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Total No. of Pages: **72**

Indian Electrical Contractor & Trader

MAY 2024

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at Mumbai Patrika Channel, Mumbai GPO, Mumbai-1,
on 27th & 28th of Previous month. R.N.I. No. 11498 / 57
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WT 66- PRON-313 APFC



WT 44-PRON 313 APFC



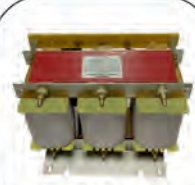
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नमस्कार,

विद्युत सुरक्षा ही विद्युत व्यावसायिक आणि ग्राहक दोघांच्याही दृष्टीने अत्यंत महत्वाची असून त्याबाबत काळजी घेणे आपली फार मोठी जबाबदारी आहे. जिथे चुकीला माफी नाही. ज्या ठिकाणी कोणत्याच प्रकारची ओळख, वशीला चालत नाही अशा क्षेत्राशी आपण सर्वजण व्यावसायिक जोडलो गेले आहेत. छोटीशी चूकही स्वतःच्या व इतरांच्या जीवावर बेतू शकते. यामुळे मोठ्या प्रमाणावर आर्थिक हानी होऊन जीवित हानी होत असते. ते टाळण्यासाठी या विषयी जागृती होणे आवश्यकता वाटते म्हणून आज या विषयावर बोलणे खूप आवश्यक वाटतं आहे. अपूर्ण माहिती, अपूर्ण ज्ञान आणि अति शहाणपणा हा विद्युत अपघात होण्यासाठी मुख्य कारणे आहेत. ही काळाची गरज ओळखून संघटनेने विविध उत्पादकांच्या मदतीने इतर कार्यक्रम या बरोबरच विद्युत सुरक्षा याबाबत सतत असे कार्यक्रम घेऊन जागृती करणे यावर भर दिलेला आहे. यामुळे होणारे विद्युत अपघात कमी होण्यासाठी निश्चितपणे हातभार लागेल, मदत होईल अशी खात्री वाटते.

वेगवेगळ्या विभागात सभासदांच्या बरोबरच परवानाधारक विद्युत ठेकेदार आणि विद्युत क्षेत्राशी निगडित असणारे सर्व घटकांना यामध्ये सहभागी करून समाज जागृती करण्यासाठी संघटनेतर्फे प्राधान्य देण्यात येत आहे. तसेच यासाठी महाराष्ट्र शासन विद्युत निरीक्षक विभाग, विद्युत विभाग, महावितरण, टाटा,

विद्युत सुरक्षेचा विषय पाठ्यपुस्तकात असावा यासाठी पाठपुरावा!

अदानी, रिलायन्स, टोरंट तसेच वेगवेगळ्या महानगरपालिका, नगरपालिका यांचे कडे कार्यरत असणारे विद्युत विभाग, याठिकाणी कार्यरत असणारे सर्व विद्युत क्षेत्राशी निगडित असणारी तसेच संबंधित असणारे सर्व विभाग यांच्या सहकार्याने विद्युत सुरक्षेबाबत हा कार्यक्रम राज्यभर राबवित आहोत, सर्व विभाग सक्रियतेने सहभागी होत असल्यामुळे निश्चितपणे हे सर्व कार्यक्रम यशस्वी होत आहेत. सुरक्षा विषयक जनजागृती करून आणि विद्युत अपघात कमी करण्यासाठी आपणास सर्वांना प्रयत्न करणे आवश्यक आहे. संपूर्ण जगात विद्युत अपघात होण्याचे प्रमाण पाहिल्यास आपल्या देशात जास्त आहे. हलका दर्जा, कमी क्षमता, प्रॉपर डिजाईन, अकुशल कामगार या सर्व गोष्टींचा विचार न केल्याने शॉर्ट सर्किट सारख्या समस्या निर्माण होऊन आगी लागणे सारख्या घटना सतत घडताना पहायला मिळतात. यामुळेच की काय, कोणत्याही ठिकाणी आग लागली आणि इतर कोणत्याही कारणाने लागली असली तरी शॉर्ट सर्किट हाच प्राथमिक अंदाज पुढे येत असतो. आपल्याला सर्वांना हे पुसायचे आहे आणि आपण हे नक्कीच करू शकतो. आपण सर्वजण करूयात.

शताब्दी वर्षांच्या निमित्त आपण विद्युत बचत आणि सुरक्षा या बाबत निर्माण होणाऱ्या पिढीला बाल वयातच अवगत व्हावी याकरिता याचा समावेश पाठ्यपुस्तकात करण्यासाठी आग्रही आहोत. यासाठी आपण प्रयत्न करण्यास सुरुवात केली आहे. देशाचे पंतप्रधान, मनुष्यबळ विकास मंत्रालय, केंद्रीय ऊर्जामंत्री, राज्याचे मुख्यमंत्री, शिक्षण मंत्री, ऊर्जा मंत्री यांना आपली निवेदने सादर केलेली आहेत. तसेच आपण आपल्या ECAMEX 24 या प्रदर्शनासाठी आलेले प्रमुख पाहुणे मंत्रिमहोदय श्री. कपिल मोरेश्वर पाटील साहेब यांनाही देण्यात आली आहे. संबंधित व्यक्तींनी वरील विषयासंदर्भात सकारात्मकता दर्शविली आहे. या आपल्या प्रयत्नामुळे आपला निश्चितपणे विद्युत अपघात मुक्त भारत घडविण्यासाठी हातभार लागणार आहे. आपल्या सर्वांच्या सहकार्याने आपण हे शक्य करू याबाबत तिळमात्र शंका वाटत नाही.

आपली संघटना संपूर्ण महाराष्ट्रभर तळागाळात रुजावी हे आपले स्वप्न आहे. हे स्वप्न साध्य करण्यासाठी संघटना जनमानसात पोहोचणे गरजेचे आहे. संघटनेच्या सभासद संख्येमुळेच आपल्या संघटनेची व्याप्ती वाढेल आणि संघटनेस सर्वदूर प्रसिद्धी मिळेल. संघटनेची सभासद संख्या वाढली तरच संपूर्ण महाराष्ट्रभर पोहोचेल व संघटनेचा पाया अधिक भक्कम होईल. नुकत्याच झालेल्या ECAMEX 24 या प्रदर्शनामुळे आपल्या संघटनेच्या नावलौकिकात भर पडली आहे. शताब्दी महोत्सवी वर्षात इकॅमची सभासद संख्या दुपटीने वाढावी यासाठी इकॅम कडून प्रयत्न चालू आहेत. नवनवीन परवानाधारक व्यावसायिक बंधूना आपल्या संघटनेचे सभासद होण्यासाठी प्रयत्न करणे आवश्यक आहे. सर्व सभासद बंधू भगिनींना मी नम्रपणे आवाहन करतो की या येणाऱ्या वर्षात आपली सदस्य संख्या ही आपण दुपटीने वाढविण्यासाठी प्रयत्न करूया. प्रत्येक सभासदाने एक नवीन सभासद ECAM कुटुंबात समाविष्ट केल्यास आपण हे उद्दिष्ट सहजपणे साध्य करू शकतो. नवीन सभासद फॉर्म आपल्या www.ecam.org या वेबसाईट वरती उपलब्ध आहे. याचा उपयोग निश्चितपणे सभासद संख्या वाढविण्यासाठी होणार आहे.

चला तर मग एक नवीन सदस्य आपल्या ECAM परिवारात सामील करूयात.

आपला

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नमस्कार मित्रांनो,

सध्या देशभरात उष्णतेची लाट आली आहे. आपला व्यवसाय हा आपल्याला सर्व ऋतुत अविरतपणे चालवावा लागतो. उन्हाळ्यामध्ये आपण थंड वातावरण राखण्यासाठी वेगवेगळी उपकरणे वापरतो. सदर उपकरणे वापरताना अपघात टाळण्यासाठी आपल्यास विद्युत सुरक्षेची काळजी घेणे गरजेचे आहे. तसेच कामे करताना आपल्या प्रकृतीची काळजी घेणेही गरजेचे आहे.

आपल्याकडे बऱ्याच सभासदांच्या तक्रारी आल्या आहेत की बऱ्याच ठिकाणी सार्वजनिक बांधकाम खात्याने मंजूरी दिलेल्या यादीतील साहित्य वापरू दिले जात नाही. जे साहित्य सार्वजनिक बांधकाम खात्याने मंजूरी दिलेली नाही असे साहित्य वापरण्यासाठी भाग पाडले जाते. याबाबतीत इकॅमतेर्फे मा. अधीक्षक अभियंता (विद्युत), औरंगाबाद गुणवत्ता नियंत्रण विभाग, सार्वजनिक बांधकाम खाते यांच्याशी पत्रव्यवहार करून सार्वजनिक बांधकाम खात्याने मंजूरी दिलेल्या साहित्याची यादी

मागवून सदर यादी सार्वजनिक बांधकाम खात्याच्या सर्व अधीक्षक अभियंत्यांना तसेच सर्व कार्यकारी अभियंत्यांना पाठवून त्यांना सार्वजनिक बांधकाम खात्याने मंजूरी दिलेले साहित्य वापरू देण्याची पत्राद्वारे विनंती करण्यात आली आहे.

सभासदांनी त्याचप्रमाणे आपली संघटना शक्तीशाली करण्यासाठी तसेच संघटनेची पाळेमुळे संपूर्ण महाराष्ट्रात पोहोचवण्यासाठी आपल्या संपर्कातील नवीन अनुज्ञाप्तीधारक ठेकेदारांना संघटनेबद्दल माहिती देऊन नवीन सभासद जास्तीत जास्त प्रमाणात करण्याचे प्रयत्न करावेत असे मी सर्व सभासदांना आवाहन करीत आहे.

आपल्या आय.ई.सी.टी. मासिकामध्ये आपण आपल्या व्यवसायासंदर्भात विविध लेख छापत असतो. मी आपणास आवाहन करतो की ज्या सभासदांना आपले लेख किंवा उपक्रमांसंबंधी काही माहिती आपल्या आय.ई.सी.टी. मासिकामध्ये छापण्यास द्यायची असेल तर ती इकॅम कार्यालयाकडे पाठवावी.

सभासदांची यादी अद्ययावत करण्याचा आमचा प्रयत्न चालू आहे. सभासदांचे बरचसे पत्ते बदलले आहेत. ज्या सभासदांचा पत्ता, दुरध्वनी क्रमांक तसेच ईमेल आय.डी बदलला असेल तर त्यांनी तो त्वरीत इकॅम मुख्य कार्यालयाला कळवावा.

नवे आर्थिक वर्ष २०२४-२०२५ सुरू होत आहे. तरी सर्व सभासदांनी आपल्या नवीन आर्थिक वर्षाची सभासद वर्गणी मागील थकीत वर्गणीसह इकॅम कार्यालयात जमा करावी ही विनंती.

आपल्याला आपला व्यवसाय करताना काही अडी-अडचणी येत असतात. त्या अडचणी आपण इकॅम मुख्यालयाला लेखी कळवाव्यात. इकॅमच्या सभासदांना येणाऱ्या अडचणी सोडवण्यासाठी आम्ही प्रयत्न करू. आपल्या सभासदांना येणाऱ्या अडी-अडचणींचे निराकरण करण्यासाठी सभासदांच्या बाजूने आम्ही कायम कटीबद्ध राहू असे आम्ही आपणास आश्वासन देतो.

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Growing business of EPC contracts in solar energy in India

The EPC (Engineering, Procurement, and Construction) sector in solar energy has indeed been experiencing significant growth in India.

Here's an overview:

Government Initiatives: India has set ambitious renewable energy targets, with a particular focus on solar power. Initiatives like the National Solar Mission aim to promote solar energy generation and investment in the sector. These initiatives create a conducive environment for EPC contracts in solar energy.

Increasing Demand:

With the decreasing costs of solar technology and increasing awareness of environmental sustainability, there's a growing demand for solar energy solutions in India. This demand is driving investments in solar projects, leading to more opportunities for EPC contractors.

Favorable Policies: The Indian government has introduced various policies and incentives to encourage investment in renewable energy projects, including solar. These policies provide support mechanisms such as subsidies, tax incentives, and favorable tariffs, making solar energy projects financially attractive for investors and developers.

Improving Infrastructure: The infrastructure for solar energy generation and distribution is continuously improving in India. This includes advancements in grid connectivity, energy storage solutions, and transmission infrastructure, which are essential for the success of solar projects and EPC contracts.

Private Sector Participation: Alongside government initiatives, private sector participation in the solar energy sector is increasing.

Private companies, both domestic and international, are investing in solar projects and seeking EPC contractors to execute these projects efficiently.

Technology Advancements: Advancements in solar technology, such as improved efficiency of solar panels, innovations in energy storage systems, and smart grid solutions, are driving growth in the solar energy sector. EPC contractors play a crucial role in deploying these advanced technologies effectively.

Skill Development: There's a growing emphasis on skill development and capacity building in the renewable energy sector, including solar. This ensures the availability of skilled workforce for EPC contractors to execute projects effectively and efficiently.

Overall, the combination of government support, increasing demand, favorable policies, technological advancements, and private sector participation is fueling the growth of EPC contracts in the solar energy sector in India.

This is a great business opportunity for the members of Ecam in not only Maharashtra but all over India.





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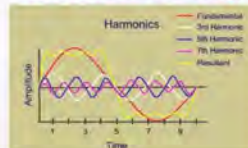
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R	230.0	132.8	10.0	0.0	2300	0.0	0.95	0.05	0.05
Y	230.0	132.8	10.0	0.0	2300	0.0	0.95	0.05	0.05
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Electrical Safety in Industry



Electrical safety in industrial settings is paramount to safeguarding personnel, equipment, and property from hazards associated with electricity. Adherence to stringent safety protocols not only prevents accidents but also ensures uninterrupted operations. Key components of electrical safety in industry include:

1. **Training and Education:** Comprehensive training programs educate employees about electrical hazards, safe work practices, and emergency procedures. Workers should understand electrical symbols, equipment ratings, and proper use of personal protective equipment (PPE).
2. **Risk Assessment:** Regular inspections and risk assessments identify potential electrical hazards such as overloaded circuits, damaged wiring, or improper grounding. Mitigation strategies are then implemented to eliminate or minimize risks.
3. **Equipment Maintenance:** Scheduled maintenance of electrical equipment, including testing and calibration, reduces the likelihood of malfunctions or failures that could lead to accidents or fires.
4. **Lockout/Tagout Procedures:** Strict lockout/tagout (LOTO) procedures prevent accidental energization of machinery during maintenance or repair work, protecting workers from electrical shocks or burns.
5. **Grounding and Bonding:** Proper grounding and bonding of electrical systems and equipment prevent electrical faults and minimize the risk of electrocution or fire.
6. **Arc Flash Protection:** Implementation of arc flash risk assessments, labelling, and appropriate PPE ensure worker safety in the event of an arc flash incident.
7. **Emergency Response:** Establishing clear emergency response protocols, including evacuation procedures and first aid training, is essential to mitigate the consequences of electrical accidents.
8. **Compliance with Standards:** Adherence to relevant electrical safety standards and regulations, such as IS or OSHA requirements, ensures legal compliance and best practices in electrical safety.

By prioritizing these measures, industrial facilities can create a safer working environment, reduce the risk of electrical accidents, and protect the well-being of employees and assets.





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Fire Safety in Industry & Warehouse



Fire safety in industrial and warehouse settings is crucial to protect personnel, assets, and operations from the devastating effects of fires. Effective fire safety measures encompass various strategies aimed at prevention, detection, and mitigation:

1. **Fire Risk Assessment:** Regular assessments identify potential fire hazards, such as flammable materials, improper storage practices, or faulty equipment. Addressing these hazards reduces the likelihood of fire incidents.
 2. **Fire Prevention:** Implementing measures to prevent fires, such as proper storage of flammable materials, regular maintenance of machinery, and adherence to smoking policies, minimizes ignition sources.
 3. **Fire Detection Systems:** Installation of fire detection systems, including smoke detectors, heat sensors, and flame detectors, enables early detection of fires, allowing prompt response and evacuation.
 4. **Fire Suppression Systems:** Automatic fire suppression systems, such as sprinklers or foam suppression systems, suppress fires rapidly, minimizing damage and providing additional time for evacuation.
 5. **Emergency Planning:** Developing and practicing fire emergency plans, including evacuation routes, assembly points, and communication procedures, ensures a coordinated response in the event of a fire.
 6. **Employee Training:** Comprehensive training programs educate employees on fire safety procedures, including fire extinguisher operation, evacuation drills, and emergency response protocols.
 7. **Housekeeping and Maintenance:** Good housekeeping practices, such as keeping work areas clean and clutter-free, and regular maintenance of fire safety equipment ensure effectiveness in fire prevention and response.
 8. **Compliance with Regulations:** Adherence to local fire safety regulations, building codes, and industry standards ensures legal compliance and promotes a culture of safety within the workplace.
- By integrating these fire safety measures into industrial and warehouse operations, organizations can mitigate the risk of fires, protect lives and property, and maintain business continuity in the face of potential emergencies.

