maa Badi's teachers and students can run lights, fans and e-leaning equipment's for their educational development. With the help of a solar water pump, Maa Badi stakeholders can use groundwater effectively for their domestic purposes like drinking and cleaning utensils, hygiene purposes for toilets and hand washing.

With this project each Maa Badi can generate up to 2,600 units in a year and total 78,000 units will be generated by 30 Maa Badi's in a year which further help them to save/earn ₹ 15,000/- to 18,000/- per year on electricity bills/from sun. As per the assumptions Reduction of CO2 emission per 1 kWh of solar panel = 1 kg of CO2 and in India approx. units per kW per day – 4 kWh – Rate of sunshine is available (as India fall under the regions with more than 300 days of sunshine). In this project total Reduction of CO2 emission per 2 kWh of solar power = 2 kg of Co2, so CO2 emission reduced: 2880/1000 = 2.88 Tons per year per Maa Badi and 85 tons Co2 emission can be reduced per year by 30 Maa Badis.

This project is successful in many aspects. The success of this project was possible because of the efforts of the management team of India Infoline Foundation, the project team of Green India Initiative, teachers of Maa Badis, members of supporting local NGOs, and the villagers etc. who worked on this project by contributing their sweat equity (shram-daan) to implement this project.

PXIL launches ESCerts - online energy trading platform

ESCerts is a tradable certificate for EE mandates under Energy Conservation Act 2001.

Power Exchange India Limited (PXIL) recently announced the launch of ESCerts Trading under Perform, Achieve and Trade (PAT) scheme – cycle II. The trading on the platform will commence from 26th October 2021. The company had conducted a mock trading session on 8th October 2021, which received encouraging reception.

'ESCerts' are the Energy Savings Certificates issued by the Central Government in the Ministry of Power to the Designated Consumer under sub-section (1) of section 14 (A) of Energy Conservation Act, 2001. ESCerts is a tradable certificate for EE mandates under Energy Conservation Act 2001. The validity of ESCerts will be up to the next PAT cycle (currently the 2ndcycle in progress). ESCerts will be transacted every Tuesday of the Week on PXIL platform or as decided by CERC/BEE.

Under National Mission for Enhanced Energy Efficiency (NMEEE), the scheme of Perform, Achieve and Trade (PAT) is a regulatory instrument to reduce specific energy consumption in energy-intensive industries, with an associated market-based mechanism to enhance the cost-effectiveness through certification of excess energy saving which can be traded.

Commenting on ESCerts Trading, Prabhajit Kumar Sarkar, MD & CEO, PXIL said "ESCerts trading will take forward and diversify amongst participants the benefits of the PAT Cycle-II, which has reportedly prompted savings of 13.28 million toe of energy for the country resulting in absolute saving of more than Rs. 30,000 Crs. for sustainable growth of the country. We have achieved major market share in REC and TAM market by continuously fulfilling the transactional needs of the market participants through PXIL's robust transaction platform. In ESCerts too, we seek to serve all market participants to fulfil their energy savings requirements."

Increased investments will be catalyst for EV's growth in India

Our AvionIQ series and the ClassicIQ series, is a new-age e-scooter with cutting-edge technology was launched exclusively to the development of EVs for India.

Anshul Gupta,
Director, Okaya Power Private Limited

What was the thought process behind Okaya EV?

It was a natural shift for us to vertically enter into a solution approach rather than merely build batteries for our customers. Another motivation was seeing the customers' pain over the last three to four years. With heavy incentives and an open playing field, first-time manufacturers, traders, startups and so many inexperienced entrants are venturing into the ecosystem. Eventually, it is the consumer who bears the brunt of having to deal with cheap imported products, minus any value-added features or services.

What counts in an electric scooter are the battery, electronics, and software. With 31 years of experience as battery manufacturers, combined with 35 years of electronics excellence through our Microtek arm, we decided to enter the EV space and bring about a change. Based on our extensive R&D our research team has chosen a battery technology that gives more life to the batteries and performs well even at 50°C temperature. We are very conscious of adaptability to the Indian conditions, and Okaya EV's chargers, controllers and BMS can withstand extreme power fluctuations and extreme weather conditions.

As per earlier reports, Okaya had no serious plans to enter cell manufacturing. Are you contemplating a move in that direction now?

There has been some change in strategy. Currently, our investments are more focused on the EV business. Once we can justify our EV volumes through retail and consumer reach, then it is in the natural order of things to enter into cell manufacturing. We did not want to enter into that area till we had an established retail network where the growth comes in every year and providing constant services to our customers. So, if you have a good hold on a product and are selling to the consumer rather than just to the B2B or to the B2G segment, then it makes sense for us, in the long run, to get into cell manufacturing, or at least do something substantial in that segment.

What kind of investment do you intend to put into the e-2W business, and what is the kind of capacity you are planning?

A ballpark figure would be an initial investment to the tune of ₹ 75-80 crore. That includes the land, building team, products and moulds, design, everything. Since we have to launch products every year, we expect to invest a minimum of ₹ 10-15 crore a year into the product and R&D.

Parallel to that, on the capacity for this year, we plan to sell around 26,000 vehicles. This is our first three-year target. Then we will increase the shifts, etc., so we can turn it up a notch. But the entire capacity is being planned at around 70,000 to 80,000 vehicles per annum.

What are your plans for the EV business? Will your products be entirely indigenous?

Ours is a third-generation family business and we make in India. Our fully sustainable, current manufacturing hub is in Himachal Pradesh. We are committed to quality and our newly launched e-scooter has been running many test miles on the high mountain roads of the state. To factor in future demand, we will also set up a plant in Haryana in the next six months.

To target Tier-II and Tier-III cities, we addressed both the entry and mid-level segments and launched two variants - the AvionIQ series and the ClassicIQ series. This is a new-age e-scooter with cutting-edge technology that was created at state-of-the-art research centers dedicated exclusively to the development of EVs for India. This comes combined with the trust of Okaya. Additionally, we provide service at your doorstep.

As per our initial planning, we were focused more on the entry and mid-level segments. With the FAME subsidy extension, we increased our focus on our product for the premium segment, which is now scheduled for launch before Diwali. We are also looking forward to launching our high-speed motorcycles in early 2022.

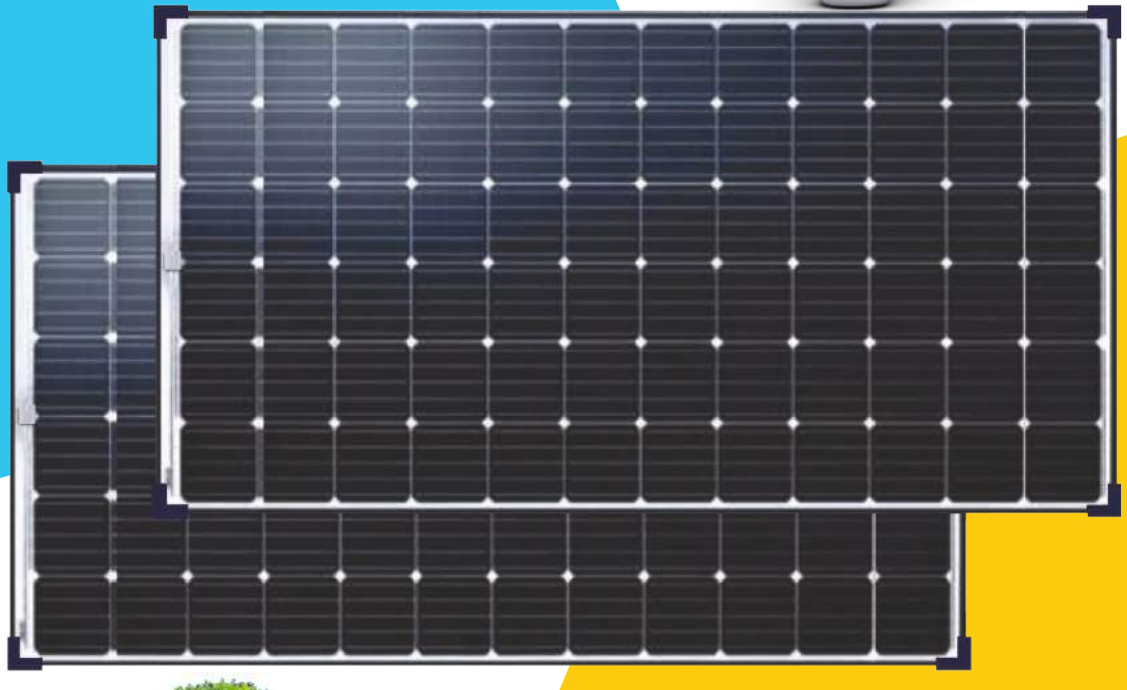
GREEN ENERGY 2HIFT
IN ELECTRICAL AND POWER SECTOR

Solar Lighting System | Solar Power Plant | Solar Thermals | Solar Pump

Highlights

IS ROOF AREA LIMITING THE SIZE OF SOLOR POWER PLANT ?

USE G - PLUS CELLS SOLOR PANEL



350-400 WP 72 CELL- MONOPERC SOLAR PANEL

HIGHLY EFFICIENT PV MODULE

We are system integrators and we do EPC also

SOLAR GLASS | INSULATED GLASS | LAMINATED SAFETY GLASS | TOUGHENED GLASS | LED STREET LIGHT GLASS

Birkan Solar

BIRKAN ENGINEERING INDUSTRIES PVT. LTD

S-4 & S-6, Site IV, Sahibabad Industrial Area, Ghaziabad, Uttar Pradesh, India

+91-7042101164 / +91-9999387854

karishma@birkanengg.com / robinmukesh@birkanengg.com

www.birkansolar.com

SunPower believes in developing last-mile service with Lithium-ion and Solar

Kindly walk us through your company's key profile and your focus?

Rahul: Sunpower Renewables is an Australian company with its headquarters in Melbourne. We develop and manufacture portable lithium solar generators. We have integrated all the different components of a solar power plant, along with battery storage, into a single compact device. So, all you have to do is connect a solar panel to it and charge from the grid. The unit is very sleek, compact and well designed with lithium-Ion battery storage; and it allows you to charge any electrical appliance with that unit.

Natasha: We are creating a situation where a customer can choose according to their energy needs. If you've used a diesel generator or an inverter, you get a set number of sizes, and choose accordingly. And if you're using diesel, you're burning that much diesel each and every time, no matter how many appliances you're using. So, our energy is actually not one size fit for all, it's more bespoke energy customised according to your requirements. So it's sustainable in every sense of the word.

How do we deal with the geographical challenges in terms of attaining power stability?

Rahul: I think there is a misconception that solar only works when the temperatures are high. Solar is most effective when the temperatures are in the mid 20s; so, solar can generate power even during winter and during the monsoon, especially due to the installation and ambient temperatures. So generation might be limited during the monsoon, which means, you might be able to have generation for around 300 days out of 365 days. And our products are portable units that can withstand and work in temperatures as low as -50°C and as high as 50–55°C and they are built to withstand these extreme temperatures.

Natasha: While building these machines and products, we considered the variability and power, and if a solar panel can withstand it, our machines should be able to couple with it.

What kind of technology have you been using and how is it helping you to attain maximum efficiency in your products?

Rahul: Our products really became viable when lithium-Ion batteries became commercially viable. In 2015-2016, the price of lithium-Ion batteries was reduced, and that's when we could start developing our product. Also, using good quality lithium-ion batteries has been the key enabler for this product, which allows for energy independence. The batteries themselves have a lifespan of 10 years or more, with an efficiency of more than 90 percent. Our innovations are integrated well with the other components of a solar plant and the heat management of the unit to allow the portability.

