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## सौरऊर्जा व्यवसाय ही एक सुवर्ण संधी.....

मित्रांनो नमस्कार

सौरऊर्जा व्यवसाय ही एक सुवर्ण संधी..... जगाने अधिक शाश्वत आणि स्वच्छ ऊर्जा प्रकारांकडे संक्रमणाची गरज ओळखल्यामुळे अक्षय ऊर्जेची मागणी सातत्याने वाढत आहे. असाच एक प्रकार म्हणजे सौरऊर्जा, ज्याने प्रचंड लोकप्रियता मिळवली आहे. आज यामुळे भरमसाठ वाढलेले विजदर आणि यामुळे दरमहा होणाऱ्या खास पर्याय म्हणून घरगुती, व्यवसायिक ग्राहकांच्या बरोबरच इंडस्ट्रीज मध्येही भरपूर प्रमाणात सौर ऊर्जा यंत्रणा बसविण्याकडे लोकांचा कल वाढलेला दिसून येत आहे. म्हणून हा व्यवसाय विद्युत कंत्राटदारांसाठी एक सुवर्णसंधी मानली जात आहे. आपल्या चालू असणाऱ्या व्यवसायात विस्तार म्हणून सौर ऊर्जा उद्योग व्यवसायाचा निश्चितपणे आपण विचार केला पाहिजे. हा विस्तार करू पाहणाऱ्या इलेक्ट्रिकल कॉन्ट्रॅक्टर्सना निश्चितपणे फायदेशीर ठरणार आहे. मात्र याकरिता आपल्याकडे याबाबतचे ज्ञान आणि कुशल कारागीर असणे अत्यंत आवश्यक आहे. आपल्या सर्वांच्याकडे असणारा इलेक्ट्रिकल सिस्टीम, वायरिंग आणि इन्स्टॉलेशन

डिझाइन करण्याचे ज्ञान आणि अनुभव असल्यामुळे ते सोलर सिस्टीम उभारणी क्षेत्रासाठी उपयोगी ठरत आहे. इलेक्ट्रिकल कॉन्ट्रॅक्टर्सना याचा फायदा घेऊन स्वतःला प्रतिष्ठित सौर ऊर्जा पुरवठादार म्हणून नावलौकिक मिळविण्यासाठी एक चांगली संधी प्राप्त झालेली आहे. निश्चितपणे आपण सर्वजण याकडे जोडधंदा म्हणून पाहणे आवश्यक आहे. शिवाय, सौरऊर्जा व्यवसायात आपण प्रवेश केल्याने विद्युत कंत्राटदार त्यांच्या सेवांमध्ये विविधता आणू शकतात आणि आपले उत्पन्न वाढवू शकतात. त्यांच्या पारंपारिक विद्युत सेवांसोबत सौर ऊर्जा याचा समावेश करून, कंत्राटदार आपला ग्राहकवर्ग वाढवू शकतात आणि विशेषतः अक्षय ऊर्जा उपाय शोधत असलेल्या ग्राहकांच्या नवीन वर्गाला आकर्षित करू शकतात. याव्यतिरिक्त, सौर ऊर्जा उद्योग आवर्ती व्यवसायासाठी दीर्घकालीन संधी मिळणार आहे. एकदा सोलर सिस्टीम स्थापित केल्यानंतर, त्याची सतत देखभाल, तपासणी आणि अधूनमधून दुरुस्तीची आवश्यकता असते. विद्युत कंत्राटदार या अतिरिक्त सेवांचा लाभ घेऊन मेटनन्सचे कॉन्ट्रॅक्ट यातून सतत उत्पन्न मिळवू शकतो आणि त्यांच्या सौरऊर्जा ग्राहकांशी कायमस्वरूपी संबंध निर्माण करून आपल्या व्यवसाय बाढीस उपयोग करून घेऊ शकतो. शिवाय, सौर ऊर्जेसह अक्षय ऊर्जेचा अवलंब करण्यास प्रोत्साहन देण्यासाठी सरकारी अनुदान आणि धोरणे याचा फायदा ग्राहकांना होत असतो. टॅक्स क्रेडिट्स, अनुदाने आणि सबसिडी याचा फायदा घेतल्यास ज्यामुळे हे ठेकेदार आणि ग्राहक दोघांसाठी आर्थिकदृष्ट्या फायद्याचे ठरू शकते. या संधीचा फायदा घेऊन सौरऊर्जा बाजारपेठेतील चांगला पुरवठादार म्हणून आपण स्वतःला स्थान मिळवू शकतो. तथापि, विद्युत कंत्राटदारांनी हे ओळखणे महत्वाचे आहे की सौर ऊर्जा व्यवसायात प्रवेश करण्यासाठी उद्योगाशी संबंधित अतिरिक्त ज्ञान आपल्याकडे आवश्यक आहे. या क्षेत्रात अनेक संस्था ट्रेनिंग देण्याचे काम करीत आहेत. त्यांच्याकडून आपण आणि आपल्या कर्मचाऱ्यांना योग्य प्रशिक्षण देऊन कुशल कारागीर निर्माण करणे आवश्यक आहे. यामुळे आपली ग्राहकांमध्ये विश्वासार्हता वाढण्यास निश्चितपणे मदत होईल. सौरऊर्जा व्यवसाय ही विद्युत कंत्राटदारांसाठी एक सुवर्ण संधी प्राप्त झालेली आहे त्याचा फायदा घेऊन, त्यांच्या सेवांमध्ये विविधता आणून आणि नवीकरणीय ऊर्जेच्या वाढत्या मागणीचे भांडवल करून, कंत्राटदार त्यांच्या व्यवसायाचा विस्तार करून आपला व्यवसाय अधिक मजबूत केल्यास भविष्यात व्यवसायाला सुगीचे, भरभराटीचे दिवस येतील, हे निश्चित.



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## प्रारंभ

नमस्कार मित्रांनो,

इकॅम नाशिक विभागाची वार्षिक सभा मंगळवार, दिनांक ४ जुलै २०२३ रोजी मनोहर गार्डन, नाशिक येथे संपन्न झाली. सदर वार्षिक सभेस इकॅमचे मुख्य कार्यालयातील पदाधिकारी, संचालक, इकॅमच्या सर्व विभागाच्या पदाधिकाऱ्यांनी तसेच नाशिक विभागाच्या सर्व सभासदांनी उपस्थिती दर्शविली. सदर सभा खेळीमेळीच्या वातावरणात पार पडली. नाशिक विभागाच्या वतीने एक छोटेखानी प्रदर्शन आयोजित करण्यात आले होते.

सर्व सभासदांना कळविण्यात येत आहे की आपल्या संघटनेचा शताब्दी महोत्सव आपल्या समोर आहे. त्या निमित्त आपण ECAMEX 24 प्रदर्शन NESCO, गोंरेगाव, मुंबई येथे आयोजित करणार आहोत. त्या प्रदर्शनास यशस्वी करण्यास आपला हातभार लागणे गरजेचे आहे. आपणास मी आवाहन करीत आहे की आपण या प्रदर्शनामध्ये स्टॉल बुकींग करण्यासाठी प्रयत्न करावेत. तसेच आपणास शताब्दी महोत्सवाच्या अनुषंगाने काही महत्वाच्या सूचना द्यायच्या असतील तरी आपण त्या इकॅम मुख्य कार्यालयाला कळवाव्यात.

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

इकॅमची सभासद संख्या जास्तीत जास्त वाढवण्यासाठी प्रत्येक सभासदाने एक सभासद बनवावा असे आवाहन मी सर्व सभासदांना करत आहे.

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

इकॅमच्या सभासदांना येणाऱ्या अडचणी सोडवण्यासाठी आम्ही कायम प्रयत्नशील राहू असे आम्ही आपणास आश्वासन देतो.



## देवांग ठाकूर

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The lighting industry has been undergoing significant innovations in recent years, driven by advancements in technology and the increasing demand for energy-efficient and sustainable lighting solutions. Here are some notable innovations in the lighting industry:

**LED Lighting:** Light-emitting diode (LED) lighting has revolutionized the industry. LED lights are more energy-efficient, durable, and longer-lasting compared to traditional incandescent and fluorescent lights. They have become the go-to lighting technology for residential, commercial, and industrial applications.

**Smart Lighting:** The rise of the Internet of Things (IoT) has enabled the development of smart lighting systems. These systems use sensors, wireless communication, and advanced controls to provide adaptive and personalized lighting solutions. Smart lighting can be automated, remotely controlled, and integrated with other smart devices to optimize energy usage and enhance user comfort.

## Energy Efficiency, Connectivity, and Customization in Lighting Solutions.



**OLED Lighting:** Organic light-emitting diode (OLED) lighting technology utilizes thin, flexible, and transparent materials that emit light when an electric current passes through them. OLEDs offer unique design possibilities as they can be shaped into various forms, including curved or transparent lighting panels. They provide uniform illumination and are highly energy-efficient.

**Li-Fi:** Light Fidelity (Li-Fi) is a wireless communication technology that uses light to transmit data. It leverages LED lights to create high-speed, bi-directional wireless communication networks. Li-Fi has the potential to provide secure and reliable data transfer in areas where traditional Wi-Fi may not be suitable, such as hospitals or aircraft cabins.

**Human-Centric Lighting:** Human-centric lighting focuses on the impact of lighting on human health, well-being, and productivity. It aims to replicate natural daylight and adjust lighting conditions based on the time of day and individual needs. Human-centric lighting systems can help regulate sleep patterns, enhance concentration, and improve mood and overall comfort.