For Rulka Electricals Ltd.
Mr. Nitin I. Aher
Wholetime Director.



Avaada Energy inks Rs 4,471-cr refinancing pact with NaBFID for four solar projects in Rajasthan

Avaada Energy has closed a refinancing deal of Rs 4,471 crore with National Bank for Financing Infrastructure and Development (NaBFID) for its four solar projects in Rajasthan. The financing from NaBFID will enable Avaada Energy to prepay existing loans to multiple lenders. The facility, sanctioned and disbursed as a 20-year rupee term loan, achieves significant commercial improvements over the earlier facilities prepaid, the company said in a statement.

"Avaada Energy is pleased to announce the successful closure of one of the largest refinancing transactions in India's renewable energy sector, securing about Rs 4,471 crore (USD 535 million) from the state-owned lender NaBFID," the statement said.

This refinancing transaction, conducted under Restricted Group (RG) structure, encompasses four interstate transmission system-connected solar projects with a combined capacity of 1,700 MWp. The structure has been rated as 'AA (Stable)' by CareEdge Ratings, it said.

Work in Progress

<p>Signed \$1.07b deal with Brookfield for green ventures in India, part of its ongoing \$1.3b raise plan</p>	<p>Secured 1,400 MWp solar projects from state-owned agencies</p> <p>Won 280 MW solar project from RUVNL in May 2023</p> <p>Invested ₹40,000 cr in 6,000 MW hybrid wind-solar projects in Gujarat</p>	<p>By March 2023, commissioned 4 GW DC solar projects, with 2.5 GW DC under-construction capacity</p>
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Vineet Mittal, Chairman of Avaada Group, said, "We have achieved a major milestone by refinancing four of our largest operating assets in Rajasthan. These assets have been operational for approximately two years. This is one of the largest transactions ever conducted in India's renewable energy market and allows us to pay off existing lenders and welcome NaBFID as the new single lender."

Avaada Group has been engaged in renewable energy generation, solar PV manufacturing, development of green fuels such as green ammonia, green methanol and sustainable aviation fuel, and providing energy storage solutions.



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Energy Efficiency: It's Time To Get Next Level



despite climate promises says that, on the current course, fossil fuel production in 2030 will be more than double the amount allowable under climate targets.

As the impact of that growth continues to bite, the importance of energy efficiency becomes clearer. Focus on alternatives to oil and gas, from renewables to hydrogen, must be accelerated. But, most of all, we need to focus on cutting or shifting energy demand. Energy efficiency, which relates to every megawatt 'not' consumed, is going to play an increasingly critical role in the transition of the energy system.

Energy efficiency is going to have to counteract the growth in fossil fuels

As Professor Mark Maslin, Professor of Earth System Science at the University College London, points out:

Energy efficiency is crucial to cutting fuel costs and decoupling growth from emissions – but managing energy demand is equally important. A new report shows that actions as simple as using energy at the right time could save 40m tonnes of CO2 across the UK and Europe.

Renewable energy now represents over 80% of new generation on an annual basis, but the majority of generation remains fossil based. Renewables need to make up 70% of the energy mix by 2050 if the goals of the Paris Agreement are to be reached. The energy system, however, is not yet prepared to manage the natural peaks and troughs of renewable energy supply.

At the same time, electrification is itself a form of energy efficiency – after all, it has been estimated that transitioning from a fossil energy system to a fully electrified one could cut up to 40% of final energy consumption. Given the increasing press on emissions reductions and resurgence of oil and gas, we need to build on existing potential and invest in next level energy efficiency.

Professor Nick Eyre, Professor of Energy and Climate Policy at University of Oxford & Senior Research Fellow in Energy at the Environmental Change Institute, said: “Historically, energy efficiency has delivered the largest share of greenhouse gas mitigation and reinventing it for the era of renewables will enable us to continue this trend and achieve net zero by 2050.”

The energy system is moving in the wrong direction despite growth in renewables

As COP28 nears, despite countries and companies increasingly committing to net zero, the UN's latest Production Gap report is showing a growing chasm between the actions needed to meet climate goals, as well as current trajectories. Phasing down or phasing up? Top fossil fuel producers plan even more extraction



“Energy efficiency is crucial if we are to have a fighting chance of honouring the Paris Agreement of 2015, reaching net zero and keeping climate warming under 1.5°C. We must remember the IEA has stated that energy efficiency will be able to provide one third of the carbon saving required towards net zero. We can achieve this and ramp up energy efficiency by electrifying as much of our energy system as possible, enabling flexibility in energy supply, demand and storage, and re-using waste heat.”

In support of this, Danish-headquartered engineering multinational Danfoss has published a white paper exploring the energy efficiency possibilities – meaning demand-side flexibility, electrification, the



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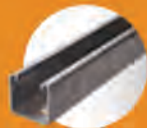
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are leaving the fossil fuel era, but we haven't prepared our energy system for the future because we are neglecting energy efficiency as one of the main tools to lower emissions. The grid is not ready to use all the renewable energy we are making rapid progress to produce. We must take steps to utilize energy efficiency solutions - such as demand-side flexibility technologies - that not only help us to use less energy, but to use the right energy

at the right time. We have the solutions, but we need action."

Why demand side management matters

Demand-side flexibility refers to the levelling out of energy consumption to prevent periods of simultaneous high demand and low supply, which is especially important for an energy system based on renewables. The deployment of demand-side flexibility technologies can lower demand during expensive peak hours and reduce the amount of fossil fuels in the energy mix.

In buildings, for example, AI-driven technologies can save up to 20% in a building's energy costs by combining building, weather, and user data to predict heating and ventilation demand. Observations on 100,000 flats equipped with this technology, based mainly in Finland, show that the maximum power usage was reduced by 10-30%.

Meanwhile, load-shifting can also be automated to cool supermarket freezers down to a much lower temperature than required outside the peak demand hours, with the freezers effectively operating like a battery storing energy. This 'supercooling' technique means refrigerators can be switched off during the peak hours of energy demand, both lowering stress on the grid and saving money for the supermarket.

The advent of new technologies, from new forms of generation to the use of AI to optimize the use of electricity and manage energy demand peaks and troughs, means that we have the capacity to transform the energy system. We can create a system that cuts energy demand and decouples energy demand growth from emissions. What we need to make this a reality for the future, however, is politicians and investors with a vision that no longer relies on systems that are not fit for purpose in a climate constrained future.

widespread use of hydrogen, and the deployment of excess heat. It matters because it helps to make the business and economic case for investing in efficiency, as well as highlighting how cutting energy consumption or, more importantly, shifting energy demand will have a direct impact on emissions.

According to the analysis in Energy Efficiency 2.0: Engineering the Future Energy System, the EU and UK can achieve an annual societal cost savings of €10.5 billion by 2030 and €15.5 billion by 2050. Perhaps most importantly, these are net savings – the numbers already account for the majority of implementation cost of demand-side flexibility infrastructure. Sometimes, of course, it can be hard for us as individuals to conceptualise the impact of such society-wide savings. Looking at it in another way, the average consumer across the UK and EU could save 7% on their electricity bill by 2030 and 10% by 2050 through a full roll out of demand-side flexibility.

In the US, optimizing efficiency, demand flexibility, and electrification in buildings can save up to \$107 billion in annual power system cost savings alongside a 91% reduction in carbon emissions from buildings by 2050.

Waste heat and hydrogen are also going to play a crucial role in meeting energy demand. In 2030, it has been calculated that up to 53% of global energy input will be wasted as excess heat. Much of this heat, however, can be captured and reused to heat buildings and water through deeper sector integration. On a global scale, it is theoretically possible by 2050 to recover 1.228 TWh of excess heat from hydrogen produced through electrolysis, which is equivalent to almost two-thirds of today's global heat generation from coal, the largest source of heat. The potential for fundamental change is within our grasp but the energy system needs to be made fit for the future.

Kim Fausing, President and CEO, Danfoss said: "We





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Wire efficiency and Electricity saving

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1. Resistivity
2. Skin effect
3. Wire design
4. Wire insulation

Resistivity

Resistance in a wire is defined as restriction of electronic energy flow through copper conductor. Restriction in the energy flow path results heat and loss of energy efficiency. This phenomena increases while increasing the wire length irrespective of the nature of current and the efficiency goes down exponentially.

The resistance of a wire can be easily calculated from Ohm's Law which is

$$V = IR$$

$$\text{Or } R = V/I$$

Where

V = applied voltage

I = Load Current

R = Resistance in the wire

The resistance of full wire length can be calculated as per the following Resistivity equation:

$$R = \rho \cdot L/A$$

Where, ρ = Resistivity

L = Length of wire

A = Cross-sectional Area of the wire

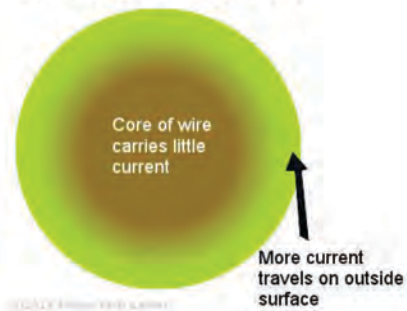
The above equation shows that the efficiency or conductor loss can be improved by employing low resistivity material(99.997% Pure and 101% High conductivity copper) and ideal cross-section of the wire (Size requirement based on calculation, load factor and duty cycle).

Skin Effect

Skin effect is the tendency of an alternating electric current (AC) to become distributed within a conductor such that the current density is largest near the surface of the conductor and decreases exponentially with greater depths in the conductor.

High frequency noise in the range of 1kHz-1.5MHz increases the inductive reactance of the wire. This forces the electrical charge towards the outer surface of the wire. This means that the total available space of the wire is not used to carry the electrical power. Overcrowded electrons at the circumference of the wire will not find sufficient

Skin effect in a solid wire



room to travel increasing friction among them. This will lead to release of frictional energy also known as heat which leads to a lower efficiency. Generated heat from the wire will leave the wire through its plastic insulation. Prolonged exposure of plastic to the heat will decrease the life span of the wire.

Wire Design

It is essential to design the wire & cable based on application and installation. Several parameters are to be considered to design based on duty cycle, load factor, fixed or flexible installation and wet or dry application.

Selection of raw material plays an important role on this to help the wire to carry highest load current and hence the improvement of efficiencies.

Wire Insulation

These are the materials that do not allow electricity to flow through them. Insulation of a wire and cable is a critical component where technology plays an important role. The function of an insulation is to protect the leakage current as well as dissipate the heat developed during the passage of current. While do this insulation material should not degrade.

However in presence of an electric field sometimes many of the material gets polarized and allow energy to pass on.

Therefore appropriate selection of wire & cable size during installation always give lower heat development and reduce power loss. Approximately 1/10th power can be lost due to inferior quality wire selection. High efficiency is achievable with better wire with high quality raw material and improved design. It is to be noticed that some of the energy entering to your house will just dissipate as heat from the wires and will not produce any useful work, while you are still billed for it. But practically it should be unnoticeable on your bill.

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Preface

Three decades before in lighting installation work, electrical contractor was to carry out work with the help of lighting distribution boards, switches, conduits, wiring and light fittings etc. Subsequently, there was introduction of lighting controls with dimming solutions. Generally, it was used where audio video systems were used such as in board rooms or in meeting rooms. In next phase occupancy sensors or lux sensors were introduced. And now home automation or lighting automation started in use. In spite of this, truly at many places still contractors, supervisors or electricians are not exposed to use of automation and still they are ignorant of new technologies which are being used.

They will have to gear up and update their knowledge in technological advancement era. Because now ahead, there will be combination of Artificial Intelligence with lighting systems. This will be sustainable solution and conserve the energy. Such systems will be coming up in industries, commercial complex, residential complex, public places and in many other applications. Let us walk through on this illuminating journey into AI and lighting, where in there will be multifold advantages for users.

What is present lighting

In present lighting system which is widely known to contactors comprises of following-

- 1) LED lighting fixtures of various types with assembly of electrical component such as conduits, wires, distribution boards, switches etc.
- 2) Switches can be normal ON/OFF wired or could be wireless.
- 3) Wiring setup can be single switch or a multi-switch setup.
- 4) LED lights can have dimmer compatibility for dimming.
- 5) There could be single or multi zonal lighting.
- 6) Lighting control can be standard wall switches or remote control or smart switches.
- 7) Sensors for occupancy, programmed to turn lights on and off automatically based on schedules, motion detection, ambient light levels, circadian cycle, color changing, voice control etc.

Up to above, understanding is generally known to by and large installers. Once existing lighting installation clarity is there then one can better plan transition to smart lighting. This type of lighting offers various benefits which we shall review ahead.

What is advancement in lighting installation

Advancement means progress, improvement, or development in a particular field or feature of technology, knowledge or usage pattern. It typically signifies moving forward and making things better, more efficient, or more sophisticated compared to previous conditions. Let us understand the transitions in sensors and lighting controls into details.

Sensors are now modified as-

- 1) Light Level Sensing- Sensors use precise lux measurement to calibrate lighting levels, ensure user comfort and adhere to daylight management regulations.
- 2) Passive Infrared- Method of occupancy detection, enhanced by connectivity, PIR with unwanted triggering.
- 3) Network Interface- Sensors communicate with each other to measure average light levels across large areas and report occupancy to monitoring and BMS software.
- 4) Fully Programmable- Sensors are configurable via software, allowing to customize sensors' performance without physical access to the device.
- 5) Ultrasonic- Active occupancy detection over large areas ensures that the lights stay on even when users are sitting still.
- 6) IR Receive- Commissioning of sensors from anywhere in sensor range including device selection, network integration, scene selection, light level set up, temperature set up, third party integration etc.



In short sensor can control, - Lighting level, day light harvesting, circadian lighting, occupancy, HVAC management, Blinds, TV, Fan, Parking management, meeting rooms, asset management and many other functions.



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Lighting Control transition –

- 1) Analog lighting control- In this there were different group of lighting fixtures which were controlled. So, control was not precise, more cabling was used, more complex to install, maintain etc. There were other issues such as it was not precise control. It was susceptible for power problems. Dimming response was not proper. Color temperature was only one and fixed. If changes to be done then manually rewiring required to be done.
 - 2) Digital lighting control- In this wiring/cabling became simpler and easier to install. Monitoring and troubleshooting became easier. In this accurate dimming and color control could be done. Tunable white, RGB control, circadian rhythmic lighting is possible. Light grouping can be easily reconfigured without not much wiring. Scaling to bigger size is possible. Effectively more comfort, more energy conservation, time and money are saved.
 - 3) Network lighting control- In this light fittings, devices, sensors, digital controllers are connected in network. In this scalability is very high, one control unit for single complex is possible. One can have touch screens, connectivity to different areas, lighting software, BMS compatibility etc. A range of different network gateways enable integration with comprehensive third-party network systems. These devices allow multiple systems to be controlled from a single user interface. The software package enables full commissioning of all devices without the need for additional add-ons. The software is able to display different perspectives of the system, such as an overall network view, individual logical areas and floor plans. Facility engineer can have a clear view of the entire system or selected area which reduces time. Entire data can be monitored by end user.
Knowing the present facts in lighting, let us move ahead towards AI in lighting.
- 2) Predictive Capabilities- They can predict lighting needs based on historical data and environmental conditions.
 - 3) Integration- AI lighting can integrate with other smart devices and systems to provide a comprehensive smart home or building experience. An AI lighting system in a commercial building might analyze occupancy patterns, weather forecasts, and user feedback to optimize lighting schedules and energy usage while maximizing comfort.
 - 4) Automated Lighting Control- AI algorithms can analyze data from sensors to determine when and how much lighting is needed in a particular area. This enables automated lighting control, ensuring that lights are turned on or off based on real-time occupancy and lighting conditions. This will save more energy.
 - 5) Adaptive Lighting- AI powered lighting systems can adjust the color temperature and brightness of light fixtures based on factors like the time of day, natural light levels, and user preferences. This helps create lighting that is more comfortable and beneficial to specific activities, such as reading or relaxation.
 - 6) Energy Optimization- AI can optimize lighting energy consumption by dynamically adjusting lighting levels in response to changing environmental conditions. For example, lights can be dimmed or brightened to maintain a consistent light level while using the least amount of energy.
 - 7) Predictive Maintenance- AI can predict when lighting components, such as lamp source or drivers, are likely to fail based on usage patterns and environmental factors. This enables proactive maintenance, reducing downtime and replacement costs.
 - 8) Personalized Lighting Experiences- Smart lighting systems can use AI to personalize lighting based on individual user preferences. Users can set their preferred lighting scenes, and the system will adjust the lighting accordingly.
 - 9) Voice Control- AI powered lighting systems can be integrated with voice assistants like Amazon Alexa, Google Assistant, or Apple Siri, allowing users to control lights with voice commands.
 - 10) Occupancy Analytics- AI can analyze occupancy data to provide insights into space utilization. This information can be valuable for optimizing lighting layouts and occupancy-based energy management.
 - 11) Security- AI can enhance security by using facial

Artificial Intelligent (AI) in Lighting

AI lighting takes intelligence a step further by incorporating artificial intelligence and machine learning algorithms into the lighting system. It will be more intelligent, energy-efficient, and user-friendly. AI lighting systems can make complex decisions and learn from data to optimize lighting conditions. The features of the same will be as -

- 1) Machine Learning- AI lighting systems can learn user preferences and adapt lighting accordingly over time.