THE smarter E | INDIA

India's Innovation Hub for the New Energy World

Hall 11, Helipad Exhibition Centre, Gandhinagar

DEC 02–04 2021

www.TheSmarterE.in

COME & MEET INDIA'S LEADING SOLAR BRANDS

adani Solar | Agrawal Group Goa | Aatmanirbhar Energy for Nation | Bender The Power in Electrical Safety | Citizen Solar solarising the nation | Credence Solar Panels Private Limited

Ecoprogetti Specialist in Photovoltaic Production Process | EVVO | ESDEC IN | GOLDI Renewed life | Growatt | GreenBrilliance

Hitachi Inspire the Next | IFORE Green Power | INA the way to Energy | Kiansh International | Kosol Energie | krannich global solar distribution

KSolare Energy Pvt. Ltd | navitassolar conserve | sustain | flourish | NOVA | Nyalkaran Energy LLP | OctaBees | PAHAL Solar

Photovoltaic Solar | PIXON Redefining Solar | Power-One Micro Systems Pvt. Ltd. | powertrac Updates Your Needs | RAYZON Solar | redren

RenewSys let there be light | SAMPTEL Energy | sanelite Solar Private Limited | SOLARIUM | SOLEX | SUNBOND

Sunchaser Structures | sunevasolar | Trinasolar | URJA An ISO 9001 : 2015 Co. | Wattkraft | JOINTWELL Cable Lugs & Connectors Since 1975

Just to name a few ....

Be a part of the energy transition in India!

inter solar connecting solar business | INDIA

ees electrical energy storage

POWER 2 DRIVE | INDIA

Contact us: Mr. Brijesh Nair I T:+91 22 4255 4707 I E: brijesh.nair@mm-india.in

Natasha: I think we've also been lucky that we had a lot of R&D focus at a time where smart technology has been growing, as it allowed us to take all the components in a traditional solar plant, small/large/medium/micro sized, and are portable with a very slick design, which you can use and move with you at any point anywhere.

We also have a lot of clients who prefer to put this machine outside the petrol pump or in their private premised. Moreover, we have customers who come to me and say that they want to keep their machines right next to them. It also has a start-up tablet capability that allows you to optimise your power.

Focusing on R&D and innovative technologies allowed us to take all the components in a traditional solar plant.

▶ *Nitasha Badhwar - Co-Founder & Head of Strategy, SunPower Renewables*

People are willing to go green, but the cost competencies and cost conscious market remains to be a concern.

▶ *Rahul Kale, Founder & CEO, SunPower Renewables*

What are the challenges to meeting the demands in a cost-conscious country like India?

Natasha: Definitely, people are cost conscious, and that's actually something that all of us can support; as pandemic has hit various industries and people at large. So it's important to be conscious of about it. Another important thing is, we have reached grid parity, and the price of panels and lithium-ion batteries has dropped significantly to the place from where it started. We are now in a position where customers have come back to us and mentioned of being able to save over 70 percent of cost with solar. It's an amazing thing, because if anything supports uptake, it is that you are able to save on the bottom line.

Rahul: Traditionally, solar power was used to power the supplementary power in India, and in most markets. However, due to the seamless cut off, our unit has actually put the petrol pump nozzle on our machine. So, even when there is no electricity they don't have to run the diesel generator and can still keep pumping and selling fuel. And not only is there a 70 percent reduction in cost, they've actually reported an increase in sales by about 20-25 percent. It is a very cost-conscious market. And I think most people now want to go green. But obviously, the cost becomes an inhibitor.

If you look at our products on the smaller range, which is the portable side, we are on par with, say a home inverter, UPS kind of a solution. Compared to a diesel generator, we have a payback of about 8-9 months, which I think given a 10 year lifespan for most people; and if you get rid of the operational headache, it's still a viable investment. And most people are now transitioning to that space.

Natasha: In keeping with sustainability, we see our vision for the business being very holistic. If it matters to us, it has to matter to the end customer. What the end customer is experiencing is something that has to come back to R&D. It has to be further developed, it has to be optimised and it has to be solution-oriented. And what we're seeing is that finally, because we have reached grid parity a couple of years ago, the projects are all-encompassing and the products are in a position where, not only are people saving on costs, they are also increasing sales. So it's coming quite well together.

What are your plans, projections, and offerings to the industry?

We were heavily focused on R&D, and by putting our products out there, we've had a lot of feedback from customers. They come to us and ask us to develop a last-mile anxiety with EV cars coming into the market. We've also had customers who deal heavily into the port industry, asking us to build products just to boost cars to get them off the ship. So what we are really looking at is everything in the last mile. We'll definitely go into specifics with you, hopefully in the future, but for now, represent last mile anxiety for electric vehicles. Electric vehicle owners, we're looking at the last mile, with ports left.

Delivering technology-enabled one-stop solutions to solar industry

SOLAR EXPERT is one of the fastest growing Solar EPC (Engineering, Procurement & Construction) for Solar Power Plants. The company, located in Vadodara (Gujarat) has executed 100+ MW of Solar Projects for the leading companies across India.

As a solar EPC company, its priority is to reduce the lifetime cost of energy, ensuring long system life and long-term performance. As per the Indian Standards Guidelines, we construct civil pedestal with M20/M25 ratio. Also, we take test report to analyse compression strength of the civil pedestal. We further design systems to match the location requirements including wind speed, corrosion risks and maintenance requirements and other factors. Our teams, including in-house engineering, procurement, projects and O&M teams work closely on each project design.

Below mentioned are some of the factors that gave an edge to Solar Expert over competition are;

- Hands on experience in rooftop solar installations, with more than 65+ completed projects
- Commissioning of projects within 3 – 6 months of contract closure, typically less than 30 days of actual installation work on site.
- Equipped with an experience in-house engineering, procurement and project management team with a thorough understanding of solar
- Consistent plant performance and customer satisfaction leading to 100 percent repeat business from more than 10+ corporate clients
- Strict adherence to all relevant safety guidelines and employment of experienced personnel for the job resulted in 100 percent accident free man-hours.

We have created a dedicated solar market place that acts as a one-stop solution for all your solar needs. We will be providing an end to end service to the customer's right from free consultation and selection of the solar system, to smooth the installation process. We deliver superior after-sales services with our technology-enabled platform.

For more details, email to – solarexpert35@gmail.com
www.solarexpert.in

Reliable Fans for transformer cooling application

ZAplus is the perfect corrosion free housing with improved performance, wherein the air is guided in a proper fashion through the radiator.

To ensure a reliable electricity supply, Power Transformers play a key role in the society and its infrastructure. This kind of system can be found in power plants and in the electricity grid in substations.

During operation of typically oil immersed transformers, losses occur in the tankand generate heat. These are concentrated in what is known as hot spots in the winding and significantly inhibit the service life of the transformer. Overheating of the winding would bring the system to a stop, which could result in a "blackout".

According to studies by the University of Stuttgart, the service life of a transformer is reduced by a factor of 2 if the hot spot temperature increases by just 6 K. For decades mainly, axial flow fans have proved effective for use with powerful air-cooled transformers by using radiators or oil-coolers.

On a first view cooling seems simple. The hot oil (top oil temperature) flow by "natural" convection in an external radiator. The radiator basically is "naturally air cooled", which is based on convection and radiation. This type of transformer is called ONAN (Oil Natural Air Natural).

But Transformers with high power density and/or high ambient temperatures the heat dissipation will be insufficient by natural cooling methodology. The logical and simple way to improve the cooling capacity of a Transformer is to increase the air flow by using fans. Doing this we come to the most used power transformer types called ONAF(Oil Natural Air Forced).

But the cooling capacity of ONAF cooling systems depend on the local flow situations and temperatures in the radiator. Reliable cooling is a must to get the best performance from a Transformer, so the reliability of the fans used is of huge importance.

An ideal fan should:

- Deliver the designed airflow
- Have high efficiency or in other words lowest auxiliary losses
- Have high reliability, as it is a 24 x 7 operation
- Have long lifetime
- Be corrosion proof
- Have lowest noise

ZIEHL-ABEGG offers Fans that meet all the above-mentioned criteria, by offering Compact External Rotor Motor based Axial Fans both in traditional AC-Technology (Asynchronous Motor) or state-of-the-art EC-Technology (Electronically commutated DC-Motor).

To provide the perfect air flow ZIEHL-ABEGG offers unique fan technology like FE2owlet and ZAplus. The FE2owlet fanis inspired by nature (Owl) which not only reducesthe sound emissions to a minimum but also improves the efficiency of the fans. ZAplus is the perfect corrosion free housing with improved performance, wherein the air is guided in a proper fashion through the radiator.

The development and testing of these fans has been conducted in the Unique TÜV and AMCA certified laboratory in Germany.

Contact: vikas.kundra@ziehl-abegg.in
Web: www.ziehl-abegg.in

Vikram Solar commissions Kolkata Port Trust's first solar project

Cumulative green energy generation from the plant would be 1.4 million units/year and the project will reduce 1260 tonnes of CO2 emissions annually.

Vikram Solar commissions 1 Megawatt (MW) solar plant for Kolkata Port Trust (KoPT), The Syama Prasad Mookerjee Port Trust. This is KoPT's first solar plant located at the Haldia Dock Complex, KoPT.

The ground-mounted captive solar plant of KoPT is expected to generate 1.4 million units of green energy per year and reduce approximately 1,260 tonnes of CO2 emissions annually.

Gyanesh Chaudhary, MD, Vikram Solar said, "We are proud to partner with Kolkata Port Trust (KoPT) on their first step towards solarisation. We are confident KoPT's commitment towards energy sustainability will inspire other infrastructure development projects and organisations to transition to clean energy sources to meet their power requirements and enable India's energy security. We hope to partner with KoPT in their future ventures towards enhancing their green energy portfolio. As India's largest solar module manufacturer, we will continue to collaborate with our clients to deliver the best of quality and performance solar solutions, upholding our commitment of enabling clean energy transition in India and across the globe."

Speaking at the inauguration, A.Ganesan, General Manager (Engineering) – Haldia Dock Complex, KoPT said, "We are glad for the successful commissioning of the 1 MW solar plant. This is our first step towards green energy adoption and reiterates our commitment towards contributing to the National Solar Mission while reducing our carbon footprint and effectively choosing to restore the climate. We chose Vikram Solar as our green energy partner for this project after assessing their impressive EPC portfolio, reliable and high-quality products and robust project execution capabilities. We have further plans to expand our green energy portfolio and we encourage others to select energy sustainability through solar."

Building a sustainable ecosystem in India with solar PV

This article provides a brief view about the present market scenario for solar PV manufacturers in India. It further walks us through the details pertaining to challenges and opportunities for increasing localisation in solar PV.

Present market demand scenario of Solar PV in India

The solar PV segment dominated the market share in 2020, and it is expected to be the largest segment during the forecast period, owing to supportive government policies to develop clean energy generation in the country's energy mix.

India has an abundance of solar irradiance and receives solar energy throughout the year. This has created enormous opportunities to exploit solar energy from the sunniest sites in the country, especially Rajasthan, Gujarat, and Andhra Pradesh. The factor mentioned above, clubbed with foreign investment and extensive R&D projects, and provides an opportunity for the growth of the solar energy market in India.

The government of India has taken several initiatives with the Ministry of New and Renewable Energy (MNRE), drafting plans and putting out tenders, which, in turn, is expected to drive the market during the forecast period.

Opportunities and challenges for Solar PV sector in India

High manufacturing costs: Due to the high cost of solar power generation, a lot of the premium equipment used in a solar power plant had to be imported. The high module prices, along with other teething problems such as central and state policies and land issues contributed to the slow growth of the solar industry. It was from the year 2014 that there was a noticeable growth in the solar industry, thanks to the reducing cost of equipment owing to equipment used by Indian manufacturers. However, trying to compete with China's strong manufacturing base still poses a huge challenge.