**LiDAR-based Lighting:** Light Detection and Ranging (LiDAR) technology, primarily used in autonomous vehicles, is finding applications in the lighting industry. By using LiDAR sensors, lighting systems can detect the presence of individuals in a space and adjust lighting levels accordingly. This can optimize energy usage in buildings and improve safety in outdoor lighting.

**Energy Harvesting Lighting:** Energy harvesting lighting systems capture and store ambient energy from the surroundings to power the lights. This can include harnessing solar energy, kinetic energy from human movement, or other renewable sources. Energy harvesting lighting reduces dependence on conventional power sources and contributes to sustainable and off-grid lighting solutions.

**3D Printing:** Additive manufacturing, commonly known as 3D printing, has impacted the lighting industry by enabling unique and customized lighting designs. Manufacturers can create intricate and complex light fixtures, shades, and decorative elements using 3D printing technology. This allows for greater design freedom, faster prototyping, and reduced production costs.

These are just a few examples of the innovations transforming the lighting industry. As technology continues to evolve, we can expect further advancements in energy efficiency, connectivity, and customization in lighting solutions.





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# Illuminating the Future: Unveiling the Evolution of the Electrical Lighting Industry

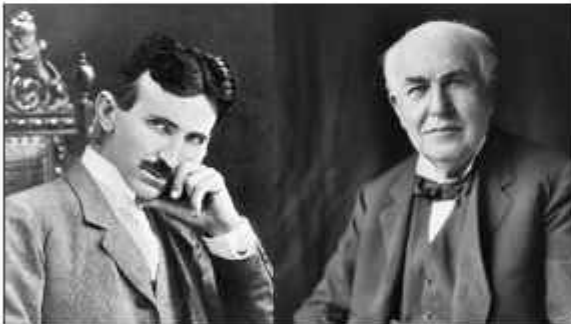
## Shaping a Brighter World with Innovative Illumination Solutions

### Introduction

In an era driven by technological advancements, the electrical lighting industry has emerged as a beacon of innovation, revolutionizing the way we perceive and interact with light. From the early incandescent bulbs to the advent of energy-efficient LEDs, this dynamic industry has consistently pushed boundaries to illuminate our lives in more sustainable, efficient, and aesthetically pleasing ways. Join us as we embark on a journey through the fascinating evolution of the electrical lighting industry and explore its transformative impact on various sectors of our modern society.

### The Dawn of Electric Lighting:

At the turn of the 19th century, the world witnessed a monumental shift from gas and oil



lamps to the revolutionary invention of electric lighting. Explore the pioneering work of visionaries like Thomas Edison and Nikola Tesla, who laid the foundation for the electrification of our cities and homes, forever changing the way we perceive and utilize light.

### From Incandescent to LED: A Paradigm Shift:

Delve into the groundbreaking breakthroughs that led to the development of energy-efficient lighting solutions. Trace the transition from incandescent bulbs to compact fluorescent lamps (CFLs) and, ultimately, to the advent of light-emitting diodes (LEDs). Uncover the profound impact of LEDs on energy consumption, longevity, and design possibilities, revolutionizing both

residential and commercial lighting applications.

### Revolutionizing Everyday Spaces:

Discover how the electrical lighting industry has transformed various domains of our lives. From smart homes and offices to retail spaces, entertainment venues, and outdoor environments, explore the seamless integration of lighting technology to enhance functionality, ambiance, and energy efficiency. Learn how intelligent lighting systems, sensor-based controls, and programmable lighting schemes are reshaping our interactions with illuminated spaces.







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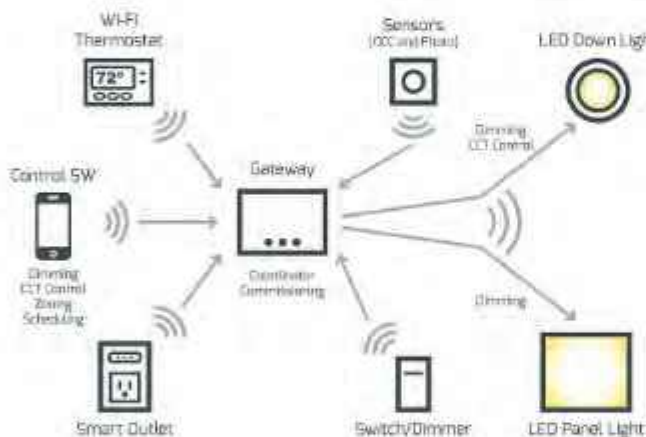
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### The Sustainable Lighting Revolution:

In an era of heightened environmental consciousness, the electrical lighting industry has embraced sustainability as a core principle. Unvell



the industry's commitment to reducing carbon footprints through the development of eco-friendly lighting solutions. Explore advancements in energy-efficient technologies, such as dimmable LEDs, daylight harvesting, and advanced controls, which minimize waste and contribute to a greener future.

### Lighting as an Artistic Medium:

Beyond practical applications, lighting has become a transformative artistic medium, enriching architectural design, public spaces, and artistic installations. Dive into the realm of architectural lighting, immersive experiences, and interactive light installations that blur the line between technology and art. Discover how lighting designers and artists are pushing



creative boundaries and captivating audiences with captivating visual spectacles.

### Innovations on the Horizon:

Peek into the future of the electrical lighting industry as it continues to push boundaries and explore new frontiers. From advanced OLED (organic light-emitting diode) technology to Li-Fi (light fidelity) networks and human-centric lighting solutions, witness the exciting developments that promise to reshape how we experience and harness light.

### Conclusion:

The electrical lighting industry has come a long way since its inception, evolving from a simple source of illumination to a dynamic and transformative force that shapes our environment, enhances our well-being, and paves the way for a sustainable future. As we navigate an increasingly connected and energy-conscious world, the industry continues to innovate, leaving an indelible mark on our lives and reaffirming its status as a beacon of progress.







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## Light Pollution, Excessive Lighting is a major issue after the birth of LED Lights.

An article on sectors like Retail, Residence & Landscape Lighting

Mr Ritesh Shah, a principle Lighting Designer having 18 years of lighting experience, have work on numerous projects from Retail Stores Lighting Designs, to High end Residential lighting, Landscape lighting, Façade lighting, Warehouse lighting, fine dine restaurant & even worked for Temples.

**Lighting design;** these days requires similar quantum of detailed research and technical data input as in any Engineering planning. It is therefore considered an art in parity with any engineering design.

### What lighting can do

Light as a merchandise or artefact should be purchased with a cost-effective budget but at the same time it should be borne in mind that it is an **asset** that should be carefully evaluated while investing in it. **Choosing the right lighting designer and luminaire will give you the best results in a cost effective manner.**

"Lighting" is the application of light to spaces, where the light is placed at a distance, at some direction & at some point if not correctly placed can have major impact not only on vision and visual appearances but also health effects.

Lighting, therefore, can impact our vision & visibility, task performance, safety & security and health & mood.

Many-a-times, light is use a tool for a story teller about the space, whether it is a given store which is likely to be focused on discounts or high-end products or whether it is a restaurant is selling fast

food or a fine dining experience or a luxury home.

Therefore, **Lights & Lighting Design** should be taken as an **asset** & not as an expense **saving your Eyes & Energy.**

### Lighting a Retail Store

Retail lighting should create an inviting atmosphere that encourages people to browse and explore your shop. If store lighting is too bright or uses too many contrast colour temperatures can overwhelm the shopper's senses. Instead, strike proper balance between ambient and accent lighting.

Good & limited lighting makes your store seem inviting and open to a customer, can create an atmosphere that can help your customer to relax, get comfortable and be excited enough to buy something more from your store.

Do not over-lit your space, I repeat - Do not over-lit your space which will generate extra heat, light reflection & too much glare, customer will go away.

### Lighting a Residential

For a healthier life, good lighting is essential in the every home but that does not mean that we light-up each & every corner & even wardrobe of our home, it is wastage of energy as well as money.

Basic requirements of Good Lighting Scheme for home:-





  
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- Lux level should be as per government norms,
- Absence of Glare, • Uniformity of Illumination,
- Good contrast,

#### Some tips for Residential Lighting :-

- Do not use same lighting in all rooms, use mix-match luminaires

- Do not over light-up which will add reflection & glare to your space

- Do not use flat panels or other luminaires which gives glares

- If you have low height ceiling use surface / suspended luminaires there is nothing wrong using them in residence,

- Use light dimmers to create mood and satisfactions

- Use motion/light sensors to add extra beauty. Reference images are shared below

Lighting a Landscape Landscape lighting also known as garden lighting which not only increases the aesthetic value of the place but also strengthens its beauty including safety and security. These lighting adds glamour & increases property prices.

The key steps in the design process are:

- Identify the requirements,
- Determine the method of lighting,
- Select the right luminaires,
- Calculate the lighting parameters &
- Determine the control system with Dusk to Dawn Timers

Some tips for Landscape Lighting :-

- Correctly position of luminaires for proper distribution of light,
- Do not over lit-up your trees, plants which looks ugly,

- Use light & shadow for unique look &
- Create a schematic lighting design

LED Lights being an energy saver which does not mean that we apply to entire space whether it is a shelf, a cabinet, a wardrobe, table or chairs, you should not forget you are not paying just for a light but also paying for labour cost, wire cost, installation cost, switch cost, maintenance cost & finally energy cost, it is called an excessive lighting which is also known as "Light Pollution".

As the name suggests, "Light pollution / Over Illumination" is basically too bad, to our self, mother-earth & to people who wait for power you are using their power, it means lighting actually it is not needed or required.