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recognition or object detection to identify individuals and respond with appropriate lighting. For example, a smart lighting system can turn on lights when it detects an intruder.

- 12) Dynamic Signage- AI-driven lighting can be used to create dynamic signage or wayfinding systems. Lights can change colors or patterns to guide people through spaces or convey information.
- 13) Daylight Harvesting- AI algorithms can adjust artificial lighting levels to complement natural daylight, ensuring that spaces are adequately illuminated while minimizing energy usage.
- 14) Data Analytics- AI can analyze lighting data in real-time to identify trends, anomalies, and opportunities for further optimization, helping organizations make data-driven decisions.
- 15) Human Centric Lighting- AI can enable human-centric lighting systems that mimic natural light patterns throughout the day, potentially improving well-being, productivity, and circadian rhythms.

Overall, AI integration in lighting systems will not only enhance energy efficiency but also will improve user comfort, security, and the overall functionality of lighting installations. These intelligent lighting systems can adapt to changing needs and conditions, making them more efficient.

Intelligent lighting components

Intelligent lighting systems consist of various following components that work together to provide advanced lighting control and automation.

- 1) Smart lamp source- These are lamp source with built-in connectivity, such as Wi-Fi or Zigbee, which allows them to be controlled remotely using a smartphone app or voice commands. Smart lamp often has features like adjustable color temperature and brightness.
- 2) Smart Switches- Smart switches replaces traditional wall switches and provide smart control of connected light fixtures. They can often be integrated with existing lighting systems and are compatible with voice assistants.
- 3) Smart Dimmers- These devices allow you to adjust the brightness of your lights. They can be used with both standard and dimmable LED bulbs and can often be controlled remotely.
- 4) Smart Lighting Controllers- These central devices serve as hubs for managing multiple smart lighting

components within a place. They enable centralized control and automation of lighting.

- 5) Motion Sensors- Sensors can detect movement in a room and trigger the lights to turn on or off automatically.
- 6) Light Level Sensors- These sensors can measure ambient light levels and can adjust artificial lighting to maintain a consistent level.
- 7) Occupancy Sensors- These sensors can detect the presence of people in a room and can control lighting based on occupancy. They are often used in spaces for energy savings.
- 8) Daylight Harvesting Systems- Daylight harvesting systems integrate light level sensors and motorized blinds or shades to optimize natural daylight usage and artificial lighting in commercial buildings.
- 9) Smart Lighting Software- Apps and software platforms allow users to control and program their smart lighting components. They provide features like scheduling, scene creation, app connectivity, cloud computing and remote control.
- 10) Voice Assistants- Voice assistants like Amazon Alexa, Google Assistant, and Apple Siri can be integrated with smart lighting systems to enable voice control of lights and create voice-activated lighting scenes.
- 11) Smart Plugs- Smart plugs can be used to make existing lamps or fixtures "smart" by allowing remote control and automation of connected devices.
- 12) Smart Lighting Bridges or Hubs- Some smart lighting ecosystems require a dedicated bridge or hub to connect and control the various components. These hubs often provide compatibility with multiple protocols and devices.
- 13) Lighting Fixtures- Some advanced lighting fixtures come with built-in smart capabilities, allowing them to be controlled and programmed as part of a smart lighting system.
- 14) Lighting Control Panels- In commercial and industrial settings, lighting control panels provide centralized control and monitoring of complex lighting systems.

These intelligent lighting components work together to create a versatile and customizable lighting experience, offering energy savings, convenience, and enhanced functionality for places.



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Blade tweak boosts vertical-axis wind turbine efficiency by 200% — Study

While horizontal-axis wind turbines (HAWTs) dominate the modern wind energy landscape, vertical-axis wind turbines (VAWTs) have a rich historical origin. Their origins date back to the eighth century in the Middle East for grain milling.

VAWTs, spinning perpendicular to the wind, offer advantages such as higher wind energy density. Also, it features quieter operation due to slower rotation and a smaller spatial footprint for equivalent output, both onshore and offshore.

Moreover, their lateral blade movement is more wildlife-friendly, allowing birds to avoid them more easily. Despite these benefits, VAWTs remain rare in today's wind energy market.

The issue came down to an engineering problem — airflow control, which researchers at the School of Engineering Unsteady Flow Diagnostics Lab (UNFOLD) at EPFL promise to solve. Their approach involves a combination of sensor technology and machine learning to optimize the airflow in VAWT designs.

The team suggests two pitch profiles for VAWT blades that result in a 200 percent boost in turbine efficiency and a 77 percent decrease in vibrations that could damage the structure.

The details of the team's research were published in the journal *Nature Communications*.

Addressing a crucial shortcoming

VAWTs have a significant disadvantage despite the multiple benefits mentioned: they work best in environments with moderate, constant airflow. Because of their vertical axis of rotation, the blades' orientation in relation to the wind is always changing.

Dynamic stall is a phenomenon where a powerful gust increases the angle between the airflow and the blade, creating a vortex. The blades are unable to sustain the momentary structural loads created by these vortices.

The researchers installed sensors on an actuating blade shaft to assess the air forces operating on it and address this lack of resistance to gusts. By varying the angle, speed, and amplitude of the blade's back-and-forth motion, they produced an array of "pitch profiles."

After that, they employed a genetic algorithm on a computer, and it completed more than 3500 trial repetitions. The algorithm, akin to an evolutionary process, identified the most robust and efficient pitch profiles and merged these characteristics to produce new and enhanced "offspring."

"Our study represents, to the best of our knowledge, the first experimental application of a genetic learning algorithm

to determine the best pitch for a VAWT blade," said Sébastien Le Fouest, a researcher in the School of UNFOLD, involved in the project, in a statement.

Transforming VAWT efficiency

The approach employed by the team allowed them to turn the main flaw in VAWTs into a strength and uncover two pitch profile series that considerably increase turbine durability and efficiency. The profiles enhance efficiency by 200 percent and reduce damaging vibrations by 77 percent, optimizing turbine performance.

According to researchers, on a lesser scale, dynamic stall—the same mechanism that destroys wind turbines—can actually advance the blade. Here, by pushing the blade pitch forward to generate power, the team could truly make use of dynamic stalls.

"Most wind turbines angle the force generated by the blades upwards, which does not help the rotation. Changing that angle not only forms a smaller vortex — it simultaneously pushes it away at precisely the right time, which results in a second region of power production downwind," said Le Fouest.

To develop a proof-of-concept VAWT, the team has been awarded a BRIDGE grant by the Swiss National Science Foundation (SNSF). The intention is to place it outside in order to test how it reacts to actual conditions in real-time.

"We hope this airflow control method can bring efficient and reliable VAWT technology to maturity so that it can finally be made commercially available," said Le Fouest.

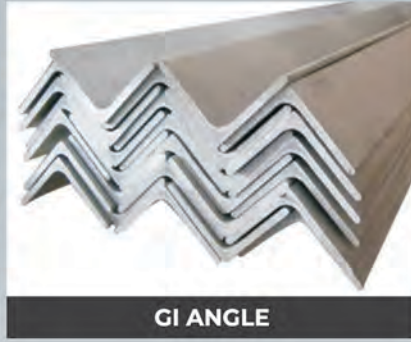
Abstract

Vertical-axis wind turbines are great candidates to enable wind power extraction in urban and off-shore applications. Currently, concerns around turbine efficiency and structural integrity limit their industrial deployment. Flow control can mitigate these concerns. Here, we experimentally demonstrate the potential of individual blade pitching as a control strategy and explain the flow physics that yields the performance enhancement. We perform automated experiments using a scaled-down turbine model coupled to a genetic algorithm optimiser to identify optimal pitching kinematics at on- and off-design operating conditions. We obtain two sets of optimal pitch profiles that achieve a three-fold increase in power coefficient at both operating conditions compared to the non-actuated turbine and a 77% reduction in structure-threatening load fluctuations at off-design conditions. Based on flow field measurements, we uncover how blade pitching manipulates the flow structures to enhance performance. Our results can aid vertical-axis wind turbines increase their much-needed contribution to our energy needs.





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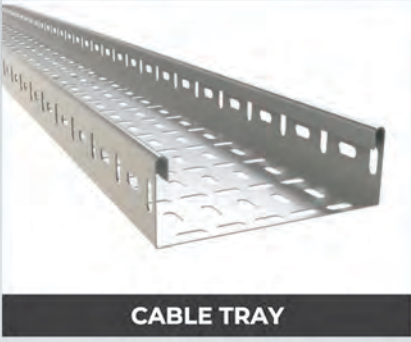
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Is Your Rooftop Solar Module Made In India Or China? You'll Soon Be Able to Find Out

The Centre government is gearing up to provide clarity on the origin of rooftop solar modules with the upcoming launch of an online platform.

This platform will empower citizens to ascertain whether their rooftop solar modules are made in India or imported from other countries like China.

The move comes following the failure of domestic content rules (DCR) to curb Chinese imports.

Bhupinder Singh Bhalla, secretary for the Union Ministry of New and Renewable Energy, announced that all indigenously manufactured module will receive a unique identification number, which will be registered on the platform.

The platform will also allow beneficiaries of the recently launched PM Surya Ghar scheme to verify if the modules used for their rooftop solar installations are indeed made in India.

"We will launch an online platform for traceability of domestically manufactured modules. All such modules will have unique IDs, which will be populated on the platform and it will help us verify whether a particular module on the ground has been manufactured in India," Bhalla said, *Livemint* reported.

"The prototype has already been developed in a six-month process with the help of the industry, we are likely to launch it in about two months," he added.

Under various subsidized schemes of the ministry such as CPSU Scheme Phase-II and PM-KUSUM, sourcing solar PV cells and modules from domestic manufacturers has been mandated. Similar regulations apply to the 'PM Surya Ghar' rooftop solar scheme.

The online platform will serve as a repository or a database of India-made modules, aiding in compliance with domestic content requirements (DCR) and facilitating tracking of manufacturing details, sales, operational lifespan, and even usage in grid-scale solar projects.

"It will also be useful in the recently launched PM Surya Ghar yojana, wherein the households will be able to check whether the modules installed at their rooftop are locally produced," Bhalla said.



This initiative coincides with the government's decision to reintroduce the Approved List of Modules & Manufacturers (ALMM) for solar module manufacturers starting 1 April.

The order to procure solar modules exclusively from ALMM-listed manufacturers was temporarily suspended for the fiscal year 2024 due to module supply shortages and its potential impacts on solar capacity addition.

Goods made by firms on the ALMM list can be sourced for government-supported schemes and projects where electricity discoms procure electricity. Manufacturers and solar modules are approved by the Bureau of Indian Standards (BIS) and the ministry of new and renewable energy.

Bhalla emphasised that reinstating the ALMM would address concerns regarding escalating imports, as the domestic ecosystem can support projects, with around 37 GW already contracted under the ALMM.

This move aligns with India's target of achieving 500 GW installed renewable energy capacity by 2030 and reflects efforts to reduce dependency on imports amid diplomatic tensions with China and the latter's status as the world's leading solar module exporter.

Apart from the imposition of higher basic customs duty and the ALMM to restrict imports, a production linked incentive (PLI) scheme is also underway for local manufacturing of these modules.





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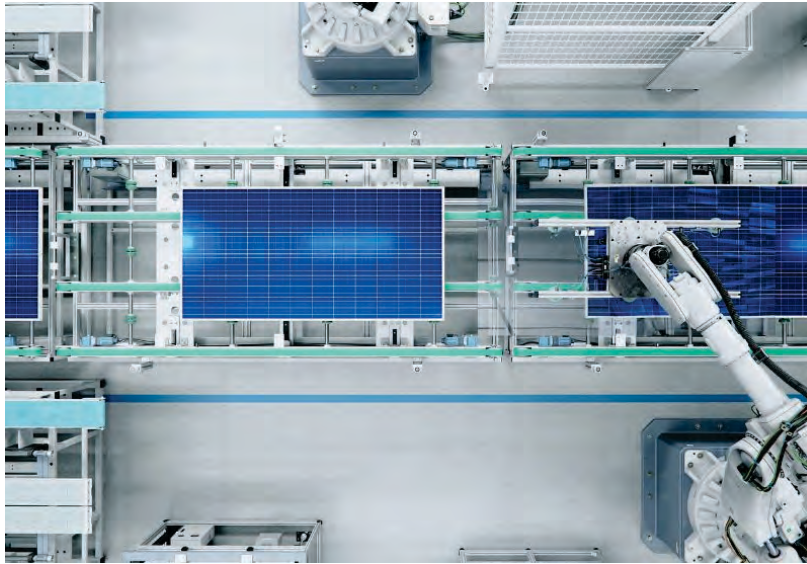
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Indosol to Produce 500 MW Solar Modules at New Facility in Andhra Pradesh



The company claims this will be the world's first fully integrated quartz-to-module manufacturing facility

Indosol Solar, a subsidiary of Shirdi Sai Electricals Limited (SSEL), has begun the production of photovoltaic (PV) modules at its facility in Ramayapatnam in Andhra Pradesh.

The company will invest 13 billion (~\$155.78 million) in developing the initial phase.

The facility is built on 30 acres of land and is currently equipped to manufacture 500 MW of fully automated solar PV modules with different glass-glass and glass-back sheet combinations, including TOPCon (tunnel oxide passivated contact) and HJT (heterojunction technology) modules.

Once completed, the company claims the facility will be the world's first fully integrated quartz-to-module manufacturing plant, with a final capacity of 30 GW upstream and 20 GW downstream facilities.

The project, envisaged to be developed in phases over the next five years, aligns with Indosol's commitment to herald India's boost to domestic manufacturing under the Production Linked Incentive (PLI) program.

The company secured PLI for 10 GW under two tranches, worth 5.1 billion (\$619.5 million) for

manufacturing high-efficiency PV modules. In 2021, SSEL was awarded a PLI of 18.75 billion (~\$229.03 million) for a capacity of 4 GW to set up the integrated manufacturing plant.

As per the company's timeline, phase 1A of the project will be completed by December of this year and will have a manufacturing capacity of 500 MW of modules, cells, and ingot wafers. The entire Phase 1 of the project, which entails a capacity of 5 GW and an investment of 15 billion (\$1.8 billion), will be completed by 2025.

Indosol will also internally produce raw materials, such as 5 GW of glass panels for the modules. The total capacity is targeted by 2028.

The integrated project will require 8,348 acres of land.

"Once the full scale of operations of our integrated project is achieved, Indosol Solar will have a positive economic impact on up to 100,000 people while creating direct and indirect employment for over 32,000 people in the state of Andhra Pradesh," said Sharat Chandra, CEO of SSEL.