Waste management: Any growing industry will produce waste and solar is no exception. Even though solar modules and other equipment have a life of about 25 odd years, the modules do get damaged and need to be disposed of. This contributes to the solar waste in the country. Currently, India does not have a solar waste disposal policy and needs one on the lines of e-waste, where the guidelines are set for proper disposal or recycling of waste generated by the solar industry.

Land availability: One of the biggest challenges in the solar sector is the availability of land. Solar PV plants require a large amount of contiguous land to set up. This is particularly challenging in a country like India, given the land ownership issues, local politics and terrains.

Financing mechanism: In order to give a much needed push to a growing industry, there needs to be a well thought out set of mechanisms that can generate the required cash flow to sustain it. One such mechanism is the green bonds and green climate fund that were set up in India and have already seen transactions worth $ 10.3

billion (2019). More such bonds are needed to ensure that the industry reaches a financially viable position.

India has medium-scale plants of 0.5-1 GW capacity, while plants in China have capacities of three-five GW, thereby providing a huge advantage in cost reduction. Firms in India are provided loans with an interest rate of 10-13 per cent with shorter return periods, whereas only 0-0.5 per cent of interest along with long tenures are provided by China. The industry requires more facilitating policies for acquiring land, innovative financing models and clarity on the custom duty structures for the solar manufacturers in developing a sustainable eco-system in the country and strengthening their position in the global market.

The 'Make in India' initiative has been in focus and adopted by various industries for some time now. However, as global businesses look to diversify their supply chains, the spotlight is back on the government's 'Atmanirbhar Bharat' (Self-Reliant India) campaign.

Benefit to customers

For Indian customers who choose products manufactured in India, the benefits are multifold. To begin with, products designed or engineered in a country are aptly suited for their home markets as they are developed and tested in local conditions. This can help qualify a product as a 'best-in-class' in its category. Second, due to local manufacturing, customers (intermediary or end use) can expect faster deliveries as importing sometimes comes with delays driven by travel times and lengthy documentation processes. Thirdly, taxes, duties, and costs on imported goods can result in the local product being competitive from a price point of view, allowing the buyer to appreciate value pricing.

Benefit to companies

Local manufacturing enables a great deal of flexibility which allows cost efficiencies, control over quality, faster turn-around times in terms of production, transportation, deliveries, etc. Additionally, localisation can not only save production costs but can also cut down logistics costs and delivery times. Manufacturing locally helps India's industries grow and its talent pool to develop specialised skill sets. Such scale and diversity drive companies to innovate.

Localisation can be the gateway to further opportunities such as export growth, import substitution, and contract manufacturing. Developing economies of scale, focusing on quality, maintenance of foreign country compliances, investment in R&D and technology, and right pricing can help accelerate India to a new level of competitiveness and scale.

Benefit to the country

The benefits of localisation at the country level are multifold. First, it helps to boost the economy and the lives of people. India has the world's largest population of youth at an employable age. This makes for a great opportunity for the country to supply a workforce to its industries.

Localisation-benefiting the vertical transport industry

As cities continue to expand and infrastructure proliferates, elevators and escalators are a main part of the narrative. To support this demand for elevators and escalators, major industry players have turned towards strengthening their localisation.

Panelstack's AI-assisted intelligent solar sales and design platform can assist in solar site modelling and load profiling. This software also prepares shade analysis, loss analysis, and system metrics such as annual production, monthly production, performance ratio, and specific generation. This software also aids in sales and financial proposals, allowing users to predict financial savings and the term of return on investment. We are giving technology breakthroughs that make site design and analysis considerably more reliable and trustworthy in this era when the solar energy business is on the rise. This serves as a symbol of trust for both our customers who use this AI-assisted software and us. So come along with us on this incredible journey towards a solar-centric future!

Expertise shared by
Siddharth Gangal,
CEO, The Solar Labs

Digitally integrated lighting will facilitate energy efficiency

Saving power from external additional sources will enable us reduce dependency on conventional power.

Rahul Bankar,
Director, Fevino Industries LLP

We must look at adopting various digital tools and technologies to reduce energy consumption, along with the anticipated failures in lighting systems, says Rahul Bankar, Director, Fevino Industries LLP.

Is there a Demand for smart and efficient lighting in the commercial and residential segments?

Smart cities consume less lighting as compared to regular lights. This is actually power saving which will be used for commercial and residential use. If India reaches its goal of 100 cities, it will be a big power saving as well as beneficial for industrial growth.

Renewable trends are impacting the demand for energy-efficient lighting

This basically directly impacts the sources we have for energy/power production. The demand for energy has been incessantly increasing day by day. By using energy-efficient lighting, we can save lots of energy, which will be useful for our future industrial growth. With the power generated from renewable energy, our future energy will be useful at a lower cost.

Challenges and opportunities to increase smart and energy-efficient lighting in India

Energy-efficient lighting is very essential in India. India is already in an energy crisis. To fulfil its needs for energy for industries, corporate, and the farming sector, we have to save power from other sources.

Energy efficient lighting will save more energy by using new technology and new ideas. Currently, it has challenges like quality and new edge technology which we have to apply as early as possible with lower cost. If we overcome these challenges, it will be a great energy saver for us.

Enabling industry to convene demand for energy-efficient lighting in smart cities with IT, IoT and automation

IT & IIoT integrated with regular lights will save ample of energy and power. We can manage its on/off schedule from one point, which can be useful for energy saving. We can detect faults and other problems in lights by managing them, which allows us to solve them in less time and money. Ultimately, we use these techniques to reduce energy consumption and failure rates.

Lighting sector's contribution in minimising the environmental impacts and CO2 emissions

This is from the evolution of LED technology. By using highly efficient LEDs and drippers, the power consumption is reduced and lumens are greatly increased, which directly impacts the required wattage. By using low watt lights, we emit less CO2 as compared to previous lighting products. By using high-lumen lights, we require fewer quantities than previously used.

GREEN ENERGY 2HIFT
IN ELECTRICAL AND POWER SECTOR

Periodic testing and maintenance – a mandate for uninterrupted power supply

Increasing imports of low-cost and compromised quality products hamper the efficiency and reliability for uninterrupted power supply.

Navin Goliya,
Director, Kusam Electrical Industries Limited

Talking about the significance and vitalities of T&M instruments, Navin Goliya, Director, Kusam Electrical Industries Limited says, "The energy sector must look for ways to sustain faultless power supply by conducting regular periodic maintenance."

How are the present trends impacting the demand for T&M instruments in India's energy sector?

Due to the changing focus of the Government of India for renewable energy generation such as solar energy and wind energy, the demand for testing & measuring instruments elated to solar and wind energy installations are in demand. New instruments to measure the related parameters are developed by manufacturers to meet the growing demand of such instruments. Also, transmission lines rated for 765KV are being increasingly used to transmit large quantity of energy that has led to the development of all related and allied products suitable for use with 765KV lines.

How is the testing and measurement industry responding to the ever increasing demand for the uninterrupted power sector in India?

Electricity has become indispensable for our very existence; and to carry out our daily routines electricity is necessary for every industry to operate. And everyone needs uninterrupted supply of electricity. To achieve this, the power generating stations, transmission lines, and the distribution stations should operate without faults. To ensure that there are no faults in the entire system they should be checked periodically to ensure that all the instruments/equipments are working appropriately. Test and measuring instruments play a very significant role to ensure that all equipments are functioning properly, thereby ensuring uninterrupted supply of electricity.

What are the challenges present in the market, especially in terms of cost, technology up gradation, and obtaining raw material?

On the one hand, due to shortage of electronic components world-wide, the cost is going up and the delivery times are shooting up to 4-6 months for components and finished goods, the DGFT has issued circular regulating the import of electronic ICs, which is very difficult to comply. This will lead to further shortage of components, which will affect production of electronic instruments. It will also retard the upgradation process of technology in the field of electronics.

How are increasing imports in imports for electrical equipment impacting the service and quality of T&M in the power sector?

There is a significant increase in the imports of Electrical Equipment's including Test & Measuring instruments. Due to the government organisations policies to buy equipment's @L1 there is large scale imports of low cost poor quality instruments in India which cause constant failure of the equipment's due to poor quality instruments in India further leading to poor maintenance of equipment resulting into constant failure in the equipment. These organisations should change the buying system from L1 to quality products so that the failure rate of the capital goods is reduced. Further, this will increase the demand for quality testing and measuring instruments.

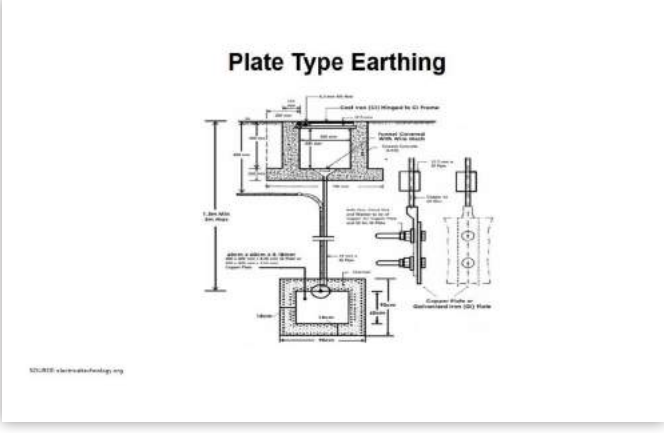
How are government policies helping the industry to increase localisation and domestic manufacturing in this sector?

To help industries to increase localisation and domestic manufacturing in this sector which requires high technology and large volumes for economic production, there should be level playing ground compared to Chinese/Taiwanese manufacturers who dominate the market due to large volumes and least red tapeism. There are least approvals required for setting up a unit in Taiwan or China, least paperwork thereby giving the entrepreneurs time to develop new products/ technologies and expand their business. This can accelerate localisation of production. Otherwise the localisation in this industry will be very slow.

GREEN ENERGY 2HIFT
IN ELECTRICAL AND POWER SECTOR

Features of plate earthing diagram – explained

Electrical earthing is the phenomenon of connecting metallic parts of an electrical component to the earth.



Earthing is the connection of all the neutral points present in the supply of the system to create immediate discharge of the electrical energy during a fault without any danger. Earthing provides an alternate path for the fault current to flow and ensures that all the exposed conducting materials do not reach their respective maximum potentials.

A good earthing system always has low impedance to make sure that sufficient current can flow through the safety device and disconnects from the supply during the occurrence of fault current. A good earthing system protects the personnel against electric hazards and safeguards electrical devices, appliances, power tools, machinery, etc., from current leakage. Properly designed earthing also avoids interference with the communication circuits present in the system. There are many types of earthing systems which include plate earthing, pipe earthing, rod earthing, and chemical earthing.
Plate Earthing: In this type of earthing, a plate made up of galvanised copper or iron is buried vertically at a depth of not less than 3m from ground level. The plate connects all the conductors to the earth.

Pipe Earthing: In this type of earthing, a galvanised steel perforated pipe is buried vertically connecting all the electrical conductors to the earth where the depth of the pipe depends on the soil conditions. Pipe earthing is an economical type of earthing compared to other earthing methods.

Rod Earthing: In this method, a copper rod of 16mm diameter and galvanised steel or hollow section of 25mm is buried vertically at a depth of not less than 2.5m. This resembles an embedded electrode which reduces the earth's resistance to the desired value. The procedure implemented for rod earthing is similar to that of pipe earthing.