#### Impacts of light pollution or over illumination :-

1. First and the most obvious impact of light pollution is wastage of electricity or energy. Electricity can be saved if appropriate amount of lighting is done with minimum wattage required. National Code of lighting has specified appropriate lux level to every sector & areas, kindly apply in our daily practice,

2. Excessive lighting in indoor & outdoor areas can cause a lot of glare and can thus impact visibility of elderly people & especially younger children's. Add to it, day-light LED lights coming from the cars & bikes can impact partial

damage & or permanent damage to your eyes.

3. Light pollution causes disruption to ecosystems and is not good for various plants and animals too.

4. Excessive lighting can also cause sleep disorders and other problems in humans.

All this does not mean lighting is bad. In fact artificial lighting has helped mankind in extending their productivity during the day. It also provides a lot of security during the night time, which is important. So artificial lighting has become very important component of our daily lives that cannot be avoided. But there are certain things that we can surely take care.

#### How can we save energy ?

1. Avoid excessing lighting and do task based lighting.
2. Use those luminaires that direct light to a specific area & it is not flooded to other areas or the area which do not need the light,
3. Use properly angled light so that light is directed to the task,
4. At homes,
  - a. Use table lamps while doing work,
  - b. Spotlights can be used to highlight specific areas or wall washers,
  - c. But beware of the unproductive options available in the market,
  - d. Make use of light dimmers which can be used for moods & atmosphere change,
  - e. Good quality dimmers also help save electricity.

Why you need a "Lighting Designer" or Why "Lighting Designers" are important in today's life ?

Ans: Lighting designers can provide a design to meet the vision of client, but are most helpful in organizing the budget. They will select right luminaires from numerous manufacturers to help keep bids competitive and recommend lighting scenes to reduce installation costs & helps saving your energy.

- A lighting designer brings technical and artistic expertise to the table,
- Boosting sales and improving customer experience,
- Improving workplace safety, efficiency and comfort,
- Innovative concept & milestone,
- Increasing social communication, mood & atmosphere
- Cost control through the construction process and beyond,
- Effective lighting design requires a good level of expertise & experience,
- Finally Saving of Energy, Labour & Material Cost.



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# ADVANCE SMART SWITCHGEARS

-Ajit N. Kulkarni

Electrical industry progressed for years rapidly and switchgear technology also developed in same pace with many advanced knowhows. New innovative technologies came and were implemented effectively in power system making it more and more sturdy. This applies switchgears in all voltage ranges. Due to IoT, now new platform is available for switchgears to make them more advanced in technology. This is covered in below article on Advance Smart Switchgears.

## Present switchgears

As of now present switchgears which are in use are restricted to mainly manual or remote switching, limited protection against fault, less monitoring and manual operation as mentioned below-

- Switching- Switchgears have facility of manual operation for switching, remote switching, partial automation, and limited configuration.
- Fault Detection and Protection- Switchgears have basic protection features like overloads, short circuits, and earth faults with thermal or microprocessor protections. Although these protections detect fault and clear the same in given time the response is sometimes restricted and slow in dynamic power conditions.
- Monitoring- Switchgears offers limited monitoring like power qualities, number of operations, partial checking of contacts conditions.
- Operation- Switchgears have partial operation facilities like localized operation or operation from control station but less facilities with anticipated real time basis automatic operation.

## Advancement in switchgears

Future ready switchgears are advanced electrical circuit breaker that incorporates many intelligent features with connectivity capabilities. These are unlikely as per present switchgears which are available with limited facilities of protection from overloads, short circuits, and earth faults. However, now advanced switchgears may be said as smart switchgears go beyond basic functionality. There are many additional benefits with advanced technologies. The features of smart switchgears may vary depending on the manufacturers and models. Aim of all will be to provide intelligent, connected, and reliable solutions for electrical power distribution and management.

## Components of smart switchgear

Smart switchgear consists of various components to have monitoring, control, and



protection of electrical systems with many additional features. These components remain almost same except few modified features, requirements, as per manufacturer and the specific requirements of the switchgear. The components mentioned below will give overview and can vary depending on the specific implementation and requirements to cater to various types of industries or for specific applications.

1) Circuit Breakers- This is the fundamental components of switchgear so it is present as per standard. They are having protection algorithms, measurements, monitoring, alarms, communication capabilities, and monitoring sensors.

2) Sensors- Smart switchgear incorporates sensors to monitor various parameters and conditions. These sensors can include current sensors, voltage sensors, temperature sensors, pressure sensors and vibration sensors. They provide real-time data on electrical parameters, equipment health and environmental conditions.

3) Communication Infrastructure- Smart switchgear requires a communication infrastructure to transmit data and enable remote monitoring and control. This includes typically communication protocols, network devices and software applications that facilitate data exchange between the switchgear components and a central monitoring system.

4) Monitoring and Control System- A monitoring



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and control system receives data from sensors and circuit breakers. It is then analyzing the information and provides real-time insights on system health, load status and fault conditions. It enables operation of the switchgear as per program provided with override of remote control or local control.

5) Data Storage and Analysis- Switchgears are having data storage and analysis capabilities. Historical data on system performance, fault events and maintenance records are stored for analysis and future reference. Advanced analytics algorithms are deployed to check back history, power patterns, detect irregularities, give command for operation, and optimize system operation.

6) Human Machine Interface- This interface allows operators and maintenance personnel to interact with the switchgears. It can be a graphical interface displayed on a computer screen or a dedicated control panel that provides access to system status, alarms, and control functions.

7) Power Quality Monitoring- Switchgears include power quality measuring and monitoring capabilities to assess the quality of the electrical supply. This can involve measuring parameters such as current, voltage, demand, energy, power factor, harmonics, sags, swells, transients etc. This helps facility department to take corrective actions so that power circuit remains stable and reliable.

8) Releases and Relays- Protection is very essential component and have advanced features with micro level of abnormalities, power conditions, external / internal fault measurement and it initiates proper actions to protect the electrical system. In smart switchgear, these relays have enhanced functionalities and communication capabilities to integrate with the overall monitoring and control system. The accuracy level of this feature provides highest level of protection. With this power circuit will remain healthy and operate with or without interruption as per power circuit designed.

#### Advantages of smart switchgears

1) Remote Monitoring and Control- Smart switchgear breakers can be monitored and controlled remotely through a network connection. This enables operators to have real time access to breaker status, electrical parameters, and operational data, regardless of their physical location. Remote monitoring and control allow for efficient

troubleshooting, maintenance, and operational decision making. This helps further in unmanned substations or operators.

2) Condition Monitoring- Smart switchgear breakers are equipped with sensors and monitoring systems that continuously assess the condition of the breaker and its components. These sensors measure parameters such as temperature, current, voltage, and vibration, providing insights into the health of the breaker. By analyzing this data, potential issues can be identified early on, enabling proactive maintenance, and reducing the risk of unexpected failures.

3) Fault Detection and Analysis- Smart switchgear breakers employ advanced algorithms and analytics to detect and analyze electrical faults. They can identify abnormal conditions, such as arc faults, ground faults, or abnormal load patterns, and promptly respond by isolating the faulty circuit. This enhances the overall reliability and safety of the electrical system.

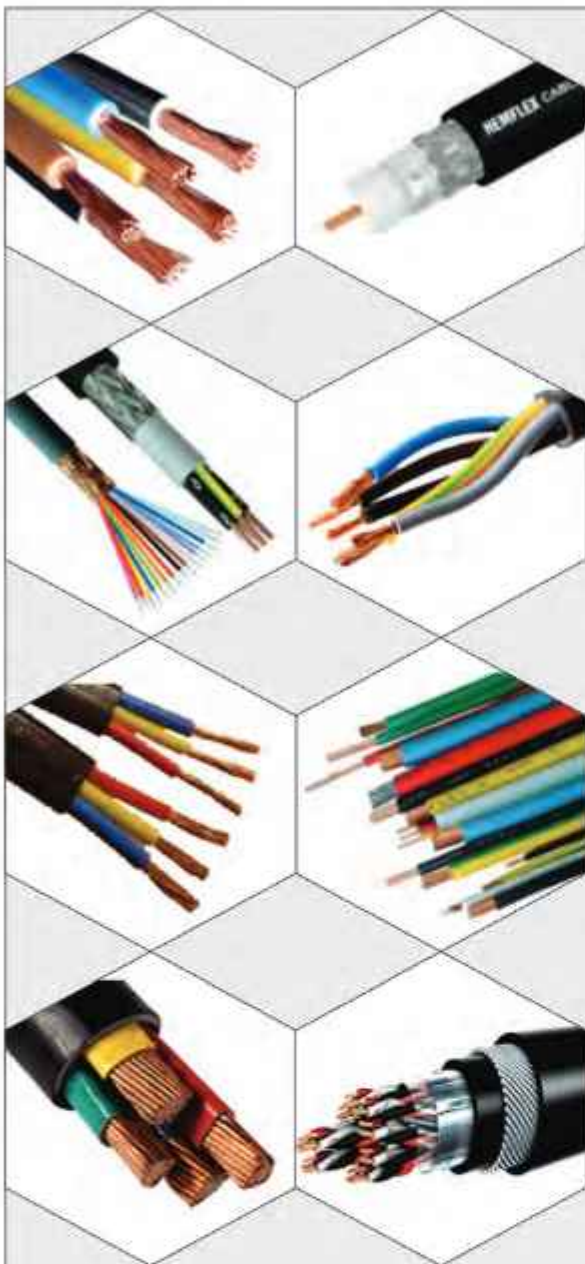
4) Energy Management- Some smart switchgear breakers offer energy management capabilities by measuring and analyzing energy consumption. This information can be used to identify energy efficiency opportunities, optimize power usage, and enable better energy planning and load balancing.