Last March, the Solar Energy Corporation of India (SECI) disbursed ₹139.4 billion (~\$1.69 billion) under Tranche II of PLI to eligible companies, including SSEL, to manufacture 39.6 GW solar modules.





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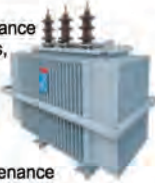
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Storm damages world's largest floating solar plant in Madhya Pradesh's Khandwa

Despite the setback, the power production is expected to resume soon, senior officials said.

The world's largest floating solar plant in Madhya Pradesh's Khandwa district has been damaged by a storm. The plant, built on the backwaters of Omkareshwar Dam, was ready for launch but, however, was hit by a summer storm on Tuesday,

The plant is a joint venture of the National Hydroelectric Power Corporation and the Madhya Pradesh government, and the NHDC has commenced evaluating the damage.

NHDC subdivisional officer Suresh Dwivedi said that a 'major loss' occurred to the solar panels installed for the plant. "Officials are assessing the loss. The survey is expected to be completed in two days," TOI quoted Dwivedi as saying.

Despite the setback, the power production is expected to resume soon, the report quoted senior officials as saying.

The Omkareshwar Dam backwaters will house plants with capacities of 100 megawatts in the Kelwa Khurd area, 88 megawatts in the Indawadi region, and 90 megawatts in Ekhand village. Among them, the 100 megawatt project in Kela Khurd village is nearly complete. However, damage was reported in the panels of the Indhawadi plant.

NHDC managing director Vijay Kumar Sinha inspected the solar power plant on Omkareshwar reservoir in Indhavadi village of Khandwa district in February this year. During inspection, instructions were also given to complete the work as soon as possible.

The solar facility in Khandwa district incorporates unique technology akin to that of a hydroelectric power plant, enabling the generation of electricity from water. Floaters positioned atop the water's surface are connected to the solar panels. These floaters are securely anchored together to safeguard the panels from any potential harm resulting from fluctuations in water flow or level.



Mahindra Susten plans Rs 12 billion investment for 150 MW hybrid project

Mahindra Group has revealed plans to create a hybrid renewable energy project combining solar and wind power, with a capacity of approximately 150 MW.

The project is estimated to cost around Rs 12 billion. Mahindra Susten, a division of the Mahindra Group, will spearhead the project alongside strategic partner, Ontario Teachers' Pension Plan Board, a renowned global investor. The installation will comprise approximately 101 MW and 52 MW of wind and solar capacity, respectively. It is anticipated to produce around 460 million kWh of power, contributing to an anticipated reduction of approximately 420,000 tonnes of carbon emissions. The project represents Mahindra Susten's entry into the hybrid renewable energy sector and will stand as one of the largest combined solar and wind projects in Maharashtra. Its aim is to provide clean energy to commercial and industrial clients. Incorporating over 80 per cent locally produced components, the project has been scheduled for commissioning within the upcoming two years.

Tata Power's EV charging network achieves 100 million green kilometers milestone

Tata Power Limited has achieved a significant milestone in India's electric mobility landscape by becoming the first electric vehicle (EV) charging solutions provider to power 100 million green kilometers across various segments nationwide.

Tata Power has expanded its EV charging network, branded as EZ Charge, to over 86,000 home chargers, over 5,300 public and semi-public charging points, and over 850 bus charging stations across 530 cities and towns. These chargers are strategically placed in diverse locations such as highways, hotels, malls, hospitals, and residential complexes, facilitating the exponential growth of electric mobility in India.



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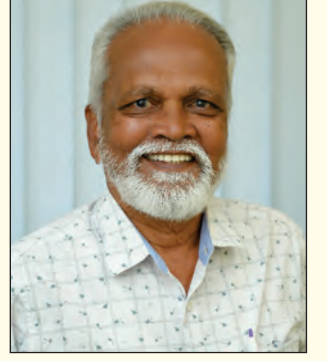
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नवीन वीज जोडण्या ... एक अडथळ्यांची शर्यत.

विक्रमादित्याने आपला हट्ट सोडला नाही.. ह्या पूर्वीच्या चांदोबातील गोष्टीप्रमाणे माझ्या मनात लपून बसलेल्या विक्रमादित्याने टेबलावरील लिखाणाचे पॅड आणि पेन पुढ्यात ओढून घेतले आणि मनातील अस्वस्थता पुन्हा एकदा कागदावर लिहायला घेतली. आता 'ही मनातील अस्वस्थता कागदावर लिहून वगैरे काय होणार?' असे प्रश्न तुमच्याच काय माझ्याही मनात येतात, पण तुमच्या माझ्यासारखी सामान्य सरळमार्गी माणसे दुसरे काय करू शकतात? लिहिल्यामुळे माझे मन थोडे हलके होते इतकच! मी सुमारे चाळीस वर्षे विद्युत क्षेत्र कार्यरत आहे. माझ्या प्रदीर्घ अनुभवावरून पूर्वीपासूनच महावितरण नवीन वीज जोडण्या करायला काहीशी उदासीनच आहे असे दुर्दैवाने म्हणावे लागते. कालानुरूप या उदासीनतेची काही कारणे बदललेली असली तरी परिस्थिती वर्षानुवर्षे तशीच आहे.



राजीव जतकर

एस. ओ. पी. चा पूर्णपणे अभाव:

ग्राहकांना महावितरणकडून तत्पर सेवा मिळावी ह्या उद्देशाने महाराष्ट्र राज्य वीज नियामक मंडळाने एस.ओ.पी. (स्टँडर्ड ऑपरेटिंग प्रोसिजर्स) महावितरण साठी लागू केलेल्या आहेत. या नुसार महावितरणला प्रत्येक कामासाठी वेळेचे बंधन लागू आहे. एस.ओ.पी. प्रमाणे कामे वेळेत न झाल्यास संबंधित अधिकाऱ्यास दंडाची आकारणी करण्याचे नियम लागू करण्यात आलेले आहेत. तथापि मुंबईमधील काही भाग वगळता संपूर्ण महाराष्ट्रात कार्यरत असलेल्या आणि मोनोपोली असलेल्या महावितरणच्या विरोधात ह्या एस. ओ. पी. संबंधी तक्रारी ग्राहक दाखलच करत नाहीत असे चित्र दुर्दैवाने दिसते. त्यामुळे नवीन वीज जोडण्या देण्यासाठी किंवा नवीन मीटर्स देण्यासाठी उदासीन असलेल्या महावितरणची यंत्रणा अतिशय धीम्या गतीने कशी काम करते ते आपण पाहू...

मार्किंगची भानगड:

सर्व प्रथम नवीन वीज जोडणीसाठी योग्य ती कागदपत्रे जोडलेल्या फाइल्स मागणीनुसार महावितरणच्या संबंधित विभागात सादर करावी लागतात. कागदपत्रे सादर केल्यावर त्याची फक्त पोचपावती मिळते. आवक क्रमांक (Inword Number) मिळत नाही. कारण ग्राहकाच्या अर्जावर वरिष्ठांचे मार्किंग व्हावे लागते. ही मार्किंगची भानगड का आणि कशासाठी करावे लागते ते कुणास ठाऊक? बर... मार्किंग आवश्यक असेल तर तर ते लगेच व्हायला हवे ना? या मार्किंगच्या सहीसाठी सुमारे चार ते सहा (कधीकधी जास्त देखील) दिवस लागतात. हा काळ वरिष्ठांच्या उपलब्धतेनुसार आणि कनिष्ठांच्या इच्छेनुसार कमी जास्त होतो, म्हणजे बऱ्याच वेळा वाढतोच. अशाप्रकारे सुरवातच विलंबाने होते.

विलंब, विलंब आणि विलंब...

पुढे ग्राहकाने सादर केलेली कागदपत्रे सर्वेक्षणासाठी (Site

Survey) उपविभागाकडे (Subdivision) पाठवली जातात. उपविभागाकडून कागदपत्रे महावितरणच्या स्थानिक शाखा कार्यालयाकडे पाठवली जातात. कागदपत्रांचा हा प्रवास कार्यालयीन उशीर करण्याचे भान राखतच होतो. मग कार्यकारी अभियंता, अतिरिक्त कार्यकारी अभियंता, सहाय्यक अभियंता यांना जिथे वीजपुरवठा करायचा आहे ती जागा दाखवण्याचा कार्यक्रम होतो. या सर्वेक्षणाच्या वेळी 'ग्राहकाच्या जागेच्या जवळच्या, आजूबाजूच्या ट्रान्सफॉर्मरमध्ये लोड शिल्लक नाही' असे सांगण्यात येते. मग नवीन ट्रान्सफॉर्मरसाठी जागा, ट्रान्सफॉर्मर आणि संबंधित उपकरणे, केबल्स वगैरे पायाभूत सुविधा ग्राहकांकडून करून घेतल्या जातात. जिथे जास्त विजेची मागणी असते अशा इमारतींचे विकासक स्वाभाविकपणे हा खर्च इमारतीतील ग्राहकांकडूनच वसूल करून पूर्ण करतात. पण छोट्या ग्राहकाला म्हणजे ग्राहकाला स्वतःचा साधा बंगला बांधायचा असेल तरी काही काहीतरी अशा प्रकारचा खर्च ग्राहकाच्या गळी उतरवला जातो. दहाबारा फ्लॅट्सच्या छोट्या इमारतीमध्ये सुद्धा ट्रान्सफॉर्मरसाठी जागा नसते, शिवाय छोट्या ग्राहकांना खर्च कारण्यावरदेखील बंधने असतात. अश्या वेळी प्रश्न निर्माण होतात. मग शेजारच्या ट्रान्सफॉर्मरची क्षमता वाढवणे, रस्त्यावरून केबल टाकून लांबून सप्लाय घेणे, किंवा महावितरणची इतर काही कामे करून देणे अशा काही गोष्टी लहान ग्राहकांना कराव्याच लागतात.

मग हा अवास्तव खर्च कमी करून घेण्यासाठी मध्यस्थांमार्फत वाटाघाटींचे सत्र सुरु होते. खर्च कमी करून घेण्यासाठी या मध्यस्थांचे कौशल्य पणाला लागते. ह्या वाटाघाटींमधील वेळ कितीही प्रमाणात वाढू शकतो. मग ह्या चर्चमधून ठरलेल्या कामाचे अंदाजपत्रक (Estimate) तयार होऊन वरिष्ठांकडे मंजुरी साठी पाठवले जाते. या सर्व प्रक्रियेमध्ये तीनचार महिने सहज निघून जातात. पुढे या अंदाजपत्रकानुसार साईटवरील पायाभूत सुविधांचे काम पूर्ण करावे लागते. हे काम



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वीज मीटर्सचा तुटवडा :

या नंतर सुरु होतो प्रत्यक्ष वीज मीटर्स मिळवण्यासाठीच संघर्ष.. मला आठवतंय २०१०मध्ये मी आमच्या संघटनेच्या मुखपत्रामध्ये 'कुणी मीटर देता मीटर?' हा मीटर्सच्या तुटवड्या संबंधी लेख लिहिला होता. तेंव्हाही मीटर्सचा तुटवडा होता आणि अजूनही तो आहेच. मीटर तुटवड्याची तेंव्हाची आणि आत्ताची करणे वेगळी असतील कदाचित, पण ग्राहकाच्या नशिबी मीटर मिळवण्यासाठी संघर्ष आहेच. थोडक्यात काय तर नवीन वीज जोडण्या आणि नवीन वीजमीटर्स मिळवणं मोठं कर्मकठीण काम. ह्या कामात महावितरणला कुठलेही वेळेचे बंधन नसते, ना कुणीही अधिकारी, कर्मचारी या विलंबाला उत्तरदायी (Answerable) असतो.

कठोर तपश्चर्या करून मिळवलेल्या सहनशक्तीच्या आधारे विद्युत ठेकेदारच हे काम करू शकतात. सामान्य ग्राहकाचे ते कामच नव्हे...

आय. टी. लोड चा अतार्तीक (Illogical) नियम:

वरील अडचणी कमी आहेत की काय म्हणून महावितरणच्या मुख्य कार्यालयाने पुण्यातील वीजग्राहकांच्या अडचणीत अजून भर टाकली आहे, ती कशी ते पाहू. महावितरणच्या प्रत्येक ट्रान्सफॉर्मरवरील जोडलेला लोड महावितरणच्या आय. टी. डिपार्टमेंटमध्ये नोंदवलेला असतो. हा नोंदवलेला लोड हा कनेक्टेड लोड असतो. इथे एक महत्वाची तांत्रिक बाजू समजावून घेतली पाहिजे. कुठलाही वीज ग्राहक कनेक्टेड लोड पूर्ण क्षमतेने एकाच वेळी कधीच वापरत नसतो. त्यामुळे ट्रान्सफॉर्मर वरील आय. टी. विभागात नोंदलेला लोड प्रत्यक्षात मात्र वापरला जात नाही. ह्या प्रकारात विद्युत शास्त्रात तांत्रिक भाषेत 'डायव्हर्सिटी फॅक्टर' चा विचार करावा लागतो. त्यामुळे ट्रान्सफॉर्मरचा प्रत्यक्ष वापरातला लोड कमीच असतो. (अर्थात ही परिस्थिती काही ठिकाणी उलटी देखील असते हे मान्य करायला हवं) पण बहुतेक ठिकाणी ट्रान्सफॉर्मरवर लोड शिल्लक असतो. ट्रान्सफॉर्मरचा प्रत्यक्ष असलेला लोड मोजता येतो. पण ट्रान्सफॉर्मरचा प्रत्यक्ष असलेला लोड न मोजता आय. टी. विभागातल्या नोंद केलेल्या लोड नुसार लोड मंजुरीचे निर्णय घेतले जातात. त्यामुळे सध्या महावितरणचे पुण्यातील सर्वच ट्रान्सफॉर्मर्स पूर्ण क्षमतेने वापरले जात आहे असा त्याचा अर्थ होतो. प्रत्यक्षात मात्र बरेचसे ट्रान्सफॉर्मर्स न वापरलेल्या अवस्थेत आहेत असा अंदाज आहे. (अंदाज अशासाठी याची नक्की माहिती काढायची कशी? हा एक प्रश्नच आहे.) बरं.. हा आय. टी. विभागात नोंद केलेला लोड चुकीचाही असू शकतो किंवा चुकीच्या पद्धतीने लिहिलेला असू

शकतो. आय. टी. विभागात नोंद केलेला लोड आणि ट्रान्सफॉर्मर वरील प्रत्यक्ष नोंद केलेला लोड ह्यात खूप तफावत असते. त्यामुळे ह्यासाठी महावितरण ग्राहकांना किंवा छोट्या विकासकांना वेठीला धरून त्यांच्याकडून पायाभूत सुविधा तयार करून घेते ह्यामध्ये लहान वीज ग्राहक भरडले जातात. या सर्व परिस्थितीमुळे छोटी मागणी असलेल्या ग्राहकांना वीज जोडणी मिळवताना असंख्य अडचणींना सामोरे जावे लागते. शिवाय ह्यात प्रचंड वेळ जातो. ह्याचा तार्किक म्हणजे लॉजिकल विचार करून व्यावहारिक मार्ग काढला पाहिजे.

पुणे महानगरपालिकेचे भयानक खोदाई शुल्क :

पुणे महानगरपालिका वीजग्राहकांच्या अडचणी वाढवण्यात कमालीची अग्रेसर आहे. महावितरणसाठी पायाभूत सुविधा करून देणे सोपे वाटावे इतके भयंकर खोदाई शुल्क महानगरपालिका आकारते. रस्त्यावरून खोदाई करण्यासाठी महानगरपालिका तब्बल १२,०००/- प्रति मीटर शुल्क आकारते. महावितरण ने सांगितलेल्या पायाभूत सुविधांतर्गत कामातील भूमिगत केबल्स टाकण्यासाठी हे पैसे महानगरपालिकेला भरावे लागताना वीज ग्राहकांचे उरलेसुरले कंबरडेच मोडते. जसे उदाहरणार्थ समजा महावितरणने १२० स्के. मीटर केबल टाकायला सांगितली असेल तर केबलचा खर्च सुमारे ६०,००/- रुपये असल्यास खोदाईसाठी महानगरपालिकेला (१००द १२०००/-) म्हणजे तब्बल १२ लाख रुपये भरावे लागतात. काम ग्राहकाने स्वतःच करायचे आणि हा अवास्तव भुर्दंड देखील सोसायचा. वास्तविक पायाभूत सुविधा करण्याचे काम महावितरणचेच आहे. वीज ग्राहकांनी किंवा विकासकांनी करून दिलेल्या पायाभूत सुविधा महावितरण ला स्वतंत्र कायदेशीर करार करून हस्तांतरित कराव्या लागतात. मग हस्तांतरित केलेल्या पायाभूत सुविधा महावितरण त्यांच्या मालमत्तेत (Assets) रीतसर नोंद करून घेते. पुढील पाच वर्षे या पायाभूत सुविधांची देखभाल देखील ग्राहकांनाच करावी लागते. त्यामुळे ग्राहकांनी करून दिलेल्या पायाभूत सुविधांसाठी हा खोदाईचा खर्च वितरण ने का करू नये? असा प्रश्न पडतो. असो...