Chemical Earthing: In this type of earthing, a chemical compound material is applied to the charcoal and salt layers and buried inside the earth. The procedure for implementing this method is also similar to pipe earthing methods.

Different factors are to be considered for choosing the type of earthing applied such as safety requirements for humans and equipment, maintenance of the equipment, economic considerations and the continuity of supply at different voltage levels and eliminate dangers from threats and hazards.

Below mentioned are a few applicable standards that are followed throughout the execution of the earthing system:

- IS 2309- 1989 Indian Standard for protection of buildings and allied structures against lightning
- IS 3043 stands for Indian Standard Code of Practice for Earthing
- Indian Electricity Rules 1956
- Central Electricity Authority Regulations (CEAR)

For laying any kind of earthing, the following materials are used which include a megger for testing the resistivity of earth, welding tool kit, excavator for earth pit excavation, copper wires, pipe, coke/ charcoal and salt, PVC wires, cement, bricks, funnel, wire mesh.

Plate Earthing Procedure

To implement a plate type earthing, a plate made up of either copper or galvanized iron (GI) with dimensions 600mm x 600mm x6.35mm is buried vertically in the earth which is not less than 3m from the ground level. For successful completion of the plate type earthing, an earth pit must be dug, plate electrodes should be inserted, earthing and water connections are to be made, the pit must be backfilled and an inspection chamber should be built. The plate type of earthing is generally carried out in a muddy area where the most percentage of the earth's soil is loose.
Earth Pit: Excavation is done at a feasible spot in the substation and an earth pit of minimum size 900mm x900mm and a depth of 3m below the surface is created.

Plate Electrode: A GI plate of minimum size 600mm x600mm and thickness of 6.3 mm is used and in the case of a copper plate a minimum thickness of 3.15mm can be used. The plate is placed in such a manner that the earthing plate is surrounded by an alternate layer of charcoal and salt.

Earthing Connection: In an earthing connection a GI strips of a minimum 50mm x 6mm to GI plate firmly with a GI nut, bolt and washer where each strip is fixed and welded to the plate at two different locations. These connections are made stronger as any loose earthing can lead to an adverse effect on the electrode system resistivity.

Water Connection: To maintain moist conditions around the earth plate, a fixed GI pipe of diameter 25mm is attached at the top covered with a wire mesh and water is poured through this pipe after which the excavated pit is backfilled with soil which is free of stones and lumps.

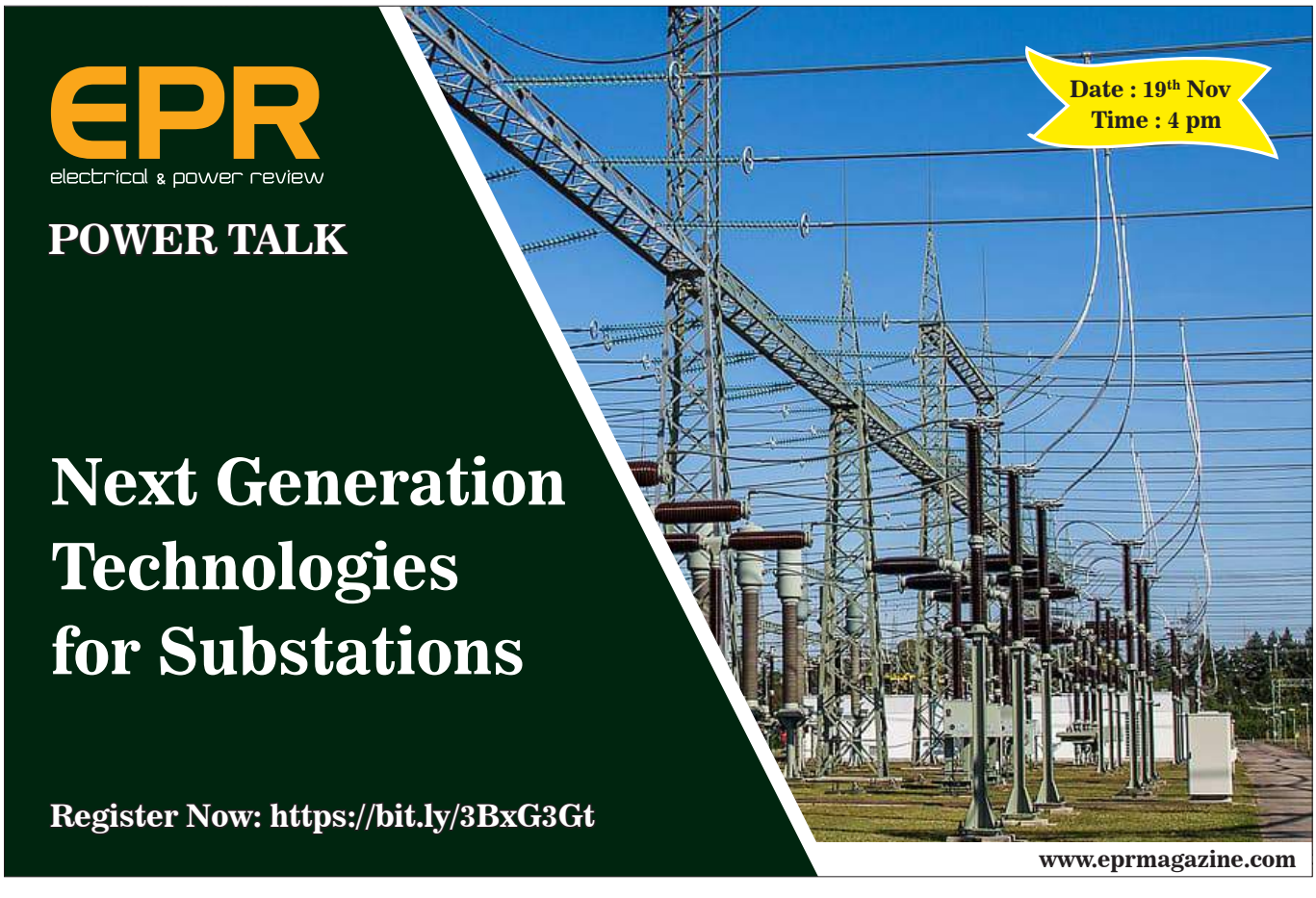
Inspection Chamber: A brick chamber is built around the earth pit over a P.C.C layer of size 450mm x 450mm x 450mm with a thickness of 100mm placed at 100mm above the ground level where the top cover is placed with cast iron (CI) hinges to CI frame.

There are different steps to be taken before installing an earthing system to follow the approved design and drawing or laying of the earth wires between the electrode and the electrical room are as follows; There are numerous applications of plate type earthing such as telecommunication, transmission, substation and power generation, transformer neutral earthing, lightning arrestor earthing, equipment body earthing, water treatment plants, heavy industries, college, hospitals, banks, residential buildings, etc.

Conclusion

Electrical earthing is the phenomenon of connecting metallic parts of an electrical component to the earth. Earthing always minimises the danger of discharge of electrical current which is designed using various earthing standards such as IEEE, IEC, NEC, ANSI, IS, etc. different standards are used for different occasions. Earthing a live wire would lead to a catastrophic disaster. Earthing can also improve the lightning protection systems. Plate earthing can prevent major accidents such as accidents that occurred due to static charges and stray current and protect systems like central communication, electronic and AC power systems meeting the earthing safety requirements for the electrical substation.

At AXIS, we test our products following major international standards such as IEC, BS EN, UNE, and UL & IS. We also provide design solutions including proprietary risk assessment software complying with IEC 62305 -2.



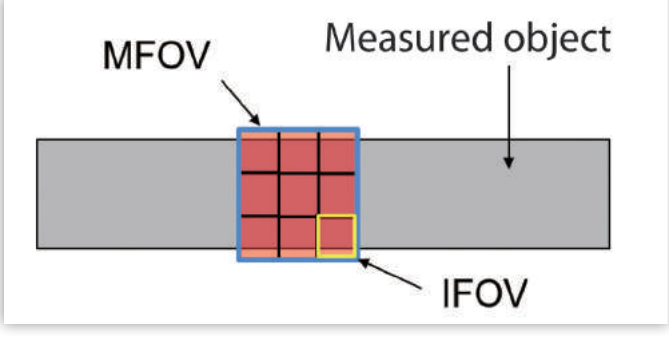
Choosing thermal imager to facilitate electrical maintenance

Five things to consider before choosing a thermal imager for electrical facility maintenance, according to Thermographers Co., Ltd.

Large-scale electrical fires were a common occurrence in electric utility power plants and factories in Japan in the early 2000s. Due to poor economic conditions at the time, facilities poured less money into necessary maintenance and repairs. It was around this time that thermal imaging cameras began drawing attention as an electrical inspection and diagnostics tool. Previously, thermal imaging cameras were more commonly used for research and development because of their cost and large size. But as thermal imagers have become smaller and more affordable they have been gradually introduced into electrical facilities for condition monitoring to identify problems without the need to shut down equipment.

Shutdowns and equipment repairs can be costly. That's why electrical facilities all over the world are switching to condition-based maintenance and routine inspections of equipment using thermal imaging. This technology has enabled facilities to routinely inspect equipment and make repairs as needed – before a failure occurs.

Thermographers Co., Ltd., is a team of specialists in Japan that offers thermography inspection services and seminars on gaining qualification as engineers in condition monitoring and diagnostics of machines (under the ISO 1826-7 international standard). Hirofumi Yamada, the company's president and a thermography expert, offers up the following five things to consider before choosing a thermal imager for electrical facility maintenance.

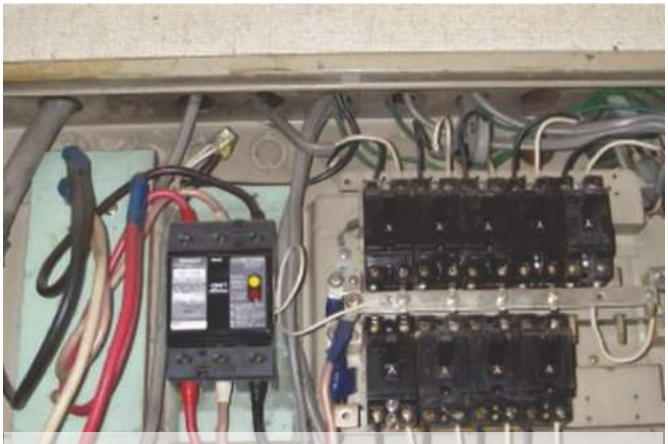


Emissivity

An understanding of the infrared properties of a material is important in determining whether you are observing a true or a false hot spot. Electrical connections and contacts are made of or plated with metal to prevent radiation heat; the emissivity of the metal parts tends to be low. Emissivity varies between 0 and 1.0. The lower levels reflect, while the higher levels emit infrared energy. Depending on the thermal camera used, the emissivity must be correctly set to get an accurate temperature reading.

Temperature under no load

It is also important to know how much load the facility operates. For example, if there is an increase in temperature but it is unclear whether the increase is caused by the properties of the facility or by a failure, then it is impossible to make a diagnosis. It is necessary to understand the relationship between degradation failure temperature and heat generation, including whether the temperature increase is adequate for the load.