5) Integration with Smart Grid Infrastructure- Smart switchgear breakers can be seamlessly integrated into smart grid infrastructures, enabling bidirectional communication between the breaker and the grid. This facilitates grid automation, load shedding, demand response, and other advanced grid management functions.

6) Enhanced Safety Features- Smart switchgear breakers often incorporate enhanced safety features, such as built in contact conditions, arc flash detection systems, advanced fault clearing mechanisms, component healthiness and improved coordination with protection relays. These features contribute to the overall safety of personnel and equipment in the event of a fault.

7) Proactive Maintenance- Switchgears use advanced sensors and advanced analytics to monitor the condition of components and detect potential issues before they fail. By implementing predictive maintenance strategies based on real-time data, maintenance can be planned. This reduces sudden failures, downtime, planning of alternative circuit, planning critical component and optimize maintenance costs. Especially remote diagnostics capabilities help





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further in maintenance processes and reduce the cost.

8) Integration with Smart Grid and IoT- Switchgears are designed to integrate with normal grid or smart grid infrastructure with IoT (Internet of Things) platforms. This enables bidirectional communication between the switchgear and the grid. So that further grid automation, load balancing and demand control etc. can be done easily. Integration with IoT platforms permits connection with other smart devices and systems.

9) Energy Efficiency- Due to high end energy monitoring capabilities, switchgears can understand energy consumption patterns, recognize energy saving opportunities and optimize power usage on various connected load centers. Load management and demand control measures enables to improve energy efficiency of grid and handle demand efficiently.

10) Data availability- Switchgears generates enormous data on switchgear itself, power system performance, fault events, replacement,

augmentation, change management, maintenance etc. By using the data analytics and other soft wares, operators can gain valuable insights into system behavior, trends and make data driven decisions for improved efficiency, reliability, and cost optimization.

#### Use of smart switchgears

Smart switchgear can be used in a wide range of applications in various industries and sectors such as Industrial Facilities, Commercial Buildings, Data Centers, Utilities, Power Grids, Renewable Energy Systems, Critical Infrastructure and in many more places. Before implementation of solution evaluation towards specific needs, intricacy, criticalness, and cost considerations of electrical system may have to be done.

In future advanced smart switchgears with numerous advantages will be available for implementation. Users will have to assess thoroughly the specific advantages associated with smart switchgear in relation to the organization's needs, infrastructure, budget, and resources. By conducting a comprehensive evaluation and risk analysis strategies can be developed to maximize the benefits of smart switchgears.



## Appellate tribunal stays MERC tariff schedule for Tata Power

### After Interim Order, Users To See 25-35% Drop In Bills

**Mumbai :** An interim order passed by the Appellate Tribunal for Electricity (APTEL) has given a stay to the MERC tariff schedule of Tata Power for 2023-24 and allowed the utility to bill its consumers as per the previous tariff order of 2020. This could mean savings of 25-35% for over 7.5 lakh consumers across Mumbai in all categories, a senior official from Tata Power said on Thursday.

"The reduction in tariff will be visible in power bills with immediate effect," said the official, adding: "Also, the difference in tariff (excess paid since April 1) for all consumers will be adjusted in future electricity bills appropriately, as per guidelines of the APTEL order. This would mean more savings for our consumers." This is an interim order and the next hearing is scheduled in October, while the final order is still awaited, sources in power utility firms said.

Tata Power had approached the APTEL in May seeking a stay on the multi-year tariff for 2023-24

and 2024-25, as according to their officials, the tariffs calculated by MERC were "higher than they should be." The objective to appeal against the order was also to prevent the migration of customers to rival distribution companies like Adani Electricity Mumbai and BEST, sources said.

"With this interim order, Tata Power tariff will be cheaper than its competitors in Mumbai," Tata Power chief (Mumbai distribution) Nilesh Kane told TOI. In June, Kane had told mediapersons that there were "anomalies" in the tariff hike from April 1, and the same was challenged before APTEL. "Our average cost of supply is very low and still our tariff is higher," he had said. On Thursday night, a statement issued by Tata Power said: "In the interim period, the tariff proposed by the company to the MERC on March 31, 2020, becomes applicable once again. This tariff is 25-35% lower than the existing one and will benefit consumers."







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## The quality of light influences the quality of life

**S**harmila started her professional career at the early age of sixteen in a grill manufacturing unit "Metal Craft" supporting her father Mr. Dilip Kumbhat. At the age of nineteen she won "Best Female Entrepreneur Award" presented to her by the Chief minister of Tamil Nadu. Later, she studied in U.S., Parsons School of Design in New York. Widely traveled around the world and gained further experience and understanding from different cultures; which continuously influenced her design and business acumen. While living in the United States, she started and ran two very successful export oriented companies. Due to her urge to come home in order to be more directly involved in homeland, coupled with the emotional quotient of bringing up her children in India, she joined K-lite in 2011 and within a short span of time, she was able to prove herself, earning title of "Director of New Business Development". K-lite has broken into international markets, progressed tremendously and the company's turnover has increased by more than four hundred percent under her directorship. In 2017-2018, she went to Dubai and won "Asia One- World's Greatest Brands" for K-lite's architectural lighting & poles.

In 1977 K-LITE began a long journey of innovation in lighting products, chasing the dream of light. Light allows us to realize the possibilities of our imagination. The quality of light influences the quality of life and it is clear that light must combine technique and emotions contemporaneously, defining new values, meanings, feelings, culture, comfort etc., overcoming the simple light - dark dichotomy. K-Lite, through their innovative outlook, have showcased a whole range of new products under various portfolios. The range is all the more very special because of the light source viz., energy saving, environment friendly "green" lighting with LED. The application with innovative design using LED includes retail lighting, office lighting, consumer luminaires, architectural lighting, facade lighting, pathway lighting, in-ground luminaire, tree-uplighter, up-down lighting, billboard lighting, vertical light bars, wall washers, area lighting poles and above all, street lighting with sleek polar lighting solutions, an instant hit. The creative and innovative designs are there to see for yourselves in our outdoor luminaires.



**Ms. Sharmila Kumbhat**  
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Globally, lighting as an industry is growing at an alarming pace with projected value of around 2000 million USD. The coming decade is going to witness phenomenal changes in the field of lighting. The last decade thrust was energy saving measures, which gave rise to the LED lighting to replace all other conventional lighting. Application of solid state devices as a source of lighting has given way to new concepts in lighting control and automation. In such a context, automation in lighting is a major thrust area for the lighting designers as well as manufacturers/ traders. The order of the day is smart (green) concept in every field viz., smart home, smart city, smart pole, smart lighting, etc., With regard to lighting, Smart lighting technology may include high efficiency fixtures and automated controls that make adjustments based on conditions such as occupancy or daylight availability through Lighting control system with an intelligent networked system of devices. These devices may include relays, occupancy sensors, photocells, light control. touchscreens, and signals from other building systems.





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# Energy Production from Biomass: Review

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**Abstract**—there are many power plants like thermal, solar, hydro, nuclear etc. but but having some disadvantage of it like pollution due to Co2 emission, global warming, fuels cost etc. A biomass power plant can avoid such factors and it can meet the demands of electricity by pollution free environment. Day by day prices of fuels are increasing this will lead to use of energy generation techniques such as biomass energy generation. Biomass is renewable in nature, carbon neutral and has the potential to provide large productive employment in rural areas. It is considered as one of the promising sources for generation of power using commercially available thermal and biological conversion technologies.

**Keywords**—Energy Generation, Renewable Energy, Non- Conventional, Power Generation and Biomass.

## I. INTRODUCTION

Enough biomass resources are available in the world to cover its energy demand. Biomass resources are available easily and in a large quantity. The major culprit contributing in global warming is carbon dioxide. More than 50% of co2 is emitted from transport sector and 70% is from the power sector.

Human being with his basic nature for easy living has over used this limited nonrenewable resource .In 1973 crises there is a hike in the petroleum product price. It had necessitated the western countries and petroleum starved countries to look for alternate fuels. Another major compelling reason to look for alternates for fossil fuel is the global warming.

In India 370 billion tons of biomass is available per year. For generation of 1MW/YEAR electricity it will require about 15000 tons of biomass. It is more economic and environmentally safe.

## II. BIOMASS

Biomass refers to the biological material derived from living, or recently living organisms. Biomass is renewable energy resources derived from human, animal and natural waste. It is mainly consist of agriculture crop, raw material from forest major household waste and wood. There are biological content from living or recent living organism. We get energy like methane gas as well as transportation fuel like ethanol biodiesel. Directly on combustion it produces heat or indirectly can be converted into various forms of bio-fuels.

### I. SOUCES OF BIOMASS FUEL

- Agricultural crops & residue
- Municipal solid waste like Bio-medical waste or hospital waste. Municipal solid waste consists of household waste, construction and demolition



debris, sanitation residue, and waste from streets.

- Forest residues such as dead trees, branches, yard clippings, wood chips and even municipal solid waste. Wood energy is derived by using biomass as fuel.