भ्रष्टाचार सर्वांच्याच सोयीचा :

या सर्व वरील प्रक्रियेमध्ये भ्रष्टाचाराला प्रोत्साहन मिळते हे वेगळे सांगायला नकोच. प्रत्यक्ष ग्राहक सोडला तर ह्या प्रक्रियेत काम करणारे संबंधित अधिकारी, कर्मचारी, विकसक, मध्यस्थ सर्वचजण आपापले हात धुवून घेतात. भ्रष्टाचार हा सर्वांच्याच सोयीचा असल्यामुळे भ्रष्टाचाराच्या विरुद्ध कुणीच आवाज उठवायला उत्सुक नसतो. शिवाय भ्रष्टाचाराच्या प्रवाहाचा वेग इतका मोठा असतो की त्या वेगवान प्रवाहाच्या विरुद्ध कोणी पोहायला जात नाही. पण ह्या सर्वांचा अप्रत्यक्षपणे येणारा भार सामान्य ग्राहकाच्या माथ्यावर पडतो हे कुणाच्याच लक्षात येत नाही हे दुर्दैव!

पुन्हा असो...





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HOME LIGHTS AND LAMPS- HOME LIGHTING SOLUTIONS

A beautiful home means beautiful life. After a long tiring day at work, what is it that reduces your stress and gets you going for the next day? The comfort and the beauty of your house. Home lights are an incredible and integral part of your sense of home. After all, what looks good is also what makes you feel good. Investing in home lighting solutions will help not only to brighten up your space but also work as mood lighting which is a perfect investment in today's stressful life. At Jaquar Lighting, we have got you some of the best LED lights for home that will prove to be the perfect home lighting solutions for all your problems. Be it creating enough light for study purposes, working, or cooking in the kitchen; you are all sorted.

Home is not just a place but a feeling, right? It's time to get some LED lights for your home so that you can experience the lighting and the beauty of your house that instantly makes you happy. At Jaquar consumer lighting, we have a wide range of home lights from which you can choose. Be it fancy LED lights for home, some designer lights for home, LED lights for room, or just about any LED house lighting solutions and consumer lighting solutions we have got it all. Now, if you wish to just relax in some dim light at night and have a good time with your family or your special ones, you can easily do so, because the beautiful lights by Jaquar Lighting are a perfect solution for all your special moments. Chit-chat and relax, take a back seat as our beautiful consumer lighting solutions do the work for you. Get in touch with one of the leading home lights manufacturers in India, Jaquar Lighting, and experience comfort lighting all your life.

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Power Ministry directs plants to continue importing coal for blending till June 2024



Peak power demand is likely to reach up to 250 GW during the summer season, says Ministry

The Power Ministry on Monday advised all the coal-fired thermal power plants (TPPs) to continue importing coal at 6 per cent for blending in a bid to prepare for the upcoming peak demand season.

This is in continuation of its October 2023 order for blending of imported coal at 6 per cent (by weight) till March 2024.

The Ministry said that it has reviewed the power supply scenario in the country and according to the projections, India's peak demand is likely to reach up to 250 gigawatts (GW) during the summer season (April-June 2024). In 2023, the peak power demand rose to 243 GW during September.

It also observed that despite an increase in loading of domestic coal rakes, the supplies of domestic coal will remain constrained due to various logistical issues associated with the railway network.

“In order to meet the power demand during the crucial summer months and to ensure uninterrupted power supply across the country, adequate coal reserves in domestic coal-based (DCB) plants need to be maintained by all the Central/ State Gencos and independent power producers (IPPs). The Ministry of

Power has, therefore, decided to extend the advisory dated October 25, 2023 till June 2024,” the Ministry said.

Accordingly, all the Gencos are to firm up their imported coal contracts for ensuring supplies till June 2024. Further, Gencos must also continuously review the stock positions of their DCB plants and opt for blending as per requirements so that adequate coal stocks are maintained at the TPP level, it added.

Energy demand

According to JM Financial, India's energy demand and peak power rose 7.6 per cent Y-o-Y to 1,225 billion units (BU) and 12.7 per cent Y-o-Y to 243 GW, respectively, during April-December (9M) FY24.

As per India Ratings & research (Ind-Ra), the peak demand increased 11 per cent Y-o-Y in H1 FY24, attributed to the improved economic activity, rising heat and poor monsoons. However, coal supply has improved during the current fiscal and led to a moderation in the peak demand deficit to 0.08 per cent during 9MFY24 (FY23: 4 per cent).

Ind-Ra expects thermal plant load factor, or capacity utilisation, to be around 68 per cent during FY24 and FY25 with a 5-6 per cent annual increase in power demand. Thermal continues to be the major source of power for the country with around 75 per cent share in the generation, followed by renewables at about 23 per cent during 9M FY24.

आयईशिट्टी पोस्टिंग : वस्तुस्थिती

प्रिय वाचक हो,

गेले ४-५ महिने मुंबई पोस्ट ऑफिसमध्ये वृत्तपत्रांच्या बाबतीत सरकारी नियमांवर चर्चा चालू आहे. पोस्टाने सवलतीचे पत्र दिलेले असले तरी RNI कडून प्रमाणपत्र न मिळालेली अनेक नियतकालिके आहेत.

नियतकालिकांमध्ये पत्ता बदल, मुद्रक बदल, किंमत बदल, संपादक बदल वगैरे होतच असतात. या प्रत्येक बदलाची माहिती RNI ला कळवायची असते. त्यासाठी मुंबईत कोर्ट डिक्लरेशन करायचे असते. ती सर्व कागदपत्रे RNI कडे पाठविल्यानंतर ते नवीन प्रमाणपत्र पाठवतात. ते पोस्ट ऑफिसला द्यायचे असते.

गेली काही वर्षे असे प्रमाणपत्र अनेक नियतकालिकांना मिळत नाही, पत्रांना, मेलला प्रतिसाद मिळत नाही. तरी पोस्टामधे अडचण येत नव्हती व अंक पाठवणे सुरु होते.

गेल्या ४-५ महिन्यांपासून प्रमाणपत्र दाखवल्याशिवाय सवलतीत पोस्टिंग करता येणार नाही अशी भूमिका पोस्टाने घेतली आहे. आणि RNI करून प्रमाणपत्र मिळत नाही अशी अनेक नियतकालिकांची परिस्थिती झाली आहे. IECT पण याच रांगेमध्ये आहे. यामुळे ठरलेल्या दिवशी पोस्टिंग होत नाही आणि प्रत्येक अंकासाठी ९ रुपयांचे तिकिट लावावे लागत आहे. हा भुर्दंड विनाकारण सोसावा लागत आहे. सध्या आपण हा खर्च करत आहोत आणि दिल्लीतील RNI ऑफिसशी मेल

व पत्रव्यवहार करत आहोत. आता निवडणुका झाल्यावर पाहू असे ते म्हणत आहेत.

या परिस्थितीची सर्वांना माहिती असावी म्हणून ही वस्तुस्थिती मांडली आहे. लवकरच परिस्थिती पूर्ववत होईल अशी आशा आहे.

- सतीश सिन्नरकर, संपादक

SECI declares winners of its 400 MW solar modules auction

Results for Solar Energy Corporation of India Limited's (SECI) auction for manufacturing, testing, packaging, forwarding, supplying, and transporting 400 MW domestically manufactured solar modules have been announced.

By quoting Rs 22.66 per Wp, Swelect Energy Systems won 100 MW, Grew Energy won 200 MW, and ReNew Photovoltaics (ReNew) won 100 MW. The value evaluated per Wp for all bidders amounted to Rs 22.66 million.

The modules and required spare parts specified in the contract must be delivered in staggered shipments over a nine-month period.

Furthermore, SECI has mandated the use of indigenously manufactured solar modules listed in the Approved List of Models and Manufacturers by the Ministry of New and Renewable Energy.

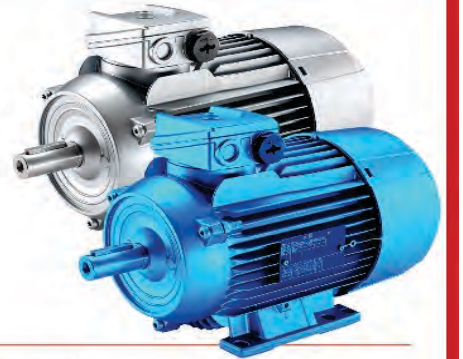


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LED – Prospects & Perspectives

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LED - When we come across this word, immediately a picture comes before us is of a source of illumination. But is it only a source of illumination or much more? Light-emitting diode (LED) is a widely used standard source of light in electrical equipment. It has a wide range of applications ranging from mobile phones to large advertising billboards. During the last four decades, technical progress in the field of light-emitting diodes (LEDs) has been breathtaking. State-of-the-art LEDs are small, rugged, reliable, bright, and efficient. At this time, the success story of LEDs still is in full progress. Great technological advances are continuously being made and, as a result, LEDs play an increasingly important role in a myriad of applications. In contrast to many other light sources, LEDs have the potential of converting electricity to light with near-unit efficiency.

So now, let us see **What is LED?** : Light-emitting diode (LED) is a semiconductor device. The LED emits light when current flows through it. An LED lamp or LED light bulb is an electric light that produces light using light-emitting diodes

(LEDs). LED lamps are significantly more energy efficient than equivalent incandescent lamps and can be significantly more than most fluorescent lamps. The most efficient commercially available LED lamps have efficiencies of 200 lumen per watt (Lm/W). Commercial LED lamps have a lifespan many times longer than incandescent lamps.

Types of Lamps : To produce Light or Illumination, a number of efforts were made initially by Humphry Davy in 1802 and subsequently by number of Scientists till 1880, when commercially manufactured light bulbs were made by Thomas Edison. Such incandescent bulbs are not energy efficient since hardly 10% of electrical power supplied to the bulb is converted into visible light. The remaining energy is lost as heat. This led to development of CFL, which is more efficient. But since it contained Mercury, it could not last long from ecological point of view. Before the introduction of LED Lamps, 4 types of lamps were used for the bulk of general (white) lighting:



Incandescent Lamp



Fluorescent Tube Light



Compact Fluorescent Lamp



Metal-Halide Lamp

1. Incandescent Lamps : They produce light with a glowing filament heated by electric current. These are very inefficient, having a luminous efficacy of 10–17 lumens/W, and also have a short lifetime of 1000 hours. They are being phased out of general lighting applications. Incandescent lamps produce a continuous black body spectrum of light similar to sunlight, and so produce high Color rendering index (CRI).

2. Fluorescent Tube Light : They produce ultraviolet light by a glow discharge between two electrodes in a low pressure tube of mercury vapour, which is converted to visible light by a fluorescent coating on the inside of the tube. These are more efficient than incandescent lights, having a luminous efficacy of around 60 lumens/W, have a longer lifetime 6,000–15,000 hours, and are widely used for residential and office lighting. However, their mercury content makes them a hazard to the environment, and are being phased out.

3. Compact Fluorescent Lamp (CFL) : Fluorescent tube working on the above principle only, but bent into a spiral, creating the compact fluorescent light. At first, these bulbs were too expensive for widespread use. But by the 1990s, CFLs became slimmer, more affordable, and more efficient. Today, CFL bulbs are 50-75% more efficient than modern incandescent, and last about ten times longer. However, like Fluorescent Lamps, due to their mercury content makes them a hazard to the environment, and are being phased out.

4. Metal-Halide Lamps : They produce light by an arc between two electrodes in an atmosphere of argon, mercury and other metals, and iodine or bromine. These were the most efficient white electric lights before LEDs, having a luminous efficacy of 75–100 lumens/W and a relatively long bulb lifetime of 6,000–15,000 hours; because they require a 5–7-minute warm up period before turning on, metal-halides are not used for residential lighting, but for commercial and industrial wide area lighting and, outdoors, for security lights and streetlights. Like fluorescents, they also contain hazardous mercury and are thus being phased out.

LED Lights Today: How Have LED Lights Improved?

LEDs were discovered by accident in 1907 and the first paper on LEDs was published in the same year. LEDs became forgotten only to be re-discovered in the 1920s and again in the 1950s. In the 1960s, three research groups, one working at General Electric Corporation, one at MIT Lincoln Laboratories, and one at IBM Corporation, pursued the demonstration of the semiconductor laser. The first viable LEDs were by-products in this pursuit. LEDs have become devices in their own right and today possibly are the most versatile light sources available to humankind. LEDs (light-emitting diodes) are the most energy efficient lighting option available. To produce the same amount of light as a 60-watt incandescent bulb, an LED light only

uses 10 watts. This is because LEDs use almost all of their energy as light, whereas incandescent give off most of their energy as heat. In comparison to incandescent light sources, LEDs have various benefits, such as lower power consumption, a longer lifespan, increased physical durability, smaller size, and quicker switching. Up to 90% more light is produced by LED lighting devices than by incandescent bulbs. Like early versions of incandescent and fluorescent bulbs, they were once expensive and available in limited colors. However, rapidly advancing technology has made them available at accessible prices, in a wide range of colour temperatures, and with excellent (CRI) color rendering indexes.



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LED Color Temperatures

The earliest commercial LEDs were only available in blue-white light. Today, LEDs are available in warm, golden color temperatures (2700K-3000K) as well as crisp, bluish white (5000K). Soft white (2700K) is ideal for lobbies, guest spaces, and residential living areas. Bright white (4000K) is preferred for workspaces, like kitchens, garages, and warehouses. Daylight (5000K) encourages productivity and is great for reading, working, and any spaces that require attentiveness and high energy.

Color Rendering Index

The higher the Color Rendering Index (CRI), the better. A high CRI helps your eye differentiate between colors. CRI is measured on a scale of 0-100, with a perfect score of 100 indicating colors appear as they would in natural sunlight. Lights with CRI ratings of eighty or above are considered acceptable for most applications.

Lights with CRI ratings of ninety or above are considered high, and are ideal for situations where color accuracy is crucial.

Types of LEDs

There are many types of LEDs. They are categorised by their size, application and power delivered. The ability to employ LEDs for lighting and illumination has been made possible by the development of high-efficiency and high-power LEDs.

- Gallium Indium Nitride LED: near UV light, produces bluish-green and blue light.
- Gallium Arsenide Phosphide LED: red to infrared light, produces orange light.
- Gallium Arsenide LED: produces an infrared light.
- Gallium Nitride LED: produces green and emerald green light.
- Gallium Phosphide LED: produces red, yellow and green light.
- Aluminium Gallium Phosphide LED: produces green light.
- Silicon Carbide LED: produces blue light as a substrate.
- Zinc Selenide LED: produces blue light:
- Aluminium Gallium Arsenide Phosphide LED: it produces a red light of high brightness, orange, red and yellow.

How LEDs are Different ?

- LEDs are different from the regular incandescent bulbs or CFLs. The following are the key differences:
 - Longer life span: LED products have a longer life span compared to the traditional light bulbs or CFL. LEDs can last up to 50,000 hours or more.
 - More Energy Efficiency: LEDs are more energy efficient compared to the other traditional light sources.

They use less electricity to produce light and are more energy efficient.

- Direction: LEDs emit light in a specific direction. This reduces the need for reflectors or diffusers. Hence, LEDs can be used for efficiently as recessed down lights or in task lighting.

- Colour Range: LEDs can produce a wide range of colours, including, red, green and blue. It can produce white light without the need of filters for mixing.

- Heat Output: LEDs produce less heat compared to the traditional light bulbs. They are less likely to cause a fire in the surroundings. Incandescent bulbs emit around 90% of the energy as heat and CFLs emit around 80% energy as heat.