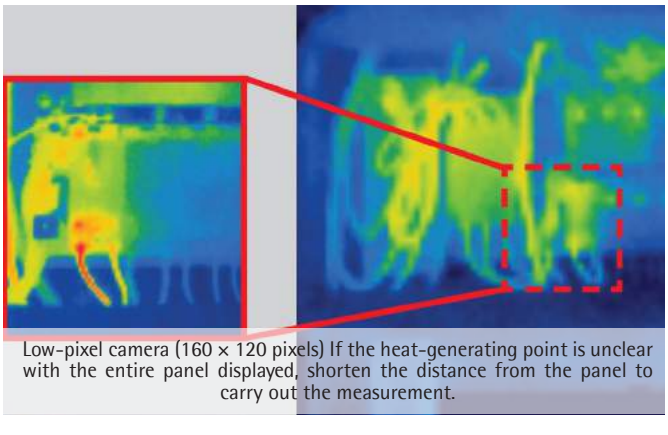
Power distribution panel with loosened screws (digital camera)

Measurement field of view (MFOV)

MFOV is the spatial resolution necessary for measurement. In the camera specifications, the instantaneous field of view (IFOV) is often specified. This corresponds to the angular projection of a single pixel. For accurate measurement we need to cover a larger area (approximately 4×4 pixels), which is called the MFOV. Premium cameras have a high detector resolution and good optics, which help with IFOV and MFOV, allowing you to accurately measure small targets at a larger distance than you can with lower resolution cameras.

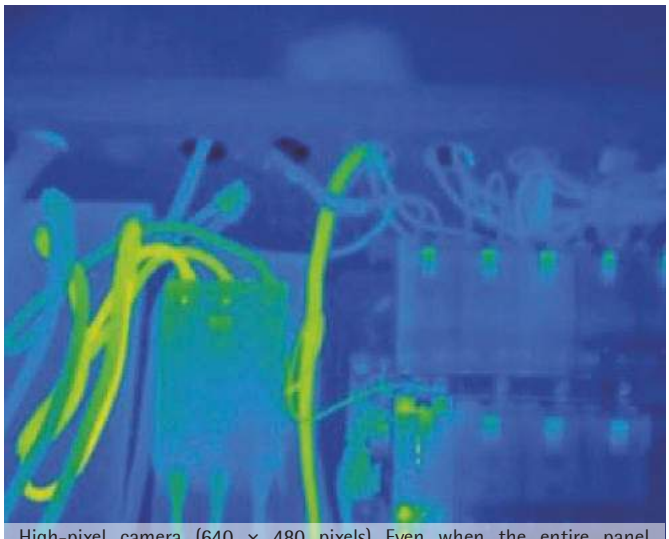
Degradation

Using thermal imaging cameras in electrical facility maintenance requires the knowledge of degradation failures, including what kinds of degradation failures or losses may occur. Electrical facilities are often located outdoors, exposed to outside air, so they degrade naturally. Their degradation varies, depending on their operating environment, materials, design, and how they are used and put under load. According to Yamada, the occurrence of an accidental failure or disaster makes predictions more difficult. "You should keep in mind that the average service life of electrical facilities is not necessarily as specified by their manufacturer," he says.



Low-pixel camera (160 × 120 pixels) If the heat-generating point is unclear with the entire panel displayed, shorten the distance from the panel to carry out the measurement.

According to Yamada, using a thermal imager for inspection is more complex than users expect. "Many think they can discover high- temperature locations and degradation failures by simply using a camera. But to measure, you need a certain level of experience and knowledge to carry out the diagnosis," Yamada says. "Temperatures may increase or decrease depending on the degradation, as described in examples in the ISO textbook. It is necessary for the user to understand, to a certain extent, the relationship between degradation failures and temperatures, and infrared theory including relevant physical laws." Without general knowledge of degradation failures, it is impossible to make a diagnosis using a thermal imaging camera.



High-pixel camera (640 × 480 pixels) Even when the entire panel is displayed, the heat-generating point is clearly shown due to the high resolution

Don't fixate on 'price'

Typical users tend to care most about price when purchasing their first thermal camera. However, Yamada says, "Less expensive cameras are more suited for experienced users, and beginner users should purchase a premium camera." Low-priced cameras have limited functions, so their effective use requires experience and skill, while premium cameras have functions that compensate for the measurers' inexperience, including the ability to shoot high-precision images of wide areas. Focus on choosing the right camera with the right functions, so problems can be accurately diagnosed.

With these five things in mind, every electrical facility can successfully incorporate a thermal imager into an inspection routine. Through regular condition monitoring using FLIR thermal imaging technology, electrical facilities can reduce equipment failure, expand life cycle, and lower overall costs.

For more information, please visit: www.teledyneflir.in/electrical or write to us at flirindia@flir.com.hk

Testo 868 – The smart and networked thermal imager

Thermal Imagers are the most effective tools for predictive and preventive maintenance of various industrial processes; and necessary equipment performance which helps to avoid failure and losses. In the range of thermal imagers, testo 868 is one of the best in its class considering its quality, measuring performance and impressive smart functions. Its integrated digital camera ensures high resolution image quality and makes operation quicker and easier. Not only that, with this hand held easy to carry instrument, the user can generate error-free and objectively comparable infrared images and execute on site reporting via testo Thermography App.

Since it is Wi-Fi enabled and equipped with smart technology, one can even use a smart phone or tablet as a second display or for remote control. Serving various day to day applications, testo 868 can identify leaks, overheated connections, overloaded machine parts, electrical anomalies, structural defects etc and are used for:

Mechanical and electrical maintenance

In the industry where machines and equipment are continuously operating to fetch desired output, it becomes equally important to ensure their health and appropriate working conditions. Early identification of imminent malfunctions or defects on plants and machines is critical and same goes for electrical components and connections. Increase or difference in the surface temperature of any component can be reliably recorded in time with thermal imagers and testo 868 is the ideal instrument that is used for:

- Identify wear on machines, motors, bearings, shafts etc.
- Fast detection of hot spots during continuing operation
- Avoid expensive damage, downtimes and fire risks on plants and machines
- Test switching cabinets, electrical conditions or circuit boards
- Evaluate heat status in low, medium and high voltage plants

Building thermography

Health of a building is necessary due to various aspects. Detecting structural defects and ensuring construction quality be it due to improper heat transfer, leaks, cracks or moulds in the structure can be easily addressed with testo 868

- Test air-tightness of windows and doors
- Locate insulation errors and cold bridges in a building shell
- Detect and visualise mould-risk areas

HVAC system maintenance

For any facility, right from shopping malls, hospitals, exhibition centers, meeting rooms or even airports, proper checking of air circulation and heating systems and their installations is must because it directly influences human comfort and health. Facility managers are obligated to ensure healthy systems and testo 868 can assist them in various ways:

- Testing air conditioning/ventilation systems and identify irregularities in the temperature
- Testing of radiators for silting
- Thermal profiling of other air regulating components

Thermal inspection of solar PV plants

Solar plants are great sources of power and electricity and some serious threats can jeopardise the power output of these systems. Also, since there are so many crucial components in the PV plants like solar modules, cells, array box, diode junction box, invertors, LT panels, cables etc, it makes the maintenance of the plants compulsory and what better way than conducting thermal inspection to detect

- Hotspots and localised heating due to bird drop, dust and dirt
- Open/Short circuit in the modules and cells
- Overheating of panels or joints
- Micro-cracking and cell ruptures
- Corrosion and loose connections

Technical highlights of the testo 868

- Infrared resolution of 160 x 120 pixels and extended to 320 x 240 pixels via integrated Super Resolution technology
- Large temperature measuring range from -30°C to +650°C
- Smart and networked with free testo Thermography App
- Automatic hot-cold spot recognition directly displays critical temperature conditions
- The testo ε-Assist ensures the correct measurement result by automatically determining and setting the emissivity and reflected temperature
- Pro software for image evaluation on the PC

For more details, login to our website www.testo.com or write back to us on info@testo.in

Panasonic Life Solutions introduces 'UNO Plus' switchgears

The new range offers advanced security with superior quality, raising the paradigm of energy-efficient and innovative switchgear.

Panasonic Life Solutions India, one of the manufacturers of electrical construction materials (ECM) in the country, reveals their latest range of premium switchgear, an advanced range of protection devices for quality-conscious Indian consumers. The new UNO Plus range consists of Miniature Circuit Breaker (MCB), Residual Current Operated Circuit Breaker (RCCB), and Distribution Boards (DB). The range is backed with the highest ever 7-year warranty, being offered for the first time in India on MCBs (0.5A to 63A), and apart from this UNO Plus range has numerous unique features to boast in the 10kA segment.

Kazuki Yao, MD, Panasonic Life Solutions India said, "The launch of UNO Plus is a significant milestone in our quest towards building a safe, secure, and quality assured product portfolio. This is in line with our endeavour from the very beginning to magnify our global expertise in the Indian market and enrich our portfolio. The UNO Plus range has been developed with Japanese Technology by the best of Japanese and Indian Minds. With this launch, we further aim to extend our innovative offerings to the metro and tier-2 cities, expand our presence across the country, while increasing our market share in new territories. We are committed to India's development and this product will be manufactured at our facilities in Haridwar, Atmanirbhar Bharat".

Commenting on the launch, Dinesh Aggarwal, Joint Managing Director, Panasonic Life Solutions India said, "At Panasonic, we have always believed to be consistent in doing better, this has led us to a commitment to offering the best of comfort, safety, and class apart services and solutions. We are targeting safety-conscious consumers, builders, electrical contractors, and other influencers who believe in installing quality products. The all-new UNO Plus Switchgear series has been designed to provide utmost security and safety while maintaining quality and superior design to ensure a well-rounded finish. The range is ideal for all our stakeholders and we are excited about the initial market response. This is the first product that has been pre-booked before the launch".

Miniature Circuit Breaker (MCB)

- Optimum Security: The MCB range has been engineered to provide optimum security to electrical appliances in two types of faults with utmost reliability
- Design Excellence: Designed & manufactured with superior class engineering plastic, this range prevents abnormal heating and resistance against strong impacts with a highly reliable mechanism. Line load reversibility, Safety shutters, Larger terminal Size of 35SQmm, Breathing channels, Higher energy efficiency, Label indicators With Rohs and CE conformance make this product is the best in class to ensure the Highest safety and Ease of installations.

Residual Current Operated Circuit Breaker (RCCB)

Uno Plus RCCB is designed with high reliability in case of residual currents caused by direct contacts or indirect contacts.

- Designed to Disconnect: The RCCB range has been designed with high reliability to disconnect the electrical load from the supply mains, which saves human life from residual currents caused by direct or indirect contacts.
- Uno Plus RCCB with 30 mA is used for human life protection in the common household.
- Uno Plus RCCB with 100 mA and 300 mA are used in industrial loads for saving human life due to residual currents.

Distribution Boards (DB)

- Protection with Elegant Design: The Distribution Boards are created with a new dimension of protection. With its stylish colour and elegant design, it will blend perfectly with any interior décor.
- Flexibility and Safety: The UNO Plus DB offers the dual advantage of Flexibility and Safety, enabling safe and efficient distribution of electrical power. With its anti-rust nature, superior finish, premium quality and state-of-the-art techniques, the UNO Plus DB will be the choice for every home, office, and industry.

Conformance to IP43, IP54 makes it a unique offering for the prevention of dust & water, while conformance to IK09 ensures Impact Resistance.

IIoT Solutions in Electrical Metering– An Overview

In this article, we will be talking about what solutions can be provided to fulfill the demand of consumers particularly in electrical measurement sector.

Introduction:

After progressing with different phases of industrial revolution, the world is currently implementing the Fourth Industrial Revolution. This phase of revolution deals with the production systems having computer technology implemented along with a network connection. With this, the devices are enabled with communication and every device is a part of a single network. This networking generates a "Cyber physical production system" in which system, its components and people communicate via network and the production system is having the freedom to govern itself or control its own affair.