- Animal residues
- Industrial residues
- Sewage

State wise availability of major crops of India:

Crop	States
Rice	UP, Punjab, West Bengal
Wheat	UP, Punjab, Haryana
Bajra	Rajasthan, Gujarat, Maharashtra
Jowar	Maharashtra, Karnataka, MP, AP
Sugarcane	UP, Maharashtra, Karnataka
Cotton	Maharashtra, UP, Andhra Pradesh
Groundnut	Gujarat, Tamil Nadu, Andhra Pradesh
Oilseeds	MP, Rajasthan, AP, Karnataka, Maharashtra





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## I. BIOMASS ENERGY CONVERSION TECHNOLOGY

### A. Biomass Combustion

Combustion is the most conventional method of obtaining heat from biomass. The chemical energy of biomass is converted into heat energy through a series of chemical reactions when biomass is burnt. The efficiency of combustion depends primarily on good contact between the oxygen in the air and the biomass.

The combustible gases produced are burnt when secondary air is supplied usually in a combustion zone separated from the fuel bed. Temperatures in combustion systems typically reach 900–1400 °C.

Types of Combustion Systems

- i. Fixed bed combustion.
- ii. Suspension burner's combustion.
- iii. Fluidized bed combustion

### B. Biomass Cogeneration

Co-generation is the process where in obtain both heat and electricity from the same fuel. The process is also referred to as CHP (Combined heat and power). A variety of fuels can be used for cogeneration including wood, natural gas, coal, biomass and which uses the waste of sugar mills.

A co-generation plant consists of four basic elements: prime mover, electricity generator, heat extraction or recovery unit, and control panel. Fuel is burnt in the system or prime mover to convert its chemical energy into heat energy which in turn produces the mechanical energy to run a generator and ultimately produce electricity. Prime movers for CHP systems include steam turbines, gas turbines, reciprocating engines, micro-turbines, and fuel cells. The heat energy from the system is also used directly as heat or indirectly to produce steam, hot water and hot air, thus making it a CHP or co-generation system.

### C. Type of Co-Generation

Different types of cogeneration technologies are used depending upon the end use or purpose. Some commonly used cogeneration technologies are:

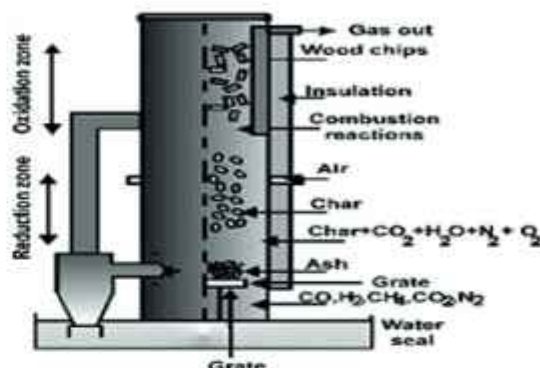
- i. Steam Turbines
- ii. Gas Turbines
- iii. Reciprocating Engines Steam turbine cogeneration

### D. Biomass Gasification

Biomass gasification or producing gas from biomass involves burning biomass under restricted air supply for the generation of producer gas.

Producer gas is a mixture of gases:

- i. 18%–22% carbon monoxide (CO).
- ii. 8%–12% hydrogen (H<sub>2</sub>).
- iii. 8%–12% carbon dioxide (CO<sub>2</sub>)
- iv. 2%–4% methane (CH<sub>4</sub>)
- v. 45%–50% nitrogen (N<sub>2</sub>) making up the rest.



A gasification reaction producing gas from biomass consists of the following main reactions which occur inside a biomass gasifier.

a. Drying: Biomass fuels usually contain 10%–35% moisture. When biomass is heated to about 100 °C the moisture is converted into steam.

b. Pyrolysis: After drying as heating continues the biomass undergoes pyrolysis. Pyrolysis involves burning biomass completely without supplying any oxygen. As result the biomass is separated into solids, liquids, and gases.

c. Oxidation: Air is introduced into the gasified after the separated process. During oxidation which process takes place at about 700–1,400 °C the solid carbonized fuel, reacts with the oxygen in the air to produce carbon dioxide and heat.



d. Reduction: At higher temperatures and under reducing conditions that is when not enough oxygen is available the following reactions take place release carbon dioxide then result is hydrogen and methane.  $C + CO_2 \rightarrow 2 CO$



Biomass is collected from various sources which is available in rural area. Collected biomass get from animal, wastage, animal waste, manure, wood, etc. Collected biomass goes to combustion chamber for heating. On combustion biogas is related with less pollutants and methane gas is produce. Later biogas produce goes to the boiler and steam formation is occurred. That's steam with high pressure supplied to turbine which connected to generator through shaft which produces electricity. By using this system we can produce sufficient amount of energy which is very useful for people leaving in rural area. Such plants can be implemented in a rural area which is beneficial.

#### I. KEY COMPONENTS OF BIOMASS POWER PLANT

- a) Fuel storage and handling equipment
- b) Combustor
- c) Boiler
- d) Pumps
- e) Steam turbine
- f) Generator
- g) Condenser
- h) Cooling tower
- i) Emissions controls
- j) System controls.

Biomass gets from animal waste, animal waste, manure, wood, etc. Collected biomass goes to combustion chamber for heating. After heating reduction process was done and result pure gas like methane. In bio system not produce pollution but lit bit reduced or exhaust gasses they was use of pollution control at the top of combustion chamber.

Later gas is goes to Steam boiler is basically a closed vessel into which gas or water is heated until the water is converted into steam at required pressure. Then steam valve use like feedback system it will get the speed control of the steam turbine.

A steam turbine is a device that extracts gas energy from pressurized steam and uses done mechanical work on a rotating output shaft. This output shaft is connected to Generator. Generator is electrical device that convert the mechanical energy into electrical energy.

#### II. ENVIRONMENTS EFFECT

In this day world has big problem which is pollution. That is air pollution environmental like crops, municipal waste, hospital, hotel, school, colleges and homemade waste, vegetable waste etc. in every place and site. This waste is spoils the beauty of good location. Air pollution is created by carbon dioxide in



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power sector. This cause produce the big question in now day in the world is global warming.

The biomass energy plant is not producing the carbon dioxide so it helps avoid or reduce the global warming. Also this is cleaning the villages and cities and beauty of location is keep as it is. Biomass energy plant also is help income for rural population. That means it provide the job opportunity in rural areas.

### III. CONCLUSION

It can be concluded that huge potential exist for exploration of available biomass in world to convert it to energy. Various resources in wide variety and different form of biomass are available. Diverse sources are there to obtain waste biomass e.g. agricultural waste, food wastes, industrial wastewaters generated in large volumes which hints the tendency to switch over to non-conventional source of energy.

At present three major technologies are being used to convert biomass into energy combustion, co-generation, gasification. Selection of conversion technologies for biomass depends upon the form in which the energy is required like combustion produce heat, mechanical, electricity energy etc. Gasification

processed biomass to form syngas. Also generating power by using co-generation technology where the waste of sugar mills is used. These plants have not only solved the rural electrification problem for the remote villages where infrastructural costs could have been quite high for conventional electrification but also the power generation cost has also been relatively low. The prime motto of biomass energy plant is to provide the use of non-conventional energy

sources of energy which helps in sustainable development of nation.

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दरसाला प्रमाणे इकॅम नाशिक विभागाची ३३ वी वार्षिक सभा दिनांक ४ जुलै २०२३ मंगळवार रोजी नाशिक मधील मध्यवर्ती ठिकाणी असलेल्या अशा 'मनोहर गार्डन व लॉन्स' च्या भव्य हॉलमध्ये अतिशय उत्साहात पार पडली. सदर ठिकाणी मीटिंग हॉल, एक्झिबिशन हॉल आणि डायनिंग हॉल अशा तीन विभागण्या केलेल्या होत्या. सर्वप्रथम एंट्रन्स लॉबी व रजिस्ट्रेशन लॉबी, नंतर हजार लोक बसतील असा हॉल व भव्य स्टेज डाव्या बाजूस प्रदर्शनी हॉल होता. त्यामध्ये २० प्रयोजकांनी आपले प्रॉडक्ट्सचे प्रदर्शन मांडले होते. पलीकडे भला मोठा डायनिंग हॉल होता. अशा अतिशय प्रशस्त आराखड्यात सदर सभा घेण्यात आली. सर्वप्रथम आयोजित प्रदर्शनाची सुरुवात मान्यवरांच्या हस्ते फिट कापून करण्यात आली व सभेची सुरुवात दीप प्रज्वलनाने करण्यात आली. इकॅम महाराष्ट्राचे अध्यक्ष श्री. वामन भुरे यांनी सभेचे अध्यक्षपद स्वीकारले व सभेस सुरुवात झाली. स्टेजवर अध्यक्षसोबत महाराष्ट्राचे मा. अध्यक्ष सुनील भुरे, महासचिव श्री. देवांग ठाकूर, नाशिक रिजनचे चेअरमन श्री. सचिन फरतडे, सचिव सुशील भुरे, व्हा. चेअरमन श्री. समाधान पाटील, खजिनदार श्री. संदीप शिंदे तसेच जळगाव, धुळे, पुणे, अहमदनगर व ठाणे इत्यादी रिजनचे चेअरमन विराजमान होते.