Advantages and Disadvantages of LED Advantages

- The lifespan of an LED light is far longer than that of the typical incandescent bulb.
- One benefit of LED lighting is that it uses less energy when operating.
- Because they require such low voltage to operate, LEDs are ideal for all purposes.
- LEDs are quite tiny. As a result, they can be used in almost any situation.
- Harmful chemicals are not used in LED lights.
- From around 5% to 100% of power, LEDs operate effectively.
- LED lights provide instantaneous on/off capabilities.
- Light is emitted in all directions surrounding the light source using traditional lighting sources.
- LED lights perform around 5% better compared to other lighting sources in colder temperatures.

Disadvantages

- The high initial cost per bulb associated with LEDs is a drawback.
- Because of ageing and temperature changes, LEDs change colour.
- LEDs need to be powered with the proper voltage and consistent current flow.
- LED causes heat to dissipate backwards and toward the emitter.
- The cost of manufacturing LEDs is expensive.
- Compared to other light sources, LEDs use a lot of power.

Applications / Uses of LED

The high efficiency and directional nature of LEDs makes them ideal for many industrial uses. LEDs are increasingly common in street lights, parking garage lighting, walkway and other outdoor area lighting, refrigerated case lighting, modular lighting, and task lighting. The light-emitting diode (LED) is today's most

energy-efficient and rapidly-developing lighting technology. Quality LED light bulbs last longer, are more durable, and offer comparable or better light quality than other types of lighting. LEDs find applications in various fields, including optical communication, alarm and security systems, remote-controlled operations, robotics, etc. It finds usage in many areas because of its long-lasting capability, low power requirements, swift response time, and fast switching capabilities.

Displays : LEDs are used as status indicators and displays on a range of equipment and installations because of their small size, low maintenance requirements, and low energy consumption. Stadium displays, dynamic decorative displays, and dynamic message signs on highways are all applications for large-area LED displays.


Active backlighting is necessary for smartphones and monitors in order to produce a viewable image. In an LED monitor, a large number of LEDs are arranged in an array. This allows for the illumination of only the portions of the screen that require illumination while consuming less power. This sort of display has a longer anticipated lifespan because of the robustness of the LED components, which further lowers the amount of power required.

Horticulture : It is the method for stimulating plant growth by artificial lighting fixtures when natural light is

lacking. LED lighting technology enables a more highly controlled growth environment that can improve productivity and control of the horticultural product and may even enable new crops to be effectively produced in controlled environments. In agricultural applications, LED lights are used to change how plants grow, alter when they flower, transform how they taste and even modify their levels of vitamins and antioxidants. LED lights can extend a plant's shelf life as well.


Medical / Healthcare : LED equipment is an invaluable tool within the medical field. LED technology improves surgical lighting, so doctors have a better view when they're performing surgeries. LED technology also heal wounds quicker and even improve brain functionality for people with limited cognitive abilities. LEDs have proven their versatility in the healthcare sector. Coloured light, for example, has a calming effect on patients, as dynamically changing the light provides the human organism with activating impetus.

Automobiles : LEDs have been utilised in automobile brake lights and turn signals. This is because of their extended lifespan, quick switching times, and visibility in broad daylight due to their high brightness and focus. Automotive LED lighting is




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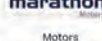
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Automobiles



Horticulture

utilised in lights for cars, motorcycles, and bicycles. In parking garages and on poles, LED street lights are used. Due to the enormous energy savings that LED technology may provide, traffic signals are increasingly often used.

- **Art** : LED art has been created by artists using LEDs. Because LEDs can create significantly thinner lights than incandescent lamps with parabolic reflectors, using them offers styling benefits. UV-emitting LEDs can be utilised as decorations at events.

- **Devices** : LEDs are small, durable and need little power, so they are used as flashlights in cameras and mobile phones. Infrared illumination for night vision applications, such as security cameras, is provided by LEDs. LEDs are used in modern smart phones and tablet computers as backlights and indication lights.

- **Communication** : Arrays of infrared LEDs are used by assistive listening devices in many theatres and other public places to transmit sound to users' receivers. Data is transmitted using light-emitting diodes over several types of fibre optical cable. Since LEDs' light can be rapidly manipulated, they are widely employed in optical fibre and free space optics communications.

- LEDs can turn on and off millions of times per second, allowing for very high data bandwidth. Visible Light Communication (VLC) has been suggested as a substitute for the increasingly constrained radio bandwidth because of this. Data transmission is possible without using radio frequencies by operating in the visible region of the electromagnetic spectrum. VLC can also be used to communicate amongst devices in a smart office or home.

Other Uses of LED

- Low-output LEDs are utilised for a variety of short-term applications, including glow sticks, throwies, and the photonic fabric Lumalive, because of their relative affordability.

- UV LEDs have been used in phototherapy, medical/analytical equipment, surface cleaning, glue curing, and DNA absorption.

- In electronic circuits, LEDs have also been utilised as a medium-quality voltage reference. In low-voltage regulators, the forward voltage drop may be utilised in place of a Zener diode.

- Machine vision applications most frequently include barcode scanners, and many of these scanners employ red LEDs rather than lasers. For machine vision, LEDs are advantageous since they offer a portable, dependable source of light.

Conclusion

LEDs were once almost exclusively used as status indicators on circuit boards or control panels. Today, these can be seen almost everywhere. Small size, low current and low energy consumption of LEDs have led to uses including large-area LED displays for stadium displays and small, thin, lightweight uses such as status indicators and glow lights. It would not be an exaggeration to say that LEDs have already transformed the luminance industry outlook towards everyday lighting devices as well as vehicle lights. LED is a highly energy-efficient lighting technology, and has the potential to fundamentally change the future of lighting. Residential LEDs, especially ENERGY STAR rated products use at least 75% less energy, and last up to 25 times longer than incandescent lighting. Widespread use of LED lighting has a large potential impact on energy savings. By 2035, the majority of lighting installations are anticipated to use LED technology. The Indian LED lighting market size reached US\$ 3.4 Billion in 2022. Looking forward, the analyst expects the market to reach US\$ 11.9 Billion by 2028, exhibiting a CAGR of 23.22% during 2022-2028.



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Great achievements by Harsh Jatkar

Harshavardhan Jatkar holds university degrees in Architecture (BArch), International Cooperation in Urban Development and Development Economics (MSc), and Development Planning (PhD). He is currently a lecturer (teaching) and inclusion lead at the Bartlett School of Environment, Energy, and Resources at University College London, UK. He has international experience in researching the topics of land, energy, housing, and material efficiency in relation to climate change and social justice. He is interested in working towards more sustainable and inclusive development in the Global South.

Harsh draws on a range of disciplines to inform research and development practice at the intersection of development studies, environmental studies, postcolonial studies, and critical theory. He thematically focuses on land, energy, and housing as they relate to climate change and social justice. Harsh has experience of doing research, teaching, and urban development practice in various international contexts, including India, Indonesia, Egypt, Mexico, Perú, Argentina, and the European south. He received his doctorate in Development Planning from UCL where he explored postcolonial politics of making



participatory land policy in western India. Subsequently, he has worked as research fellow on a GCRF-funded project 'Grounded Energy Modelling for Equitable Urban Development in the global South' (GEMDev), British Academy funded project 'Capabilities-led energy poverty alleviation via innovative community solutions' (CaPAS), and European Commission funded project 'Climate Action to Advance Healthy Societies in Europe' (CATALYSE). He recently worked on delivering three roadmaps for the UNEP-GIZ led project on 'Resource Efficiency and Circular Economy: Material Efficiency Strategies for Residential Building Construction Sector in Argentina, Mexico and Indonesia' (RECC-AIM). He currently works as Lecturer (Teaching) in Circular Economy and Resource Efficiency, where he leads a module 'Policies for Sustainable Resources' and co-leads the programme MSc Sustainable Resource: Economics, Policies and Transitions (SREPT). Harsh also acts as Inclusion lead at the Bartlett School of Environment, Energy and Resources, and co-chairs the UCL energy and development group (EDG). He is a member of the UCL Energy and Health Group.

Harsh is son of Shri Rajeev Jatkar, member of ECAM.



Mumbai's peak electricity demand surged to over 4,000 MW as temperatures crossed 38 degrees Celsius, leading to increased power consumption amid a heatwave

Mumbai: The peak demand for electricity in Mumbai on Tuesday, when the maximum temperature crossed 38 degrees Celsius, shot up to over 4,000 megawatts (MW), surpassing the usual demand of 3,400-3,600 MW for the first time this summer. On Monday, the city's power demand was 3,973 MW.

Power supply utility MSEDCL hikes electricity tariff from April 2024.

According to data, Mumbai's power demand spiked to 4,041 MW around 3.00pm. Power distribution companies attributed the sharp spike in day temperatures to the heatwave, leading to an increase in power demand.

The city has nearly 50 lakh power consumers who are serviced by BEST undertaking, Adani Electricity, Tata Power and MSEDCL.

Officials from Tata Power said demand touched 1,005 MW from its 7.5 lakh consumers spread across the city and suburbs. Notably, from April 1, Tata Power hiked tariffs by 22-24%, and the hike was steepest for those consuming up to 300 units of electricity a month.

Electricity drawn by 10.5 lakh BEST consumers in the island city touched nearly 880-900 MW, compared to 730-750 MW on a usual summer day, while peak demand from Adani Electricity consumers touched 2,070 MW.



Safeguards Must Be Established To Prevent Abuse of AI: CJI DY Chandrachud



Chief justice of India (CJI) DY Chandrachud on Monday said that adequate safeguards must be established to prevent abuse of AI (artificial intelligence) and other advanced technologies.

Delivering 20th DP Kohli Memorial Lecture on the occasion of CBI (central bureau of investigation) raising day, CJI Chandrachud said that AI is not free of prejudice and biases and because of skewed data, AI may lead to community-based profiling of marginalised social groups.

"This may not only abuse the privacy rights of individuals but also lead to disproportionate targeting of social groups. AI is a gift which must only be wielded within ethical boundaries," he said.

CJI Chandrachud added that the benefits of technological advancement should reach all members of society to build trust and confidence among stakeholders and uphold the integrity of our justice system.

He said that with the assistance of AI algorithms, law enforcement agencies like CBI can analyse vast amounts of data rapidly, identifying trends, anomalies, and potential leads with unprecedented accuracy.

"For example, in a human trafficking case, AI-powered algorithms analysed social media data to identify patterns of

suspicious behaviour and communication among potential perpetrators," CJI Chandrachud said.

By leveraging AI technology, law enforcement could sift through vast amounts of data quickly and efficiently, pinpointing critical leads and actionable intelligence that might have otherwise gone unnoticed, the CJI added.

CJI Chandrachud also presented president's police medals (PPM) and police medals (PM) to CBI officers on the occasion.

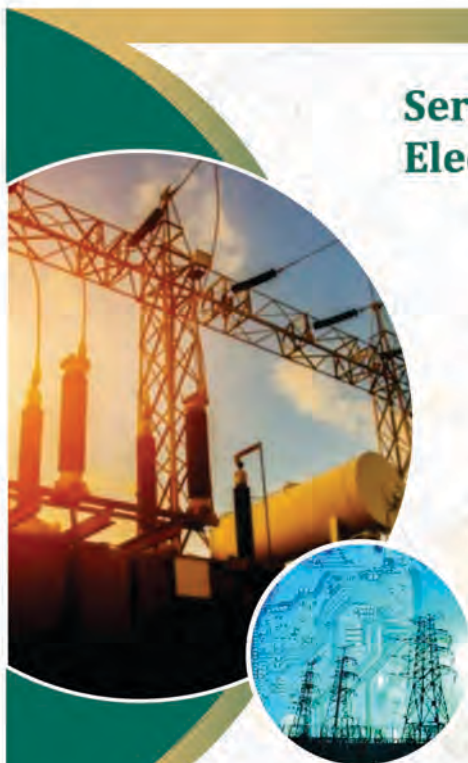
CBI was established by the Union government *vide* a resolution dated 1 April 1963 to investigate cases of bribery and corruption, including violation of central fiscal laws and serious crimes.

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Luminous Power Technologies inaugurates solar panel manufacturing factory in Uttarakhand



According to the statement, the inauguration event was graced by legendary cricketer and Luminous Brand Ambassador Sachin Tendulkar, accompanied by Preeti Bajaj, CEO & MD, Luminous Power Technologies, and Manish Pant, Chairman of Luminous Board & Executive VP - International Operations, Schneider Electric.

Energy solutions provider Luminous Power Technologies on Thursday announced the inauguration of its solar panel manufacturing factory at Rudrapur in Uttarakhand.

Equipped with the latest advancements in solar panel manufacturing, the facility boasts of cutting-edge technology and infrastructure designed to ensure maximum efficiency and minimal environmental impact, a company statement said.

According to the statement, the inauguration event was graced by legendary cricketer and Luminous Brand Ambassador Sachin Tendulkar, accompanied by Preeti Bajaj, CEO & MD, Luminous Power Technologies, and Manish Pant, Chairman of Luminous Board & Executive VP - International Operations, Schneider Electric.

The inauguration of the solar plant marks an important milestone for Luminous, with the company undertaking strategic business decisions to evolve from

manufacturing a best-in-class product range in the solar, inverter, and battery categories to building an end-to-end solar energy management ecosystem.

Preeti Bajaj, MD & CEO of Luminous Power Technologies, said in the statement, "Solar will be a significant part of our business, and we see it as a major growth enabler as we aim to double our growth in the next three years."

The factory, spread over 10 acres, is fully automated and equipped with the latest and cutting-edge solar module manufacturing technologies.

The plant also boasts of being the first in the country to have fully robotic automation capabilities to manufacture high-quality modules. Having the current capacity of 250 MW, the state-of-the-art plant is expandable up to 1 GW, the company said.

Manish Pant, Chairman of Luminous Board & Executive VP - International Operations, Schneider Electric, said in the statement, "This factory is a significant step towards achieving the collective goal of Schneider and Luminous to promote net-zero practices and sustainable energy solutions."

Luminous Power Technologies has been in business for 35 years.

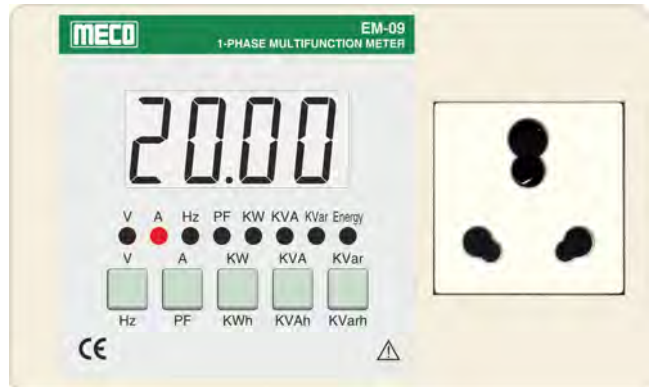


MECO Single Phase Multifunction Appliance Meter – TRMS with RS-485 Port. Model EM-09

MECO Single Phase Multifunction Appliance Meter Model EM-09 is a Microcontroller based Portable meter, light weighted and simple to use. Single Phase measurement indicating TRMS Value with 10 parameters like RMS Voltage (V), RMS Current(mA), Active Power(KW), Apparent Power(KVA), Reactive Power(KVAr), Power Factor(PF), Line Frequency, Active Energy(KWh), Apparent Energy(KVAh) and Reactive Energy(KVArh). Model EM-09 available with measurement Range of 1A or 5A or 20A AC with Smart Socket and Power Cord. Also available (Optional) with RS-485 Port & Power Master Software for MS Report.

It display 10 pages on large LCD Display (20mm) and equipped with 5 keys to program and view all parameters. Auto / Manual Scroll display (User Selectable), Green & White Backlight Display, ABS Casing suitable for Desktop Mounting, Portable are Key features of MECO Model EM-09.

Model EM-09 has various applications like Appliance Testing, AC, Refrigerator, Washing Machine, LED Light



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FLIR Announces Si2-Series of Acoustic Imagers to Detect Compressed Air Leaks, Partial Discharges, Mechanical Faults, and Quantify Gas Leaks

New Si2-Pro, Si2-LD, and Si2-PD models provide best-in-class performance, decision support, fleet management and enterprise data integration with new on-screen gas leak quantification, partial discharge assessment, and mechanical fault measurement.