Electrical metering sector

With the dynamically changing needs of the market, the major players in the field of electrical measurement and instrumentation look forward towards industrial internet of things (IIoT) as their vision to excel in this sector. But in what context can this sector contribute towards providing IIoT solutions to its customers? As far as electrical measurement and instrumentation sector is concerned, following are the fields where IIoT solutions can be offered:

- For measurement, monitoring and analysis of energy network parameters
- For measuring, monitoring and recording of physical parameters like temperature, humidity, etc.
- For visualisation of the parameters measured, over Cloud technology linking the devices in a user-friendly monitoring system

Tools required:

After understanding the fields in which these solutions can be implemented, we will be talking about the basic requirements for an Electrical Instrumentation industry (or any other manufacturing industry per say) to provide IIoT solutions for its consumers and grow in this field technically as well as commercially. We will also understand in what sense these requirements can be helpful when we talk about Electrical measurement field

Communication Protocols

The basic requirement for facilitating the demand of IIoT solutions is the inclusion of "communication capable" devices in the product basket. Along with the conventional and well-known communication protocols for energy devices such as Ethernet Modbus TCP/IP and Modbus RTU, there is a growing demand in the devices with MQTT, BACnet and Profinet protocols as most of the leading entities across globe has already implemented in their operations

MQTT is designed as a very lightweight publish/subscribe messaging transport that is ideal for connecting remote devices with a small code footprint and minimum network bandwidth.

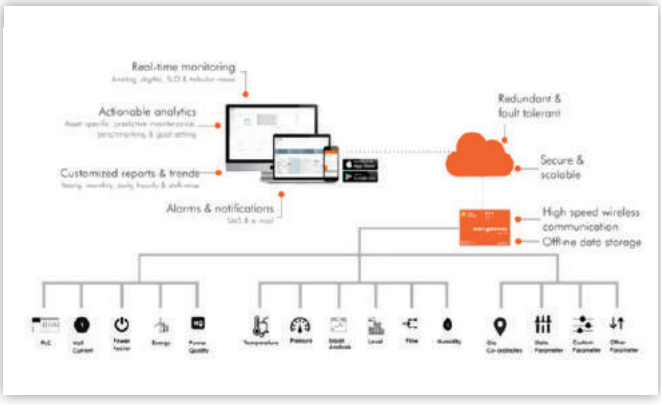
BACnet protocol is "a data communication protocol particularly used for building automation system and control networks."

Profinet or Process Field Net is an industry standard for data communication over Ethernet. It defines exchange of data between the devices and controllers in a network

Cloud

Cloud simply means storing and accessing your data over the internet instead of your computer's hard drive. Cloud is a server that can be accessed over the internet and the software and databases that run on those servers. It enables users to access the data from almost any device as all the storage and computing takes place on servers in datacenter.

In measurement industry, cloud can be a place to store all the data logged by the communication capable measurement devices. This data includes electrical, physical and other parameters measured by the devices on field over various decentralised locations and stored over a single location (cloud). After successful analysis of the data stored on cloud, corrective actions in terms of safety operations, efficient energy consumption and getting incentives over power factor can be implemented in the system. Cloud services can also contribute in the providing access to consumer data such as test certificate of manufactured products, service manuals, and datasheets of the purchased products, thus mitigated the need of physically printing hardcopies of the same and supplying them in Box packing of product. Thus, contributing towards eco-friendly approach.



Our Contribution:

Responding to the needs of the market for IIoT devices, the following can be found in our offer:

- Power network meter with recording - ND30IoT
- Rail mounted power network meter with recording - NR30IoT
- Temperature, humidity, light intensity, CO2 and TVOC data logger - HT22IoT
- Data logger - SM61IoT
- MARC CLOUD

References:

- MQTT - the standard for IoT messaging https://mqtt.org/
- BACnet - the new standard protocol http://www.bacnet.org/Bibliography/EC-9-97/EC-9-97.html
- Cloud storage: What is it and how does it work? https://medium.com/@anukritisaurabh/cloud-storage-what-is-it-and-how-does-it-work-87265f4ebc65

Expertise shared by
Rahul Vadinkar,
Lumel Expertise

Tata Power Collaborates with Tata Steel to set up grid connected solar projects

The projects will be a mix of rooftops, floating, and ground mounted solar panels.

Tata Power and Tata Steel have come together to develop grid-connected solar plants in Jharkhand and Odisha. The two companies have signed a Power Purchase Agreement (PPA) for a duration of 25 years to set up a 41MW solar project, which will be a combination of rooftop, floating and ground mounted solar panels. Under the project, Tata Power will develop Photovoltaic (PV) capacities for Tata Steel at Jamshedpur (21.97MWp) and Kalinganagar (19.22MWp).

Under the PPA, at Jamshedpur, Tata Power will develop rooftops PV with 7.57 MWp capacity, while floating and ground mounted capacity would be 10.80 MWp and 3.6MWp, respectively. The ground mounted PV will be installed at Sonari Airport, Jamshedpur. Kalinganagar will have 9.12 MWp rooftop PV capacities, and floating PV will constitute 10.10 MWp.

The estimated energy generation through 41.19MWp solar project is 6, 02, 80,095 kWh for the first year. During its lifetime (i.e. for 25 years), the total energy generation would be 1,40,93,61,488 kWh. The project will help save 45210 tonnes of CO2 per year and 1057021 tonnes during its lifetime (25 years).

A signatory to the Task Force on Climate-related Financial Disclosures for climate change, Tata Steel is committed to becoming a sustainable steel producer and has taken definitive steps to achieve this goal. The Company set up India's first steel scrap recycling plant in Rohtak followed by a plant for CO2 capture from Blast Furnace gas at its Jamshedpur Works. Tata Steel is investing in enabling long term sustainable solutions in logistics and supply chain and has pioneered the Electric Vehicles for transportation of finished steel in the country. The Company has also earned the distinction of becoming the first steel producer in the world to join the Sea Cargo Charter (SCC) to reduce 'Scope 3' greenhouse gas emissions in ocean trade.

India is projected to emerge as top market for energy storage

India will have the distinction of being among the fastest energy and mobility transitioning countries in the world.

Venkat Rajaraman,
Founder & CEO, Cygni

Talking about the challenges faced by the energy storage market in the power sector, Venkat Rajaraman, Founder & CEO, Cygni, says that it is the perception that Battery storage systems are very expensive, despite the fact that over the last decade the prices of Lithium-ion batteries have dropped steeply, by over 90 percent.

Present market trends impacting the demand for energy storage systems in India

Till the first decade of this century, the power demand supply gap in India was ever widening. It was a huge 12 percent in 2009-2010 and power shutdowns, most of which were unscheduled, especially during the long summer months, were common place. Data centers, telecom, critical manufacturing and critical health care sectors had to deploy in house emergency generation and battery energy storage systems. Flooded lead acid batteries were widely used until the advent of the more robust and maintenance free VRLA batteries.

Over the past decade RE integration to the grid has risen spectacularly, and it totals more than 100GW with solar constituting 45 GW. With installed RE, that is inherently infirm, touching 25 percent of total installed power generation capacity, grid management has become complex and the deployment of energy storage on large scale has become inevitable. Over the same decade, the prices of lithium Ion battery, that possessed far more attractive battery parameters than the lead acid battery, started declining steeply. As per the oft quoted Bloomberg report, the price fell by 89percent between 2010 and 2020 - from $1,100/KWh to $137/kWh in 2020. We are now witnessing the slow expansion of the EV market to the passenger vehicle segment as well. In the coming years, the large utility scale battery storage and the EV market would burgeon and India would emerge as the top market for storage as it has in solar and wind.

Increasing power demand, for energy storage for industrial, commercial and residential spaces

Energy costs are a significant part of the total operational cost, especially for energy intensive industries and large commercial facilities, and they are rising year-on-year. Containing the energy cost is one of the major issues faced by the enterprises. Reliability and quality of power that can adversely impact production volume and the life of critical equipment are other major concerns. All of these concerns can be addressed by deploying energy storage systems.

As for saving energy cost, the demand charges and higher tariff for power drawl during tariff peak could be minimised charging batteries during periods of low tariff or charging them through renewable sources like solar and utilising the stored energy to keep power demand below the declared quantum and utilising the stored power during peak tariff period. Power outages, poor quality of power including surges, harmonics etc could all play havoc in the smooth operation of the C&I enterprises. Well-designed energy storage system coupled with an energy management system could save lakhs of rupees and many leading C&I enterprises have already opted for storage solutions.

GREEN ENERGY SHIFT
IN ELECTRICAL AND POWER SECTOR

Individual home owners and apartment complexes can also reap the benefit of reduced energy cost and enhanced security through reliable lighting and monitoring devices using energy storage, particularly in conjunction with solar.

Government's response and support in dealing with energy storage systems

One of the important challenges facing the energy storage market in the power sector is the perception that battery storage systems are very expensive, despite the fact that over the last decade the prices of lithium-ion batteries have dropped steeply, by over 90 percent. However, this perception is changing. Secondly, with batteries becoming an element in enabling energy and mobility transition, there is intense competition among nations and corporations to develop low-cost battery technology with all desired operational parameters and material considerations. This has led to uncertainty and confusion around technology and deferred investment decisions. Thirdly, Energy storage is in its early stage of adoption and the regulatory and policy measures that are critical for any market development are also evolving. For the same reason, financing models of energy storage have not evolved. The government, critically aware of the need, is working with all stakeholders to evolve a robust framework.

Opportunities to increase domestic manufacturing and localisation in energy storage systems

Government of India's announcement in May, to implement ₹ 18,100 crores Production Linked Incentive (PLI) under the National Programme on Advanced Chemistry Cell (ACC) battery storage for setting up manufacturing capacity of 50GWh is a significant step in making India a leading Energy Storage manufacturing centre. This will enable India to build a robust manufacturing base not only to meet the growing domestic demand but also to cater to the demands outside, especially among the ISA member countries in Africa.

The plan is to set up Tesla-style giga factories to manufacture batteries by attracting investments totaling ₹ 45,000 crore. Each selected ACC battery storage manufacturer would have to commit to set up an ACC manufacturing facility of minimum 5GWh capacity and ensure a minimum 60 percent domestic value addition at the project level within five years. The incentive will be paid out on the basis of sales, energy efficiency, battery life cycle and localisation levels. The beneficiary firms have to achieve a domestic value addition of at least 25 percent and make the mandatory investment of ₹ 225 crore /GWh within 2 years (at the mother unit level) and raise it to 60percent domestic value addition within 5 years.

Which products and services do you offer to meet the storage requirements?

Cygni has designed about 15 different products for the EV-2W, EV-3W and BESS (Battery Energy Storage System) market. Among them 6 of them are ARAI certified and balance certification in progress. Cygni's Battery products caters to various EV, Commercial and Industrial customers. We have an integrated platform (with Software, BI, Analytics etc) for battery modeling. We offer modular, scalable batteries for higher capacities. Battery Pack ranges from stand-alone batteries to BTM grid-level storage batteries. Cygni's advanced battery packs support application specific design, chemistry agnostic bms, quick product design turn-around, support battery degradation modelling, supports firmware/adaptive modelling and protect against thermal, surge conditions.

Demand for solar and Li-Ion batteries in the coming years

India's oil import bill is ballooning and is expected to cross a whopping $100bn this fiscal year and India's metros, state capitals and industrial towns are becoming lethal gas chambers.

Based on National Renewable Energy Lab (NREL), USA has predicted that the energy storage capacity in India would grow to an impressive 160 to 800 GWh by 2030.

The solar and energy storage industries are therefore poised for unprecedented growth in this decade. Recent market developments with spate of announcements on acquisitions and investments, the booming startups in these two spaces are clear indicators of the exciting times ahead. For sure by the turn of the decade India will have the distinction of being among the fastest energy and mobility transitioning countries in the world.