प्रथम गतवर्षाची वार्षिक सभा, जमा खर्च, वर्षभरातील भरीव कार्य या विषयीचा गोषवारा देत त्यास मंजुरी देण्याचे सोपस्कार पार पडले. त्यानंतर उपस्थितांच्या मनोगतात श्री. अमरनाथ पाटील - चेअरमन पुणे रिजन आणि चेअरमन लायसनसींग बोर्ड कमिटी यांनी सध्याच्या परिस्थितीत लायसनसींग बोर्ड मधील सुपरवायझर परीक्षा बंद करणे बाबतची शासनाची भूमिका आणि त्यावर इकॅमने आणलेली स्थगिती कार्याचा वृत्तांत सादर केला. श्री अमित गरुड - चेअरमन पावर सप्लाय कमिटी यांनी देखील आपल्या कार्याचा आढावा घेत



एन.एस.ई. टेंडर बाबत दिलासा मिळवून देऊ आणि ठेकेदारांच्या हितासाठी कार्य करू असे आश्वासन दिले. श्री. कांतीलाल लकारिया आणि श्री. ब्राह्मणकर अशा वरिष्ठ सभासदांनी सभेच्या वाटचालीचे कौतुक करताना नासिक रिजनच्या संचालकांचे 'जे सर्व युवा असून भव्य दिव्य कार्य करतात' या शब्द सुमनांद्वारे प्रशंसा केली. येणारे शताब्दी वर्षात असेच अनेक भव्य कार्यक्रम पार पाडण्यात यश येईल असे आशीर्वाद देखील त्यांनी दिले. श्री. चंद्रकांत सोनार यांनी देखील कार्याचे कौतुक करताना सिव्हिल + इलेक्ट्रिकल कॉमन टेंडर प्रक्रियेचा निषेध करत त्यावर कार्यवाही करण्यासाठी संस्थेने ठोस काम करावे याबाबत आपले मनोगत व्यक्त केले.

मनोगतानंतर हा कार्यक्रम यशस्वी करण्यासाठी हातभार लागलेल्या प्रायोजकांचे आणि एक्झीक्यूटिव्हचे सत्कार करण्यात आले. त्यात प्रामुख्याने मे. नासिक केबल, मे. केन्टर केबल, मे. के. ई. आय. वायर्स, मे. एक्सल अर्थिंग, मे. पॉलीकॅब, मे. व्हिजन विद्युत आणि एस्ट्रोल पाईप यांचा प्रयोजक म्हणून तर मे. भारत एंटरप्राइजेस, मे. गणेश सेल्स कॉर्पोरेशन, मे. बॅटेक (बेनलो) तर्फे मे. कण्वट्रेडिंग, मे. आदित्य इलेक्ट्रिकल्स, मे. श्री



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इंजीनियरिंग, मे. न्यू बाबा ट्रेडर्स (ग्रेट व्हाईट), मे. जी आर लाईट, मे. हेव्हल्स, मे. भवानी ट्रेडर्स, मे. अलका लाईट, मे. संदीप कुडारीया, मे. टर्निंग पॉईंट, मे. युनिटी इलेक्ट्रॉनिक्स, मे. श्री इंटरप्राइजेस, मे. लोकमान्य इंटरप्राइजेस यांचे एकझीबीटर्स म्हणून सत्कार करण्यात आले.

त्यानंतर नासिक रिजनचे चेअरमन श्री. सचिन फरतडे यांनी सर्व सभासदांना मार्गदर्शन करत संस्थेच्या अनेक कामांविषयी व ते करत असताना येणाऱ्या अडचणी, सभासदांच्या तक्रारी सोडवितांना येणारे अनुभव यांचे कथन केले. त्याचबरोबर सभासदांनी पुढे येऊन संस्थेच्या कार्यात व त्यांचे शासन दरबारी होणाऱ्या अडचणींसाठी संघटनेला मदत करावी असे आवाहन केले.

इकॅम महाराष्ट्राचे माजी अध्यक्ष श्री. सुनील भुरे साहेब यांनी पुढील दहा वर्षांतील ठेकेदारी क्षेत्रातील बदल आजच लक्षात घेऊन कामाचा अनुभव, बीडिंग कर्पॅसीटी, बर्क इन हॅन्ड यावर लक्ष देण्याचे ठेकेदारांना आवाहन केले. ही वेळ एकमेकांमध्ये स्पर्धा करण्याची नसून दोन-चार ठेकेदारांनी एकत्र येऊन आपली ताकद द्विगुणित करायची आहे, असा मोलाचा सल्ला देखील दिला. श्री. देवांग

ठाकूर महासचिव इकॅम महाराष्ट्र यांनी त्यांच्या भाषणांमधून येऊ घातलेल्या शताब्दी वर्षांतील एक भव्य दिव्य कार्यक्रम २७, २८ व २९ फेब्रुवारी २०२४ रोजी आयोजित करण्यात आलेल्या "ECAMEX24" या भव्य प्रदर्शनी बद्दल सांगताना त्यांनी लेआऊट, रेट चार्ट, व्हिझीटर प्रोफाइल याविषयी संक्षिप्त माहिती दिली. तसेच मुंबई येथील बी.इ.सी. मध्ये हे एक्झिबिशन होत असून नासिक मधील सर्व उत्पादकांनी या संधीचे सोने करा असे आवाहन केले.

सर्वात शेवटी महाराष्ट्राचे अध्यक्ष श्री. वामनराव भुरे यांनी अध्यक्षीय भाषण केले. सभासदांना संबोधून "आपण अडचणी सभेसमोर मांडाव्यात, संस्थेस कळवाव्यात" असे जाहीर आवाहन केले. नासिक मधील सभासदांनी 'सभासदांचे मनोगत' यावेळी व्यासपीठावर मोजक्याच लोकांनी मनोगत व्यक्त केले.

याबद्दल खंत व्यक्त करत 'हक्काचे व्यासपीठ आहे, संधी सोडायची नाही' असा सल्ला देखील दिला. उपस्थित सर्व सभेमधील वक्त्यांचे कौतुक करत अभिवादन करत त्यांनी शताब्दी वर्षांतील अनेक उपक्रमांचा नियोजित कार्यक्रम सभेसमोर ठेवला व या कार्यासाठी तन-मन-धनाने यात नासिक मधून मोठ्या संख्येने सभासदांनी, उद्योजकांनी सामील व्हावे असे आवाहन नासिक मधील सभासदांना केले. सभेच्या अंतिम





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टप्प्यात नासिक रीजनच्या सर्व संचालकांना स्टेजवर बोलविण्यात आले आणि हा कार्यक्रम पार पाडताना घेतलेले परिश्रम व त्यांची संस्थेप्रतीची निष्ठा यासाठी शाब्बासकी एक प्रकारे त्यांना देण्यात आली.

श्री. संदीप शिंदे यांनी अतिशय सुंदर रीतीने प्रत्येकाचे आभार मानले आणि सभा पसायदानाने संपन्न झाली. नंतर सर्वांनी प्रदर्शनास भेट दिली, उत्पादनांची माहिती घेतली, एक्झिबीटर्सने देखील सर्वांशी संवाद साधला, फोटोज काढले आणि अखेरीस सुरुची भोजनाचा सर्वांनी आस्वाद घेतला. या कार्यक्रमात सभासदांना भेट वस्तू देखील देण्यात आल्या. अशा रीतीने अतिशय उत्साहात आणि खेळीमेळीच्या वातावरणात इकॅम नासिक रीजनची ३३वी सभा संपन्न झाली.

शब्दांकन

श्री. अमेय श्याम काण्णव

मे. आर.वाय.बी. इलेक्ट्रीकलस्,

(संचालक - इकॅम महाराष्ट्र

आणि को-चेअरमन एउअचएद२४)

## हरित हायड्रोजन धोरणाला मंजुरी

मुंबई: नवीकरणीय ऊर्जा आणि हरित हायड्रोजनच्या प्रकल्पांना प्रोत्साहन देण्यासाठी राज्याच्या हरित हायड्रोजन धोरणास आज झालेल्या मंत्रिमंडळ बैठकीत मान्यता देण्यात आली. असे धोरण जाहीर करणारे महाराष्ट्र हे देशातील पहिलेच राज्य आहे. बैठकीच्या अध्यक्षस्थानी मुख्यमंत्री एकनाथ शिंदे होते. या धोरणाच्या अंमलबजावणीसाठी ८ हजार ५६२ कोटी रुपये खर्चास देखील मान्यता देण्यात आली.

पंतप्रधानांनी राष्ट्रीय हरित हायड्रोजन मिशन जाहीर केले असून २०२३ पर्यंत देशात ५ मिलीयन टन हरित हायड्रोजन दरवर्षी निर्मित करण्याचे उद्दीष्ट आहे. राज्यामध्ये देखील हरित हायड्रोजन आणि संबंधित उत्पादनांची क्षमता ओळखून हे धोरण तयार करण्यात आले आहे. राज्याची सध्याची हायड्रोजनची मागणी दरवर्षी ०.५२ मिलीयन टन इतकी आहे. ही मागणी २०३० पर्यंत १.५ मिलीयन टनांपर्यंत पोहचू शकते. आज जाहीर करण्यात आलेल्या हायड्रोजन धोरणामध्ये ओपन अँक्सेसद्वारे स्वयंपापरासाठी राज्यातून किंवा राज्याबाहेरून, राज्यातील वीज वितरण कंपन्यांकडून, पाँचर एक्स्जेंजकडून नवीकरणीय ऊर्जा प्राप्त करणाऱ्या प्रकल्पांना लाभ सवलती दिल्या जातील.