March 5, 2024 – FLIR, a Teledyne Technologies company, today announced the expansion of its versatile Si-Series of acoustic imaging cameras with three models in the new Si2 family, designed for detecting compressed air leaks, specialty gas leaks, mechanical faults, and partial discharges : the **Si2-Pro**, **Si2-LD**, and **Si2-PD**. The Si2-Series offers industrial-grade solutions for the detection of air and gas leaks as well as mechanical faults such as bearing issues, addressing the top inspection requirements for industries such as manufacturing, electrical and utilities.

FLIR's new Si2-Series cameras provide superior performance, with the ability to identify issues over longer distances, detect and measure with increased sensitivity, and produce more accurate classification of issues.

The new **Si2-Pro**, the **Si2-LD** and the **Si2-PD models** offer the best image quality on the market. Improvements in acoustic camera picture quality include 12 MP color camera, 8x digital zoom, and LED illumination for addressing dark areas. The Si2 also has increased battery life to keep professionals in the field longer without the need for swapping power sources. The specialty gas leak quantification and cost estimates have been expanded beyond compressed air to include other common industrial gases such as hydrogen, CO₂, methane, helium, argon, ammonia, and more.

The Si2 cameras apply an array of acoustic imaging advancements that work to detect and quantify air and gas leaks, mechanical faults, and partial discharge, making them the top-performing acoustic imaging cameras on the market for these types of detections.

- **FLIR Si2-Pro:** Industrial acoustic imaging camera for pressurized leak detection, mechanical fault detection, and partial discharge detection with on-camera severity assessments

- **FLIR Si2-LD:** Industrial acoustic imaging camera for pressurized leak detection and mechanical fault detection in manufacturing and other industrial environments

- **FLIR Si2-PD:** Industrial acoustic imaging camera for partial discharge detection with on-camera severity assessments for power infrastructure inspection

FLIR's advanced automatic filtering identifies leaks by their sound signatures even in the noisiest of industrial environments. The new 'mech mode' feature of the Si2-Series enhances site safety by enabling quick detection of mechanical issues, such as bearing faults, empowering professionals to rapidly evaluate conditions, identify problems, and implement solutions.

Plant professionals can swiftly identify mechanical, leak and partial discharge issues, then generate reports for urgent attention. On-camera decision support tools include mechanical defect measurement, classification and severity assessment of partial discharges, leak size estimation, and cost analysis.

The Si2-Pro, the most comprehensive solution that combines the features of the Si2-PD and Si2-LD, actively lowers costs by addressing mechanical bearing issues and partial discharge on electrical equipment, and it also significantly cuts leaks in facilities to reduce expenses from compressed air and gas leaks.

"Increasing safety while avoiding costly failures is the aim of the new Si-Series. With the addition of three leading-edge models that scale up for professional use in a wide variety of situations, the new Si2-Series of cameras cement their position as the industry's most complete, enterprise-ready solution," said Rob Milner, Business Development Director, FLIR. "The highly capable FLIR Thermal Studio will also be upgraded to include gas-leak quantification, making data simple to record and easier to share via reports between users, cutting down the time to perform and record multiple site inspections."

To complement the Si2-Series of acoustic imaging cameras, FLIR provides its acoustic training platform and 24/7 support through its global service organization. To learn more about FLIR Acoustic Imaging Solutions, please visit: <https://www.flir.in/browse/industrial/acoustic-imaging-cameras/>



Dr P Krishna Kumar of Nangalwala Industries is one of the top 10 CEOs from Wire & Cable industries



Dr. P. Krishna Kumar has been chosen as one of the Top 10 CEOs in Wire and cable Industry, in a media research conducted by Industry Outlook Magazine.

Dr. P. Krishna Kumar, a visionary leader and entrepreneur with a background in

electrical engineering and engineering management, has left an indelible mark on both industry and society. His pioneering ventures, including IWIN Worldwide and Nangalwala Industries, showcase his ability to navigate complex business landscapes with strategic acumen.

CONGRATULATIONS SHRI. BALASAHEB KADAM

Education never ends and there is no age limit for learning. at the age of 65, Balasaheb Kadam have successfully completed the Electrical Engineering

Diploma Examination of Maharashtra Government Board of Higher Technical Education from Satara Polytechnic Satara.

Shri. Balasaheb (Dilipkumar) Kadam is Chairman of ECAM region western Maharashtra.



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FIRE ACCIDENTS IN INDIA- THE STATISTICS THAT SHOULD SCARE YOU

Those who would still like to believe that fire safety and exit safety are not really priority need to read this very carefully.

India is a huge country and news coverage of every fire is impossible. But just as pressing one rice grain can tell you if the rice is cooked, following the fire accident news regularly will tell you your goose is cooked if you do not act now.

“Factories in Telangana see 1 fire accident every 2 days” reads a recent headline. Telangana is not even a grain of sand if you see the map of the world, or at best, a small rock if you see the Bharat map. If only factories in that state alone see one fire accident every two days, include the whole country, add homes, godowns, hospitals, malls, offices, hutments, high rises and do the math.

The fire brigade center in Katraj (in Pune) has tackled around 861 fire incidents in Katraj, Gujar-Nimbalkarwadi, Katrajghat, Mangdewadi, Bhilarewadi, Ambegaon, Kolewadi, Jambhulwadi, Dhankawadi etc areas, says a report. These fires were successfully brought under control by the staff of the Centre. Jambhulwadi Daripul, Katraj Ghat is part of forest land where incidents of wildfires also happen regularly.

Delhi Fire department data showed that there were 82 deaths and 722 people injured in fire accidents in 2022. According to the annual statistics shared by DFS, 59 deaths in fire tragedies were reported in 2023 while 689 people were injured.

The writing on the wall is loud and clear for each one of you there who would like to be called by name rather than appear in a news report as a number, but to read it or not is entirely up to you.

WHY SPEND MORE ON PROLITE EMERGENCY LIGHTS AND PHOTOLUMINESCENT SIGNAGES?

It is a known fact that an imitation only flatters the original. However, many people economize on all kinds of consumer goods by buying imitations. There are many products that spur a parallel market which thrives too. Purses, shoes, watches or mobile phones for instance. But

in all these examples it could be an ego issue, a style statement or just a matter of choice. However, would you buy a duplicate product if your life depended on it?

In case of a fire or blackout, when people's lives may be at stake, an imitation emergency light or sign can fail and lead to injury and even

death. Therefore, buying an imitation product cannot be an acceptable business strategy here. Prolite, has over 30 plus years, gained the reputation as a market leader and service provider in safe escape or exigency solutions. Also, more importantly, Prolite's products, besides being indigenous, are approved by the National Building Code and other bona fide authorization bodies making them the safest buy for anyone and everyone.

Furthermore, Prolite manufactures separate specialized products for high risk locations as against common locations. A house or a building could have normal range of products installed but a fireworks factory or a chemical godown with flammable product storage will necessarily require the flame proof range where high temperatures will not destroy the product and let them guide entrapped people to safety.

All authorized bodies and experts will only recommend Prolite exigency products precisely because human life is worth much more than a few bucks saved.



LED Battens Lights

With a nice sleek body and a graceful white colour, our LED battens lights are one of the most beautiful options for LED lights for home. They are not too bulky or heavy in terms of appearance but have a nice soft touch to them that blends in well with the most modern contemporary setups. This is one of the best LED house lighting options by Jaquar Lighting because of its sleek and slim body and affordable price. We have different variants of LED lights for home in this edition from which you can choose the one that suits your home decor, the best.

LED Downlights

It's time to get some beautiful house lights without distracting your budget or burning a huge hole in your pocket because our led downlights are not only very affordable but are a perfect choice for LED lights for room. They come in a nice white colour and their different variants camouflage well with all architecture. The circular design of these home LED bulbs, is perfect to be installed at the top of the wall, making these the perfect LED lighting solutions for people who wish to have designer LED lights that are not too mainstream and yet not too very subtle.

LED Panels

Looking for some LED panel lights for your home? Well, not to worry! because at Jaquar Lighting, we have got the perfect LED lighting solutions for you with our LED panel lights and LED light fittings. They come in two different shapes, square and round, and you can choose one that suits your decor. These are a great choice not only for LED lights for room but also for living room LED lights. The panel lights emit sufficient light to instantly brighten up your house and also work as designer LED home lights because of their beautiful design and sleek body.

LED Spotlights

LED spotlights are the easiest of the LED lighting solutions for houses and a classier choice for LED lights for home. They are especially perfect if you're looking for LED light fittings that are not too long and do not occupy much space. These LED spotlights come in two shapes round and Square; you can choose one that matches your

decor and home setting. The best part about these LED spotlights is that they are very affordable, and their light white colour goes well with different colours and styles. Undoubtedly it is the perfect addition to your modern chic living room setting.

LED Strip Lights

LED Strip Lights are slightly more expensive than all other LED house lighting options, precisely because of their high quality and modern design. The LED strip lights are perfect if you are looking for high-end designer LED home lights that will instantly brighten up your space and set your mood right for every little gathering. It is also one of the best energy efficient LED lighting options, so if you wish to upgrade the game of your home decor and are looking for chic light fixtures, and energy-efficient lighting options then this might be the one for you.

LED Lamps

Wondering how to redesign your living room? Not anymore because our LED lamps are one of the best home lights by Jaquar Lighting that is a perfect addition to your rooms. This home LED bulb works well with different kinds of architecture and is a perfect balance of the contemporary setting with just a tad bit of vintage touch. These LED lamps also work very well as fancy lights for your home, which are sure to leave your relatives and friends dumbstruck because of their warm light and beautiful body. The home LED bulbs or lamps can also work if you are looking for some beautiful luxury home decor lights, these are slightly more expensive than other light home lights but totally worth it.

contd. page on 67

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Beyond the Smokestack: Powerica's Commitment to Cleaner Air

Introduction

In the current era of increasing environmental consciousness, the detrimental/damaging impacts of pollution have become a central theme in global dialogues. Powerica Limited, in collaboration with the Cummins India Limited, is a pioneer in driving innovation and prioritizing customer satisfaction in the Indian diesel genset industry. Championing a transformative shift, Powerica is at the forefront of offering CPCB IV+ Compliant DG Sets, heralding a new era in the quest for a cleaner and healthier environment.

This article delves into the escalating concerns surrounding air and noise pollution, emphasizing the imperative need for the adoption of Powerica's Cummins powered advanced generators.

The Pollution Predicament

While diesel generators have long served as reliable sources of backup power, their use is marred by a considerable drawback - the release of harmful pollutants into the atmosphere. Emissions such as nitrogen oxides (NOx) and particulate matter (PM) significantly contribute to air pollution, posing severe threats to human health and the ecosystem at large.

Powerica's CPCB IV+ Compliant DG Sets: A Revolutionary Solution

Recognizing the urgency of curbing pollution, it is essential to align with the stringent emission norms set by the Central Pollution Control Board (CPCB). The CPCB IV+ emission standards introduced by MoEF&CC and enforced by CPCB stands as the latest benchmark in emission control for diesel generators. These cutting-edge DG Sets are meticulously engineered to minimize the emission of NOx and PM, ensuring compliance with the latest environmental regulations and fostering eco-friendly practices.

Advantages of Upgrading to CPCB IV+ complaint DG Sets

Substantial Pollution Reduction: The foremost advantage of transitioning to CPCB IV+ Compliant DG Sets



is the profound reduction in harmful emissions. Leveraging advanced technologies, these generators effectively mitigate NOx and PM emissions, surpassing the environmental performance of outdated models.

Regulatory Compliance: In an era where adherence to stringent emission norms is imperative, upgrading to CPCB IV+ Compliant DG Sets ensures that your business remains in compliance with environmental regulations. This proactive stance shields against potential fines and penalties.

Enhanced Efficiency: Beyond environmental benefits, these advanced generators boast of intense efficiency. They deliver reliable power while consuming less fuel, translating into long-term cost savings for businesses.

Unparalleled Durability: Crafted to the highest standards, CPCB IV+ Compliant DG Sets exemplify longevity and reliability. These generators are purpose-built to endure the rigors of continuous operation, ensuring uninterrupted power supply.

Health and Well-being: Cleaner air resulting from reduced emissions leads to improved air quality, for individuals residing in the proximity of the generator.

Conclusion:

Embracing Powerica's Cummins powered CPCB IV+ Compliant DG Sets embodies a responsible decision that not only enhances the operational efficiency of your business but also actively contributes to environmental preservation. The switch to these advanced generators not only signifies a commitment to reducing pollution but also positions your business as a proactive participant in the evolving landscape of environmental regulations.

It's time to usher in a cleaner, more sustainable future with Cummins powered Powerica's CPCB IV+ compliant DG Sets.

घरात वापरा हा सोलर लाईट आणि विज बिल करा कमी!

सौर ऊर्जेचा वापर आणि त्यावरील आधारित उपकरणांच्या वापराला सध्या प्रोत्साहन देण्यात येत असून हळूहळू सौर उर्जेवर आधारित उपकरणांचा वापर देखील मोठ्या प्रमाणावर केला जात आहे. आपल्याला माहित आहेस की, विजेचे दर देखील वाढले असल्यामुळे साहजिकच वाढीव वीज बिलाची समस्या प्रत्येकाला येते व आपल्या खिशावर त्याचा आर्थिक दृष्टिकोनातून खूप विपरीत परिणाम होतो.

त्यामुळे सोलर एनर्जी अर्थात सौर उर्जेवर चालणाऱ्या उपकरणांचा वापर जेवढा जास्तीत जास्त प्रमाणात घरात केला तर विज बिल कमी ठेवण्यास किंवा शून्यावर आणण्यास आपल्याला मदत होऊ शकते. तसेच सरकारांच्या माध्यमातून देखील विविध योजनातून अनुदान देऊन सौर ऊर्जा वापरायला प्रोत्साहन देण्यात येत आहे.

या अनुषंगाने जर आपण घरातील वीज बिलाचा विचार केला तर प्रामुख्याने घरामध्ये आपण जे काही दिवे अर्थात लाईट लावतो त्याचा खूप मोठा परिणाम विज बिलांवर होत असतो. त्या ऐवजी जर आपण घरामध्ये सोलर लाईटचा वापर केला तर नक्कीच विज बिल कमी होण्यास मदत होऊ शकते. याच पद्धतीने तुम्हाला देखील विज बिल कमी करायचे असेल तर बाजारामध्ये एक विशेष प्रकारचा सोलर लाईट विक्रीसाठी आला असून तो उत्तम प्रकाश देण्यासाठी सक्षम आहे व याच सोलर लाईट विषयी महत्त्वाची माहिती आपण घेणार आहोत.

घरात लावा हा सोलर लाईट वीज बिल येईल कमी

याबाबतचे सविस्तर वृत्त असे की, तुम्हाला देखील घरामध्ये सोलर लाईट लावायचा असेल तर बाजारामध्ये एक विशेष सोलर लाईट विक्रीसाठी उपलब्ध झाला असून तो खूप चांगला प्रकाश देण्यासाठी सक्षम आहे. हा सोलर लाईट इतर सामान्य असणाऱ्या एलईडी लाईट पेक्षा खूप वेगळ्या पद्धतीचा आहे.

हा सोलर लाईट तुम्ही टेरेसाच्या किंवा जिऱ्याच्या पायऱ्यावर देखील लावू शकतात किंवा घरामध्ये कुठेही त्याला लावू शकतात. त्याचे महत्त्वाचे वैशिष्ट्य म्हणजे जर तुम्ही पायऱ्यांवर प्रकाशासाठी याचा वापर केला तर जेव्हा तुम्ही पायऱ्यांवरून चालता तेव्हा हा ऑटोमॅटिक चालू होतो व जेव्हा तुम्ही पायऱ्यांवर चालणे बंद केले तेव्हा ऑटोमॅटिक बंद होतो.

हा एकच सोलर लाईट उत्तम प्रकाशासाठी खूप महत्त्वाचा असून घरामध्ये जास्त लाईट लावण्याची तुम्हाला गरज भासणार नाही. हा सोलर लाईट मोशन सेन्सर तसेच सोलर पॅनल आणि एक शक्तिशाली बॅटरी सोबत येतो. ही बॅटरी पूर्ण चार्ज झाल्यानंतर कित्येक तास काम करते व सूर्यप्रकाशामध्ये सतत चार्ज होत राहते. त्यामुळे तुम्हाला परत परत चार्ज करण्याची गरज भासत नाही.



किती आहे या सोलर लाईटची किंमत ?