EV, a revolution made in India, for the world

This article walks us through the Ola Electric's new EV Ola S1, an significant step towards reducing the environmental impacts by increasing EV adoption in their two-wheeler vehicle range.

Climate change is real and so is the need to reverse it. This is not news to any of us. And I know we all want to make a difference. But the question is how do we reverse climate change and also advance our development as a nation, together.

Today, in India, 80 percent of the vehicles are sold two wheelers and despite that only 12 percent of India owns a two wheeler. These vehicles consume 12,000 cr litres of fuel every year and are responsible for 40 percent of air pollution.

Clearly, this penetration is going to grow exponentially in the coming years and we simply cannot allow that to happen. So moving to EVs is no longer optional, it's rather essential. But a shift like this requires innovation and manufacturing at a global scale and quality. That's what we have been up to with the Ola Future factory – the largest 2W factory in the world – and that's what we are introducing in the market today. It's a revolution on two wheels. It's called the Ola S1 and it is, quite simply, the best scooter ever made.

Our goal has been to build products which are both sustainable and revolutionary and with the S1, we've done just that. It has the best design, best performance and best technology.

Best Design: Available in 10 stunning colours in satin, matte and glossy finishes, Ola S1 comes with iconic twin headlamps, ergonomic and fluidic body, superior alloy wheels, sculpted seating, and the largest boot space that fits two helmets comfortably.

Best Performance: It is setting new industry benchmarks with a range of 181 Kms, acceleration of 0-40 kmph in 3.0 seconds, and a top speed of 115 kmph. It has a 3.97kWh of battery capacity, more than 30 percent higher than the next closest EV, and the most powerful motors in the category with 8.5 KW of peak power.

Ola S1 also comes with a proprietary Battery Management System (BMS) which works actively to monitor the battery for optimal durability, performance, range and safety.

Best Technology: S1 brings technology that is several generations ahead of anything on the market. It has no physical key and pairs with your phone with its 'digital key' feature. This enables it to know when you're near it and unlock automatically. It will also lock itself as you move away. It has a multi-microphone array, AI speech recognition algorithms built in-house, and one of the sharpest, brightest 7-inch touch-screen displays.

With our homegrown MoveOS, customers can not only alter the look and feel of the display but also how the scooter sounds. It will have four moods at launch - Bolt, Care, Vintage and Wonder, and will offer a customised vehicle sound experience that matches your mood of

the day. It will also come with three driving modes - Normal, sport and hyper for you to personalise how you ride.

We have introduced a lot of safety features which are rare in the two wheeler segment. Ola S1 has an anti-theft alert system, geo fencing, and a battery which is flame retardant and water and resistant. It also has front and rear disc brakes and 'Hill Hold' feature which makes riding in traffic and navigating inclines easy.

The 110/70 R12 tyres, rear mono-shock suspension and front single fork suspension leads to much superior road grip and riding experience. It has a cruise mode that makes riding comfortable and convenient and a reverse mode that makes it easy to park and exit tight spaces.

With a robust grab rail for safety, a side step and sculpted seating, pillion riders too will love how comfortable their ride will be. The scooters also come with voice recognition that enables you to complete your key tasks quickly without having to bother with navigating the menu.

Ola S1 also solves one of the biggest challenges which has hampered the growth of the EV sector in India has been the upfront cost. Ola S1 comes at a revolutionary price of ₹ 99,999 onwards.

In states with active subsidy grants, Ola S1 will be much more affordable than many petrol scooters. For instance, after state subsidy in Delhi, the S1 would cost just ₹ 85,009, whereas in Gujarat it would be only ₹ 79,000. We have also tied up with banks and financial institutes for an EMI plan starting at ₹ 2,999.

The first phase of Future factory is near completion and our teams are busy perfecting each and every feature for you. We will officially open Ola S1 for purchase from 8th September 2021, and will start delivering across 1000 cities and towns in October. Till then, Ola S1 is available for reservation at just ₹ 499.

Let's truly commit to mission electric

We are taking this moment to announce 'Mission Electric', a pledge that no petrol two wheeler will be sold in India after 2025. This is a mission that we are putting forward to the industry and to the consumers to reject petrol and fully commit to electric. It's time for India to lead the way in electrification and build technologies of the future, here in India for the entire world!

This is certainly not going to be easy but together we can and we must. The climate needs it, the world wants it and our country definitely deserves it.

Green Hydrogen to be game changer to move towards innovation

This article walks us through the Ola Electric's new EV Ola S1, an significant step towards reducing the environmental impacts by increasing EV adoption in their two-wheeler vehicle range.

Leading scientist and innovation evangelist, Dr R.A Mashelkar, Chief Guest on day 3 of IEEMA's Digielec Bharat 2021, addressed a special session. He shared his vision on Green Hydrogen driven green revolution in India.

Speaking on the occasion he articulated, "There has been an exponential growth in Hydrogen deployment globally. Green hydrogen has moved from hype to hope and there are 359 large scale H2 projects announced and an estimated investment worth USD 510 bn by 2030. 75+ countries have net-zero carbon ambition and 31 countries have already implemented the strategies. I believe policies should be made considering the carbon impact, complexity of hydrogen infrastructure investment and future changes to carbon pricing or import taxes, once subsidies are phased out to ensure competitiveness to existing conventional fuel."

He further added, "Green hydrogen will play a key role in the energy transition and it can reduce over USD160 bn worth of import for India. Countries like USA, Australia, India and Japan have decided to cooperate development for clean hydrogen value chain."

He also cited steps required going forward and mentioned, "Graded market development for hydrogen will encourage private sector investment through competitive bidding. Also a framework for incentives and alignment with Make in India and Atma Nirbhar Bharat need to be developed with specific zones (H2 Hub) and Grid balancing. Technology should be supported by Bold Policy decisions, patient capital and public-private partnerships."

Dr Mashelkar concluded his session stating, "I am dangerously optimistic about India. Talent, Technology and Trust will help our Nation become a world leader in affordable excellence."

Vipul Ray, President, IEEMA, expressed, "Digielec Bharat is a culmination of Digitization, Standardization & Indianisation, taking forward the clarion call of Hon'ble Prime Ministeron AatmNirbharBharat. Going Forward Hydrogen will play a very critical role in shaping the power sector globally."

Increasing flexibility with new age storage technologies

Building energy storage at scale can provide additional flexibility to grid operators in managing the generation variability.

Siddartha Ramakanth Keshavadasu,
Assistant Professor - Centre for Energy Studies

In an Interview with EPR Magazine, Prof. Siddhart Ramakanth, Assistant Professor - Centre for Energy Studies, talks about Major elements impacting the deployment of energy storage solutions, smart grids and the shifts towards renewable Energy.

How are the present market trends impacting the demand for energy storage systems in India?

Energy storage is one of the key enablers in India's energy transition, it offers new business prospects in power sector. With newly added renewable energy to the grid and increasing aspirations to become more sustainable, both grid-scale and off-grid storage solutions are picking up demand. In addition to conventional electricity solutions, the energy storage for two and three wheelers are becoming a formidable force in the market.

With DISCOMs also planning for grid stability and resilience and planning for inclusion of EVCS as part of their grids, the demand for energy storage systems will increase further. The major elements impacting the deployment of energy storage solutions are deployment of smart grid, shifting focus towards renewable power, and commercialisation of innovative technologies.

With the increasing power demand, how do you view the call for energy storage for industrial, commercial and residential spaces?

Localised energy storage systems are not new to the commercial, industrial or residential sector; they have been in place for decades in the form of diesel storage mechanisms. However, traditionally adopted energy storage technologies are not designed to conserve energy, and losses associated with energy conversion are inevitable. However, with the new-age storage technologies provides flexibility to reduce electricity costs, become self-reliant, manage load in a building or to balance load and generation in the power grid. From the owner's (Industrial/residential/commercial) perspective, storage allows to optimise energy costs while maintaining comfort on risks associated with supply or grid failure. From a grid operations perspective, building storage at scale could provide additional flexibility to grid operators in managing the generation variability from intermittent renewable energy resources (wind and solar).

What are the challenges being faced for energy storage?

Advanced energy storage provides an integrated solution to some of India's most critical energy needs: electric grid modernisation, reliability, and resilience; sustainable mobility; flexibility for a diverse and secure, all-of-the-above electricity generation portfolio; and enhanced economic competitiveness for remote communities and targeted micro-grid solutions and last but not the least reducing the oil imports and become energy secured and shield itself for geo-political risks involving oil supply and prices.

However, there are few challenges in mass deployment of energy storage. Commercially speaking, on the Performance and Safety front, Grid operators must be confident that energy storage systems will perform as intended within the larger network. Advanced modeling and simulation tools can facilitate acceptance-particularly if they are compatible with DISCOMs/Transco communication framework. On a regulatory angle, Energy storage systems provide different functions to their owners and the grid at large, often leading to uncertainty as to the applicable regulations for a given project. Regulatory uncertainty poses an investment risk considering high up-front cost and dissuades adoption.

How do you view the demand for solar and Li-Ion batteries in the coming years?

As the share of RE grows, so will the drop in renewable power provided during peak times of demand. This drop will either have to be compensated by flexible and responsive power – as is the case with coal today (and hydropower to a certain extent) – or by massively improving ESS and making the grid more flexible. This is the opportunity for batteries.

GREEN ENERGY SHIFT IN ELECTRICAL AND POWER SECTOR

Increasing localisation and incentivisation will boost EV supply chain

We need to ensure a robust grid infrastructure to accommodate large number of charging stations to facilitate smooth EV functioning.

Shikhar Gupta,
Associate Director, BIG4 Consulting & EV Expert

Infrastructural development to set up EV charging stations in India is said to be a challenge. How is the industry reinventing the thought?

Establishing the necessary EV charging infrastructure requires certain key challenges to be addressed. Land (location), local power distribution infrastructure, and collaboration between require stakeholders are the key pillars for the same.

We are witnessing Industry reinventing this via –

- Innovation in technology, such as wireless charging and smart and network charging solutions for commercial applications. Similarly, start-ups are offering portable charging solutions wherein the owner can generate revenue through numerous methods when people come to charge their vehicles. REVOS recently announced peer-to-peer charging network, which is likely to be India's first dedicated network of IoT-enabled EV charging points.
- Further, collaborations between relevant stakeholders, such as power distribution companies, transport departments, oil and gas companies, charging station operators are on the rise, acting as the critical success factor. Tata Power and TVS, Jio-BP partnering with BlueSmart are some of the examples.
- Ensuring a robust grid infrastructure to accommodate large number of charging stations will be a critical success factor in the EV roll-out. EVs present numerous opportunities along with challenges in their interface with the power grid, which is part of Vehicle-Grid Integration (VGI). We are already seeing several pilots in this space.

Under the PLI scheme, what kind of opportunities do you expect for the local battery makers and solution providers?

The PLI scheme is a clear indication from the government to position India as the leading manufacturer of advanced EV technology. While we had had FAME II and several state subsidies, PLI scheme is will boost the EV supply chain, and promote domestic manufacturing and engineering in advanced technologies such as Lithium-ion battery technology, where India is currently imports dependent. It is also likely to create more employment in this space, attract foreign investment, and make EV companies and start-ups more attractive for the talent. Since, the PLI scheme for the auto sector is open to existing automotive companies as well as new investors; we can expect several new non-traditional players to enter the market in the coming years.

What measure is being taken by the industries and the government to make EV a reality?

Government policies are acting as a strong catalyst for OEMs and start-ups to build cleaner and sustainable mobility solutions. More than 16 states now have EV and storage policies, FAME II have been extended, PLI scheme has been launched. Further, revised guidelines on charging infrastructure were issued by the ministry of power, prescribing at least one charging station in a grid of 3km and at every 25kms on both sides of the highways. Similarly, the ministry of housing and urban affairs amended the Model Building Bye-Laws to mandate 20 percent of the parking space for EV charging in commercial and residential buildings. Hence, all government entities are regulators are coming together on the same page to make this a reality.