महाऊर्जा कार्यालयाकडे हरित हायड्रोजन आणि संबंधित उत्पादन प्रकल्पांची नोंदणी करण्यात येईल. या प्रकल्पांना २५

हजार प्रति मेगावॉट इलेक्ट्रोलायझर क्षमतेनुसार प्रकल्प सुविधा महाऊर्जाकडे जमा करावी लागेल. प्रकल्प कार्यान्वित झाल्यापासून पुढील दहा वर्षांसाठी पारेषण शुल्क, व्हिलिंग चार्जसमधून अनुक्रमे ५० टक्के आणि ६० टक्के सवलत देण्यात येईल. स्टॅंडअलोन आणि हायब्रीड ऊर्जा प्रकल्पांना अनुक्रमे पुढील १० वर्षांसाठी आणि १५ वर्षांसाठी विद्युत शुल्कातून १०० टक्के सवलत देण्यात येईल तसेच क्रॉस सबसिडी आणि अधिभारातून देखील माफी देण्यात येईल.

याशिवाय पॅकेज स्कीम ऑफ इन्सॅटीव्ह्ज २०१९ नुसार लाभ मिळतील. ५ वर्षांकरिता हरित हायड्रोजनच्या गॅसमध्ये मिश्रणासाठी प्रत्येक किलोकरिता ५० रुपये अनुदान देण्यात येईल. तसेच पहिल्या २० हरित हायड्रोजन रिफ्युएलिंग स्टेशनला कमाल ४.५० कोटी रुपये या मर्यादित ३० टक्के भांडवली खर्च अनुदान देण्यात येईल. पहिल्या ५०० हरित हायड्रोजन आधारित फ्युएल सेल प्रवासी वाहनांना कमाल ६० लाख रुपये प्रति वाहन, एवढ्या मर्यादित ३० टक्के भांडवली खर्च अनुदान देण्यात येईल. हरित हायड्रोजन प्रकल्पांसाठी असलेल्या जमिनीला स्थानिक स्वराज्य संस्थांचे कर, अकृषिक कर आणि मुद्रांक शुल्कातून पूर्ण सवलत देण्यात येईल. हरित हायड्रोजन कक्षासाठी आवश्यक कुशल मनुष्यबळ घेणे, त्यांचे प्रशिक्षण, कौशल्य विकास, एक खिडकी सुविधा इत्यादी बाबींकरिता वार्षिक ४ कोटी याप्रमाणे १० वर्षांसाठी ४० कोटी रुपये देण्यात आले.



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इकॅम संघटनेचे एक सक्रिय सदस्य, श्री बाळासाहेब डुकळे हे अति सामान्य परिस्थितीतून कसे पुढे आले हे जाणून घेण्यासाठी त्यांच्याशी आईसिटीचे प्रतिनिधी सुभाष जाधव यांनी बातचीत केली.

## अहमदनगरचे बाळासाहेब डुकळे

अहमदनगर तालुक्यातील नवनागापूर या गावचे श्री बाळासाहेब डुकळे यांनी आपले शालेय शिक्षण मालेगाव येथे करून १०वीची पदवी मिळवली. पण त्यांचा एक विषय मात्र राहिला. पुढील शिक्षणाचा विचार न करता आणि घरची स्थिती लक्षात घेऊन त्यांनी नोकरी करण्याचे ठरविले. एका शुगर फॅक्टरीमध्ये त्यांना नोकरी मिळाली. पगार होता रु. ४५० महिना! या पगारावरच त्यांची व घरच्यांची मदत होती. पण एवढ्या कमी पैशात घर चालवणे अवघड होते. १९९६च्या सुमारास श्रीजी कंपनी मध्ये नोकरीची जाहिरात आली व बाळासाहेबांना येथे नोकरी मिळून त्यांच्या जीवनाची दुसरी इनिंग सुरु झाली. पगार होता रु. २२०० महिना. येथे कामगारांच्या हितासाठी त्यांनी युनियन स्थापन केली व त्याचे अध्यक्ष झाले. त्याच सुमारास त्यांचे लग्न झाले व जबाबदारी वाढली. पण काही कारणास्तव कंपनीने त्यांना नोकरीवरून काढून टाकले. इलेक्ट्रीकल कामाची त्यांना आवड होतीच. मग त्यांनी तेच काम सुरु केले व सदगुरु इलेक्ट्रिकल्स अँड ट्रेडर्स ही फर्म सुरु केली.

सन २००० मध्ये कंपनीने त्यांना परत कामावर घेतले. पण त्या कामात त्यांचे मन लागत नव्हते. म्हणून त्यांनी इलेक्ट्रीकलचेच काम करण्याचे ठरवले. यामध्ये त्यांना श्री बनकर मामा यांची खूप मदत झाली. २००५ पासून सतत काम करून आता ते व्यवसायात स्थिर झाले आहेत.

बाळासाहेबांना सामाजिक कार्याची खूप आवड आहे. झाडी, ता. मालेगाव येथील समाजकारणात व स्थानिक राजकारणात ते सक्रिय आहेत.



**Heartiest congratulations on behalf of Ecam, Electrical Contractors' Association of Maharashtra, to Shri Samir Mehta ji, for becoming the president of prestigious Electric Merchants' Association. Shri Mehta was felicitated on 24th June in ECAM Office.**

**Waman Bhure,  
President, Ecam**



**Inauguration of  
ECAMEX literature at  
the hands of  
Shri Samir Mehta,  
President, EMA,  
Mumbai.**



## Polycab India launches Etira 4-In-1 switch for modern-day lifestyle conscious customers

June 16, 2023: Polycab India Ltd. India's leading FMEG (Fast Moving Electrical Goods) brand announced the launch of Etira 4-In-1 Switch. The launch aims to put focus on Polycab's offering in terms of electrical products and provide its customers with stylish and secure switches that will inspire customers to switch to a better life.

The Etira 4-In-1 Switch is one of a kind product that provides four distinct and desirable qualities in just one product. The latest offering from Polycab aims to address the latent needs of modern-day consumer that aspires to have a secured and safe product that is value for money as well as stylish enough for an evolved lifestyle.

A switch is an important appliance in house that can change just about anything from convenience, comfort and utility perspective. Etira switches is more than just looks. They meet the highest standards of safety and durability. These easy-to-install switches are fire and shock-proof and have been tested to withstand one lac clicks\*.

With Etira, consumers would appreciate investing in an aesthetically pleasing switch that suits the décor of their homes while notably being a safe product. The launch of Etira switches is in sync with Polycab's

belief of precisely catering to the need of modern-day consumers by leveraging the best of new-age digital technologies.

The Etira range of switches is available in 33 colour combinations and comes in horizontal or vertical installation formats as an extension of art.



### CLEANROOM - PANEL

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### HYSKEIR PRO - HIGHBAY

The Hyskeir Pro is Venture's most efficient Highbay to date, providing up to 165 lumens per system Watt.



### VACADEMY PRO - LINEAR SURFACE MOUNT

The VAcademy is ideally suited for all indoor applications, its timeless style with clean lines makes it suitable for offices, corridors, stairwells, hotel reception areas and in addition due to the lockable anti-tamper design features, immediately lends itself to use in school, colleges, universities and peripheral areas in prisons, and other public service areas.



## WHEN MONSOON IS DROWNING HALF OF INDIA EVEN THE REST ARE AT PERPETUAL FIRE RISK

In the face of floods and water logging across the country, a hugely underrated risk is the risk of fires due to short circuits and exposed wires. Even in big cities like Delhi, many gully mohallas and interiors we see aged, worn out and neglected wiring that often hang visible in the skyline. These are ticking time bombs and the harm they can cause has been seen so many times before. The question to therefore ask is – “Are your premises adequately protected?”

During a flood, water can enter a building and come into contact with electrical outlets, wiring, and other electrical components. This contact can cause damage to the outlets, including corrosion and short-circuiting. Sometimes, the water can cause the electrical outlets to spark, leading to a fire. There are many poor families, the young and the old and ailing living in conditions unfit for animals. In monsoons, they are the hub of disease and in summers they are the lowest hanging fruit for a hungry fire. But even the affluent and high-rise dwellers are not safe from accidental fires and history has ample proof.

These are questions that cannot have straight answers, so successive governments and administrative bodies push them under the carpet and life goes on. The irony is, that at a time when India is gaining global recognition as an economic and technological global power, this is one area where we are no better than we were in 1947, the year of Independence.

At Prolite, our constant concern is to think ahead and create products that will come into play when the unexpected strikes and save lives of ordinary folk and VIP's alike if the worst happens. That means, our R&D is constantly monitoring global threat perceptions, changing scenarios worldwide and creating products that not just gel with the times but also conform to existing rules and regulations that govern safety related products and services.

An indispensable lifesaving tool of safe exigency or safe escape in a critical situation that is accepted and used globally is what is known as the photoluminescent sign. A sign or indicator can provide vital information or show the closest exit but how can it do so in a pitch dark condition? The photoluminescent sign does exactly that. But when there is no source of light how does this sign glow?

The answer to that is that this sign actually captures and stores light in normal conditions only to release it in darkness. Glow in the dark Photoluminescent Escape Route Signs for example, are a great option for many emergency exit locations. These units are clearly observable under

normal lighting conditions and brightly illuminate emergency exits in the event of low or no light.

Essentially, photoluminescent signs use a material which self charges using ambient light. 'Luminescent' describes a material which emits light and glows. 'Photo' often means light, such as in the word 'photograph', which means the recording of light. So simply put, 'photoluminescent' refers to something which absorbs light energy and releases that energy in the form of light.

In India, photoluminescent signages, along with emergency lights, are an essential feature of safe exit mandated by the NBC in all kinds of enclosed spaces. In a fire and smoke or blackout situation people trapped in enclosed spaces often face certain death if they cannot come out within a very small window of time. While emergency lights restore visibility to some extent, these signs show the nearest and quickest way out. People unfamiliar with surroundings too get to see the best and quickest exit route and thus get saved in time.