हा सोलर लाईट तुमच्या घरातील विज बिल कमी करण्यासाठी खूप महत्त्वाचा ठरू शकतो व याची फ्लिपकार्ड वर जर किंमत पाहिली तर ती साधारणपणे २३०० इतकी आहे. परंतु यावर सध्या ऑफर चालू असून तुम्हाला हा सोलर लाईट फक्त १५०० रुपयांमध्ये खरेदी करता येणार आहे.





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Falling electricity consumption in advanced economies

The world's demand for electricity grew by 2.2% in 2023, less than the 2.4% growth observed in 2022. While China, India and numerous countries in Southeast Asia experienced robust growth in electricity demand in 2023, advanced economies posted substantial declines due to a lackluster macroeconomic environment and high inflation, which reduced manufacturing and industrial output.

Global electricity demand is expected to rise at a faster rate over the next three years, growing by an average of 3.4% annually through 2026. The gains will be driven by an improving economic outlook, which will contribute to faster electricity demand growth both in advanced and emerging economies. Particularly in advanced economies and China, electricity demand will be supported by the ongoing electrification of the residential and transport sectors, as well as a notable expansion of the data centre sector. The share of electricity in final energy consumption is estimated to have reached 20% in 2023, up from 18% in 2015. While this is progress, electrification needs to accelerate rapidly to meet the world's decarbonisation targets. In the IEA's Net Zero Emissions by 2050 Scenario, a pathway aligned with limiting global warming to 1.5 °C, electricity's share in final energy consumption nears 30% in 2030.

Electricity consumption from data centres, artificial intelligence (AI) and the cryptocurrency sector could double by 2026. Data centres are significant drivers of growth in electricity demand in many regions. After globally consuming an estimated 460 terawatt-hours (TWh) in 2022, data centres' total electricity consumption could reach more than 1 000 TWh in 2026. This demand is roughly equivalent to the electricity consumption of Japan. Updated regulations and technological improvements, including on efficiency, will be crucial to moderate the surge in energy consumption from data centres.

Emerging and developing economies are the engines of global electricity demand growth

About 85% of additional electricity demand through 2026 is set to come from outside advanced economies, with China contributing substantially even as the country's economy undergoes structural changes. In

2023, China's electricity demand rose by 6.4%, driven by the services and industrial sectors. With the country's economic growth expected to slow and become less reliant on heavy industry, the pace of Chinese electricity demand growth eases to 5.1% in 2024, 4.9% in 2025 and 4.7% in 2026 in our forecasts. Even so, the total increase in China's electricity demand through 2026 of about 1 400 TWh is more than half of the European Union's current annual electricity consumption. Electricity consumption per capita in China already exceeded that of the European Union at the end of 2022 and is set to rise further. The rapidly expanding production of solar PV modules and electric vehicles, and the processing of related materials, will support ongoing electricity demand growth in China while the structure of its economy evolves.

Change in electricity demand by region, 2022-2026

China provides the largest share of global electricity demand growth in terms of volume, but India posts the

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fastest growth rate through 2026 among major economies. Following a 7% increase in India's electricity demand in 2023, we expect growth above 6% on average annually until 2026, supported by strong economic activity and expanding ownership of air conditioners. Over the next three years, India will add electricity demand roughly equivalent to the current consumption of the United Kingdom. While renewables are set to meet almost half of this demand growth, one-third is expected to come from rising coal-fired generation. We also expect Southeast Asia to see robust annual increases in electricity demand of 5% on average through 2026, led higher by strong economic activity.

While electricity use per capita in India and Southeast Asia is rapidly rising, it has been effectively stagnant in Africa for more than three decades. Per capita consumption in Africa even declined in recent years as the population grew faster than electricity supply was made available, and we only expect it to recover to its 2010-15 levels by the end of 2026 at the earliest. Thirty years ago, a person in Africa consumed more electricity on average than someone living in India or Southeast Asia. However, strong increases in electricity demand and supply in India and Southeast Asia in recent decades – which have gone hand in hand with a boom in economic development have transformed these regions at a spectacular pace. Meanwhile Africa's per capita electricity consumption in 2023 was half that of India and 70% lower than in Southeast Asia. Our forecast for Africa for the 2024-26 period anticipates average annual growth in total electricity demand of 4%, double the mean growth rate observed between 2017 and 2023. Two-thirds of this growth in demand is set to be met by expanding renewables, with the remainder covered mostly by natural gas.

Electricity demand in the United States fell by 1.6% in 2023 after increasing 2.6% in 2022, but it is expected to recover in the 2024-26 outlook period. A key reason for the decline was milder weather in 2023 compared with 2022, though a slowdown in the manufacturing sector was also a factor. We forecast a moderate increase in demand of 2.5% in 2024, assuming a reversion to average weather conditions. This will be followed by growth averaging 1% in 2025-26, led by electrification and the expansion of the data centre sector, which is expected to account for more than one-third of additional demand through 2026.

Slim chances of a quick recovery for energy-intensive industries in the European Union Electricity demand in the European Union declined for the second consecutive year in 2023, even though energy prices fell from record highs. Following a 3.1% drop in 2022, the 3.2% year-on-year decline in EU demand in 2023 meant that it dropped to levels last seen two decades ago. As in 2022, weaker consumption in the industrial sector was the main factor that reduced electricity demand, as energy prices came down but remained above pre-pandemic levels. In 2023, there were also signs of some permanent demand destruction, especially in the energy-intensive chemical and primary metal production sectors. These segments will remain vulnerable to energy price shocks over our outlook period.

EU electricity consumption is not expected to return to 2021 levels until 2026 at the earliest. Electricity demand in the European Union's industrial sector fell by an estimated 6% in 2023 after a similar decline in 2022. Assuming the industrial sector gradually recovers as energy prices moderate, EU electricity demand growth is forecast to rise by an average 2.3% in 2024-26. Electric vehicles, heat pumps and data centres will remain strong pillars of growth over the period – together accounting for half of expected gains in total demand.

Estimated drivers of change in electricity demand in the European Union, 2021-2026
Electricity prices for energy-intensive industries in the European Union in 2023 were almost double those in the United States and China.

Despite an estimated 50% price decline in the European Union in 2023 versus 2022, energy-intensive industries in the region continued to face far higher electricity costs compared with the United States and China in the aftermath of Russia's invasion of Ukraine. The price gap between energy-intensive industries in the European Union and those in the United States and China, which already existed before the energy crisis, has widened. As a result, the competitiveness of EU energy-intensive industries is expected to remain under pressure. Policy makers are currently discussing new policy initiatives and financial instruments to enable the European Union to position itself among other global industrial heavyweights. The scope and effectiveness of these measures will likely determine the future of the European Union's energy-intensive industrial sector.

Clean electricity supply is forecast to meet all of the world's demand growth through 2026

Record-breaking electricity generation from low-emissions sources –which includes nuclear and renewables such as solar, wind and hydro – is set to cover all global demand growth over the next three years.

Low-emissions sources, which will reduce the role of fossil fuels in producing electricity globally, are forecast to account for almost half of the world's electricity generation by 2026, up from 39% in 2023. Over the next three years, low-emissions generation is set to rise at twice the annual growth rate between 2018 and 2023 – a consequential change, given that the power sector contributes the most to global carbon dioxide (CO₂) emissions today.

Changes in global electricity generation, 2022-2026

Renewables are set to provide more than one-third of total electricity generation globally by early 2025, overtaking coal. The share of renewables in electricity generation is forecast to rise from 30% in 2023 to 37% in 2026, with the growth largely supported by the expansion of ever cheaper solar PV. Through this period, renewables are set to more than offset demand growth in advanced economies such as the United States and the European Union, displacing fossil-fired supply. At the same time, in China, the rapid expansion of renewable energy sources is expected to meet all additional electricity demand, though the weather and the extent to which the country's demand growth eases remain key sources of uncertainty for the outlook. The strong expansion in renewable power capacity must also be accompanied by accelerated investment in grids and system flexibility to ensure its smooth integration.

The rapid growth of renewables, supported by rising nuclear generation, is set to displace global coal-fired generation, which is forecast to fall by an average of 1.7% annually through 2026. This follows a 1.6% increase in coal-fired output in 2023 amid droughts in India and China that reduced hydropower output and increased coal-fired generation, more than offsetting strong declines in coal-fired generation in the United States and the European Union. The major factor that will determine the global outlook is evolving trends in China, where more than half of world's coal-fired generation takes place. Coal-fired generation in China is currently on course to experience a slow structural decline, driven by the strong expansion of renewables and growing nuclear generation, as well as moderating economic growth. Despite the commissioning of new

plants to boost the security of energy supply, the utilisation rate of Chinese coal-fired plants is expected to continue to fall as they are used more flexibly to complement renewables. Nevertheless, coal-fired generation in China will be influenced significantly by the pace of the economy's rebalancing, hydropower trends, and bottlenecks in integrating renewables into the country's power system.

Natural gas-fired generation is expected to rise slightly over the outlook period. In 2023, sharp declines in gas-fired power generation in the European Union were more than offset by massive gains in the United States, where natural gas, which has increasingly replaced coal, recorded its highest-ever share in power generation. Global gas-fired output grew by less than 1% in 2023. Through 2026, we forecast an average annual growth rate of around 1%. While gas-fired output in Europe is expected to continue declining, global growth will be supported by significant gains in Asia, the Middle East and Africa amid rising demand for power in these regions and the availability of additional liquefied natural gas (LNG) supply from 2025 onward.

Nuclear power generation is on track to reach a new record high by 2025

By 2025, global nuclear generation is forecast to exceed its previous record set in 2021. Even as some countries phase out nuclear power or retire plants early, nuclear generation is forecast to grow by close to 3% per year on average through 2026 as maintenance works are completed within France, Japan restarts nuclear production at several power plants, and new reactors begin commercial operations in various markets, including China, India, Korea, and Europe. Many countries are making nuclear power a critical part of their energy strategies as they look to safeguard energy security while reducing greenhouse gas emissions. At the COP28 climate change conference that concluded in December 2023, more than 20 countries signed a joint declaration to triple nuclear power capacity by 2050. Achieving this goal will require tackling the key challenge of reducing construction and financing risks in the nuclear sector. Momentum is also growing behind small modular reactor (SMR) technology. The technology's development and deployment remains modest and is not without its difficulties, but R&D is starting to pick up.



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FSD has a corporate office and two factories located at Faridabad and Haridwar. Haridwar factory caters only to the Domestic Market and Faridabad caters to both Domestic as well as Export Markets. In the ensuing table we present the area wise infrastructure capabilities of the Company

With strong infrastructure in place, FSD can very easily convert one of the units into a 100% EOU in order to maximize tax benefits. Furthermore, FSD's R & D facility is duly registered with DSIR as an authorized R & D center which entitles them for R & D expenditure benefits under Income Tax Act, 1961

FSD has a state of art R & D Center cum Laboratory at Faridabad Factory location wherein, regular researches are conducted for developing more evolved fire protection and suppression concentrates as well as

to better the effectiveness of the fire fighting equipment that the Company is procuring and selling to its customers across the Globe. The Company also tests all its production batches extensively to ensure compliance to respective product standards. This primarily means, quality conformity in Powders, Foams, Extinguishers and Other Fire Fighting Equipment with respect to the country, industry or client specific standards. For example: Oil & Gas Industry requires special Foam concentrates for fire protection which can create a dense layer over the Oil surface to expurgate the air contact to dowse & check further spread of fire. The product as per OISD, needs to be certified and approved by UL – USA and shall also concur to USNFPA standards. UL ensures the performance of the fire suppression products and NFPA lays down the overall fire safety standards for Oil & Gas Installations. The performance of the Product is dependent on the right ingredient mix and this is ensured for every batch produced at FSD through the compulsory extensive Laboratory testing to be carried out without a miss. Over and above the internal laboratory testing procedures, FSD also undergoes regular surprise checks & audits by various global certifying authorities' representatives who personally visit FSD Factory locations and pick up random samples from the finished goods ready for dispatch inventory for testing the standards' compliance conformity. Haridwar Factory location only has a fully equipped Laboratory to carry out the quality and standards' conformity for the production materials. This laboratory carries out the same function as explained above for the laboratory located at Faridabad Factory. FSD's R & D Center is duly registered with DSIR as an approved Industrial Research & Development center for carrying our research on development of Fire Protection products.



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Street lights

Well, when it comes to proper street lighting, it has become important to have a proper installation of these lights because of the increasing crimes. At Jaquar Lighting, we believe in putting an end to all your problems with the perfect consumer lighting solutions. You can opt for not only a modern but also an energy efficient LED lighting option that is sure to light up your street and also ensure enough light around your house, as well. You can browse through some of the best LED House Lights for your house and opt for the one that matches your vibe. After all, without proper street lighting, it becomes very difficult to come in and go at night, it also reduces the risk of any accident that may occur because of insufficient light. Apart from these necessary reasons, the proper street lighting also helps you create a nice reputation for your colony as it upscales the property's appearance. In all, it's a win-win situation for you!

JAQUAR HOUSE LIGHTS

It's time to get your hands on the perfect lighting solutions with Jaquar lighting. We promise to deliver you the best LED House Lights that are not only good on the eye but are also made up of premium quality.

We believe in giving you long last and reliable lighting solutions. You can choose from a wide variety of options like different types of LED lights that we offer. From dome lights for a home to home decor modern lights or just some fancy lights for home, we have got you covered. Jaquar Lighting is one of the leading manufacturers in India and when it comes to lights for home, what is better than entering your house after a long day at work and seeing your family comfortably seated in beautiful lighting? All this gets possible because of the perfect home lighting solutions that we offer to you at really affordable prices. It's time to create a beautiful atmosphere at home with our premium quality home lights, which are sure to brighten up your face as soon as you enter your home.

WHAT TYPE OF LIGHTING IS BEST SUITED FOR THE KITCHEN?


The kitchen is a true workhorse in the household, doing everything from having conversations to the actual meal preparation and cooking. The right lighting becomes necessary to ensure that it's suitable for everything.

For the ceilings of your kitchen walls, recessed lighting is ideal. They are compact and don't take much space making your kitchen appear larger and neat.






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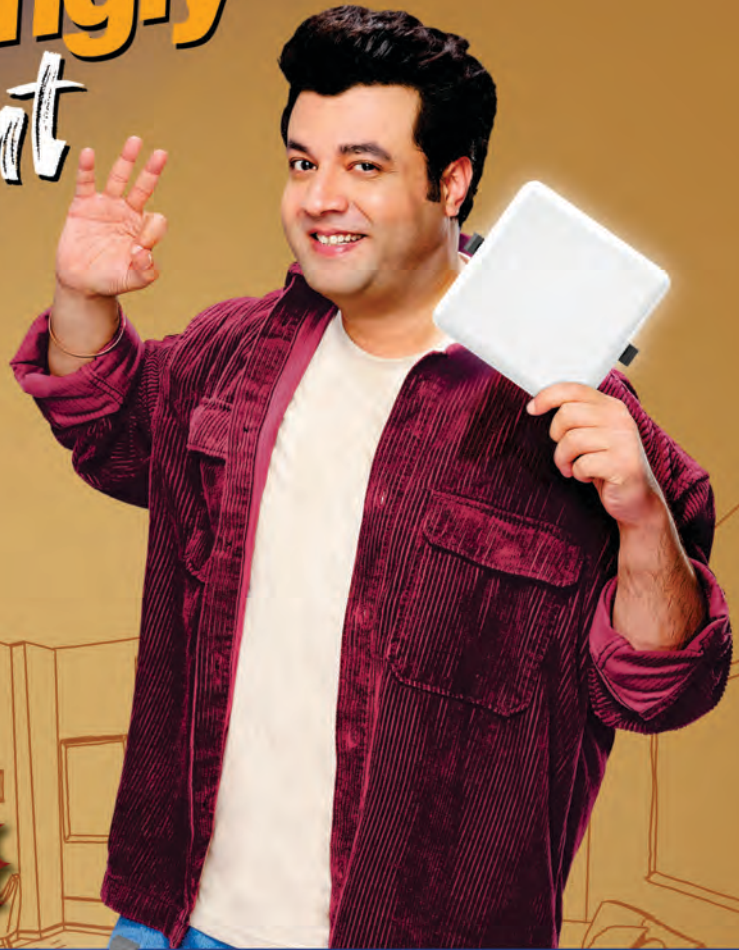
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