What are the required legislative support to EV transition and reduce carbon emissions?

India is moving rapidly to reduce emission intensity of GDP by 33-35 percent over 2005 levels by 2030, set under the Paris Agreement. Whether it's achieving 100 GW of renewable capacity by August 2021, announcing Hydrogen Mission, or EV vision 30@30, progress can be seen across corridors to position India as the clean energy leader. To accelerate EV transition, India permitted the sale and registration of two and three-wheeler EVs without pre-installed batteries; several states are offering financial incentives such as direct subsidies for the purchase of EVs, scrapping incentives for ICE vehicles for the next three years; exemptions of road tax, waiver of the registration fee, and interest waiver on loans for commercial buyers. Mandating fleets such as cabs, taxis, logistics delivery vehicles are likely to pave the way for India's EV transition.

GREEN ENERGY SHIFT IN ELECTRICAL AND POWER SECTOR

Schneider Electric reaffirms commitment towards sustainable and smart grids of the future

Given that India's power sector is at the cusp of critical transformation, transmission and distribution needs to be more agile, reliable and efficient.

In its endeavour to accelerate the 'New World of Energy', Schneider Electric, a global leader in digital transformation of energy automation and management, has stressed on the need to reinvent electrical transmission and distribution ecosystem by leveraging digitisation.

In a strategy talk on 'Grids of the Future' during the innovation summit 2021, the company said that smart, sustainable and digital power is the new standard for the next-generation network and uninterrupted, quality power supply is a pre-requisite for an 'AatmaNirbhar Bharat'.

Speaking during the event, Sanjay Sudhakaran, Vice President-Power Systems, Schneider Electric India said, 'In order to keep up with the energy demand, it has become inevitable to reinvent the electrical transmission and distribution model for an affordable and reliable supply of electricity. This has sparked the need to embed digitalisation in the entire energy ecosystem comprising smart grids, intelligent substations and smart meters. Further, the integration of smart grid technologies, sustainable energy resources, and low-carbon emissions in power systems is an important route for sustainable development of the nation. At Schneider Electric, we aim to deliver solutions to make our future sustainable, efficient, and resilient.'

India is making consistent efforts and strides in renewable energy, providing access to energy and mitigating climate change. Given that India's power sector is at the cusp of critical transformation, transmission and distribution needs to be more agile, reliable and efficient. Hence it is important to leverage smart technologies in order to intelligently respond and adapt to changes in the grid, thereby making them key to sustainable transformation. Further, smart grid technology enables effective management and distribution of renewable energy sources such as solar, wind, and hydrogen.

While India has achieved universal access to electricity, strengthening power distribution in the in the supply chain will help DISCOMs reduce losses. Smart meters play a significant role overall evolution of the power sector and enhancing consumer experience. They help the DISCOMs sharply cut their losses, by investing digital technologies to significantly improve operational and financial efficiencies.

Highlighting the importance of smart meters, Amit Kumar, Vice President and Head, MPS, L&T Electrical & Automation, said, "Data-driven decision making will be the key to handling future energy needs and smart meters herein are critical to achieving this goal. Smart metering offers facilities that include elimination of manual meter reading, tamper and features comprising the failure alerts, remote connect-disconnect and prepaid metering, which enable improved efficiencies for utilities as well as better consumer satisfaction through faster response and higher transparency. They also have a critical role to play in grid stability as power generation from renewable sources picks up momentum."

COMMERCIAL PARTNERS

Aakash Powertech Pvt Ltd 31

Altanova India Pvt Ltd 47

Amar Industries 61

AVR Electronics Pvt Ltd 69

Axis Electrical Components India Pvt. Ltd. 35

Balaji Switchgears Pvt Ltd 33

Bergen Solar Power And Energy Limited ..... IFC

Birkan Engineering Industries Pvt. Ltd. 85

Citroen Switchgears Pvt Ltd 59

DEIF India Pvt Ltd 25

Delta Electronics India Pvt Ltd 9

Eaton Power Quality Pvt Ltd 41

ECE India Energies Pvt Ltd 79

ECGC Limited 43

Electrical Research & Development Association 21

Exxon mobil Lubricants Pvt Ltd ..... BC

Fevino Industries LLP 81

Flir Systems India Pvt Ltd 11

Fuji Electric Consul Neowatt Pvt Ltd ..... IBC

Green India Initiative Pvt Ltd 83

IRay Technology Co Limited 3

K Lite Industries 65

Kusam Electrical Industries Limited 51

Leoni Cable Solutions (India) Pvt Ltd 45

Maco Corporation India Pvt Ltd 73

Modern Hiring Service 29

Modutec Ready Panels Pvt Ltd 71

OBO Bettermann India Pvt Ltd 37

Om Switchgear and Electricals 77

Panasonic Life Solutions India Pvt Ltd 7

Paras Wires Pvt. Ltd. 67

Polycab India Limited 5

Power-One Microsystems Pvt Ltd 91

Profab Engineers Pvt. Ltd. 39

R R Kabel Limited 17

Ramanuj Industries 55

Rishabh Instruments Pvt Ltd 23

Ruby Mica Company Limited 63

Small Industries Development Bank of India 27

Smith & Sharks Projects (India) Pvt. Ltd. 49

Solar Expert 89

Testo India Pvt Ltd 19

Triveni Turbines Limited 13

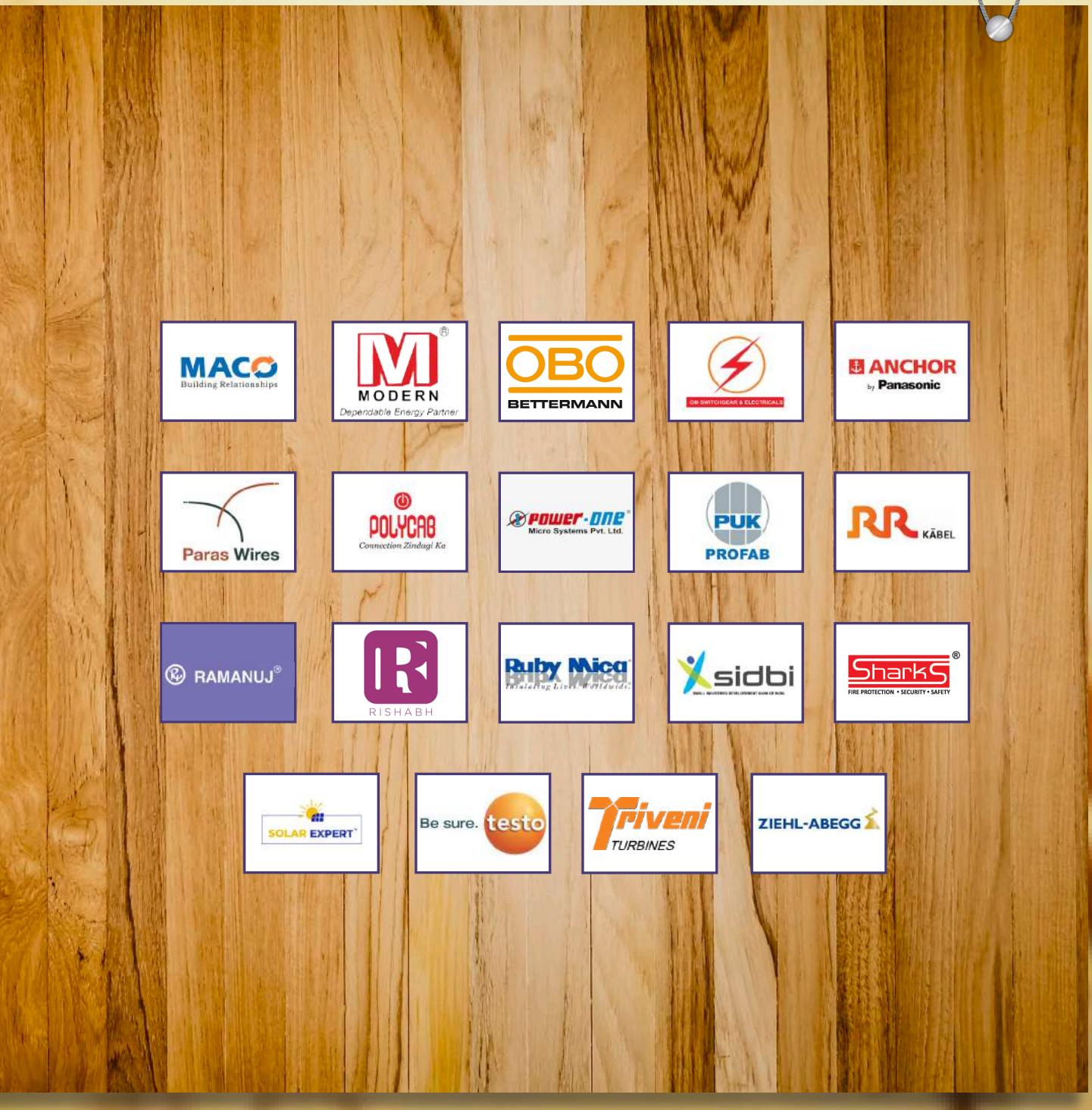
Ziehl Abegg India Pvt Ltd 53

EPR
electrical & power review

A BIG THANK YOU

EPR

For Your Participation in 9th Anniversary Issue



GREEN ENERGY SHIFT IN ELECTRICAL AND POWER SECTOR

www.elasiaexpo.com

EMPOWERING the World for a SMART FUTURE

9th ELAsia 2022

INTERNATIONAL EXHIBITION ON POWER, ELECTRICAL AND LIGHTING

THE VISION OF ASIA

In association with

ELECTRICAL CONSULTANTS' ASSOCIATION OF INDIA®

12 13 14 MARCH 2022

BIEC - BANGALORE INTERNATIONAL EXHIBITION CENTRE, BANGALORE, INDIA.




PLATINUM PARTNERS

GOLD PARTNERS

Supported by:

SILVER PARTNERS

KEY PARTICIPANTS	LANYARD PARTNER	REGISTRATION DESK PARTNER	SIGNAGE PARTNER	HALL BUNTING PARTNER	TRADE VISITORS BAG PARTNER	GALA DINNER PARTNER	INVITATION PARTNER	BADGES PARTNER	EXHIBITOR CATALOGUE PARTNER	ENTRANCE ARCH PARTNER

2019*

Organiser:
TRIUNE EXHIBITORS PVT. LTD.

+91 98451 99545
info@elasiaexpo.com

Fuji Electric

Innovating Energy Technology

Solutions for Machine, Factory and Process Automation from Leading Japanese Manufacturer

Servo Motor | VFD | PLC | DCS | HMI | Instruments | Transmitter | Gas Analyzer | ED & C

- **Low TCO (Total Cost of Ownership)**
- **Industry 4.0 Enabled Products**
- **Solution from Sensors to Complete Process Automation**
- **Integrated Technology Platform - Field to Supervisory Level**

Fuji Electric India

119, 120, 120A, Electrical and Electronics Industrial Estate, Perungudi, Chennai - 600 096, Tamil Nadu, India

+91 78 1000 9955 enquiry.fei@fujielectric.com www.fujielectric.co.in

Postal Registration No: MNE/290/2019-21 •WPP License No: MR/Tech/WPP-231/NE/2019-21
License to post without prepayment •Date of Publication: 1st of every month. Date of Posting: 1st and 2nd of every month Posted at Tilak Nagar PO, Mumbai-400089 •English •Monthly