Moreover, the most unnoticed high-risk area is the humble staircase. You will find seminars or talks or awareness programs on subjects like fire safety, safe escape, disasters, PPE etc. happening very often but never one on staircase safety. Consider the fact that steps are an essential feature of any form of vertical movement at an individual level. Be it a few steps leading up to an elevated stage or podium or a high rise of 100 storeys, stairs are the one essential option. A fall from even three steps can be fatal and so anybody climbing stair is at immediate risk. In cases involving children, the elderly, people with poor eyesight or physical impairment or in situations of low visibility or panic the humble staircase can be a killer.

There are no known statistics of how many people have died or suffered grievous injury from staircase falls. It is practically impossible to compile any such data because staircase falls happen more in individual, isolated cases rather than in public places or in view of many people. But common sense tells us that these things are so common that the figure must be staggering even on a daily basis.

Prolite has done deep research on staircase safety and created a product range to provide staircase protection to one and all. The company provides an entire product range to make the staircase a safer option and a better one too. Staircase Nosing is an all-purpose stair safety product which provides a finely corrugated and serrated surface to avoid skidding and a photoluminescent band to light up the steps in pitch darkness. This nosing can cover the entire area of each step end-to-end, and give it a metal cover so that it cannot break either at the edges or anywhere along the periphery.





## Improving the control panels for the Continuous Process industry with Multiple connections and Multiple level Terminal Blocks

**C**ontinuous Process industry is a type of manufacturing or production industry where the production process operates continuously without interruption. In this industry, raw materials are continuously fed into the production system, and the finished products are continuously generated as output. The production process typically involves a series of interconnected steps or stages, and the materials flow through these stages in a continuous manner.

Continuous process industries are characterized by their high-volume production and constant flow of materials throughout the manufacturing process. Examples of continuous process industries include chemical manufacturing, petroleum refining, power generation, steel production, paper manufacturing, and food processing.

In these industries, the production facilities are

designed to run continuously for extended periods, often 24 hours a day and 7 days a week. The processes are highly automated, with sophisticated control systems and monitoring mechanisms in place to ensure efficient and consistent production.

### Criticality of Control Panels Used in the Continuous Process Industry:

Control panels in continuous process industries need to be of high quality for several reasons.

They play a vital role in optimizing process efficiency, monitoring variables like temperature and pressure, and ensuring accurate control. This leads to reduced waste, improved energy efficiency, and overall operational effectiveness.

These control panels are crucial for safety and risk mitigation. They provide emergency shutdown capabilities, safety interlocks, and alarms to prevent accidents and detect abnormal conditions promptly.

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**Multiple Connection  
Terminal Block**

**Multiple Level  
Terminal Block**

High-quality control panels are reliable and minimize downtime. They are built with quality components, undergo rigorous testing, and are designed for easy maintenance and troubleshooting, reducing the chances of unexpected breakdowns.

Control panels must comply with strict regulatory standards. They facilitate compliance by providing accurate data logging, reporting, and compliance features, ensuring adherence to safety, environmental, and quality regulations.

High-quality control panels offer scalability and adaptability. They can easily integrate new equipment, sensors, or control modules, allowing for flexibility and accommodating changes in production requirements or expansions.

#### **How Multiple Connections and Multiple-Level Terminal Blocks Bring Value in Control Panels Used for Continuous Process Industry**

Terminal Blocks have been used in the continuous process industry for nearly half a century now, owing to their reliability and quality. In addition to the above need for safety, reliability, and accuracy, the applications in this industry require extremely dense wiring because of the high number of sensor-actuator loops to be controlled. This calls for the usage of Multiple Connections and Multiple Level Terminal Blocks.

Multiple connection terminal blocks, also known as multi-level terminal blocks or multi-tier terminal blocks, are electrical connectors used to simplify and organize the wiring connections in electrical and electronic systems. They consist of a housing or base with multiple levels or tiers of terminal points.

These terminal blocks provide a convenient way to connect and distribute electrical signals or power among multiple wires or conductors within a single

unit. Each level or tier typically contains a set of terminal points, where wires can be securely inserted, clamped, or screwed down.

The main advantage of multiple connection terminal blocks is their ability to accommodate a large number of connections in a compact space. By stacking the

terminal blocks vertically, they allow for efficient utilization of limited panel or enclosure space, making them suitable for applications where space is a constraint.

The individual terminal points in a multi-level terminal block are typically electrically isolated from each other. This isolation helps to prevent short circuits and ensures the integrity of the electrical connections. It also allows for easier identification and troubleshooting of specific circuits or connections.

These terminal blocks are available in different connection technologies and designs, including screw-type, spring-clamp, or push-in spring options. The choice of the terminal block depends on the specific application requirements, such as the wire size, voltage and current ratings, and environmental conditions.

In conclusion, multiple connections and multiple-level terminal blocks offer a valuable solution for improving control panels in the continuous process industry. These high-quality terminal blocks simplify and organize wiring connections, accommodating a large number of connections in limited space. They ensure the integrity of electrical connections, prevent short circuits, and facilitate troubleshooting. With the ability to incorporate various functions within a single terminal block, such as feedthrough, distribution, fuse, disconnect, grounding, and LED indication, they enhance the efficiency and flexibility of control panels. By making smarter connections, these terminal blocks contribute to optimized processes, increased safety, reduced downtime, and regulatory compliance.

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## Govt provides Rs 66,413 crore to 12 states for power sector reforms

Government has given financial incentives to states to accelerate power sector reforms, under which 12 states have received Rs 66,413 crore during the past two fiscals, while for the current fiscal, Rs 1,43,332 crore have been given to them for the purpose.

The finance ministry has been providing financial incentives in the form of additional borrowing permissions.

This move aims to encourage and support the states in undertaking reforms to enhance the efficiency and performance of the power sector.

The initiative was announced by finance minister Nirmala Sitharaman in her budget speech for 2021-22.

Under this, an additional borrowing space of up to 0.5 per cent of the gross state domestic product (GSDP) is available to states annually for a four-year period from 2021-22 to 2024-25.

This additional financial window is dependent on implementation of specific reforms in the power sector by the states.

The initiative has spurred state governments to initiate the reform process, and several states have come forward and submitted details of the reforms undertaken and achievements of various parameters to the power ministry.

Based on the recommendations of the power ministry, the finance ministry granted permission for reforms undertaken in 2021-22 and 2022-23 to 12 state governments.

These are Andhra Pradesh, Assam, Himachal Pradesh, Kerala, Manipur, Meghalaya, Odisha, Rajasthan, Sikkim, Uttar Pradesh and West Bengal.

In 2023-24, states can continue to avail themselves

of the facility of additional borrowing linked to power sector reforms.

An amount of Rs 1,43,332 crore will be available as an incentive to states for undertaking these reforms in 2023-24, official sources said.

The primary objectives of granting financial incentives for undertaking power sector reforms are to improve operational and economic efficiency within the sector and promote a sustained increase in paid electricity consu





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# LONGi – China's First 10,000-ton Green Hydrogen Refinery Project Starts Operation



China's Sinopec announced that the nation's first 10,000-ton green hydrogen demonstration project had successfully produced hydrogen, and the output hydrogen was piped to local petroleum refining enterprises to replace the existing natural gas fossil energy as a power source.

So far, the project has successfully realized the whole process from production to utilization of green hydrogen, which also marks first time that China has realized the whole industrial chain integration of 10,000-ton green hydrogen refining project.

The project has the capacity to produce 20,000 metric tons of hydrogen a year, which is also the first 10,000-ton photovoltaic green hydrogen demonstration project in China and provides a replicable and promotable demonstration case for the development of green hydrogen industry and PV based hydrogen production in the world.

As world's leading large-scale electrolyzer and green hydrogen production solution provider, LONGi Hydrogen won the bid for this project in May 2022. The project adopted 16 sets of LONGi Hydrogen's 1000Nm<sup>3</sup>/h electrolyzer, and for the first time realized the application of "4 to 1" system of 4 electrolyzers with 1 gas-liquid separation skid.

The construction of Sinopec's green hydrogen demonstration project mainly includes photovoltaic power generation, transmission and transformation lines, water electrolysis, hydrogen storage and transmission, public works and auxiliary production

facilities, with hydrogen production capacity of 20,000 tons/year, hydrogen storage capacity of 210,000 standard cubic meters and hydrogen transmission capacity of 28,000 standard cubic meters per hour.

Green hydrogen is produced directly from renewable energy such as solar and wind power, and basically no greenhouse gases are produced during the production process. The refining industry will be one of the main application scenarios for green hydrogen to achieve carbon reduction in the industrial sector.

The green hydrogen produced by this project will be supplied to the local petroleum refining enterprises nearby, completely replacing the existing natural gas and fossil energy for hydrogen production, which can reduce carbon dioxide emission by 485,000 tons per year, creating a new development path for green hydrogen refining, a demonstration for the industrial application of green hydrogen, and having a significant demonstration effect on the large-scale use of green hydrogen by refining enterprises to achieve carbon emission reduction, and promoting the transformation and upgrading of energy industry.

As the first typical demonstration project in China that integrates the whole process of green hydrogen production and utilization, such as photovoltaic power generation, green power transmission, green power hydrogen production, hydrogen storage, hydrogen transportation and green hydrogen refining, the project went through hardships such as new process technology, large scale and no mature engineering cases to learn from.

Through joint research and development, Sinopec has solved the problem of flexible hydrogen production and continuous and stable supply to downstream refining enterprises under the scenario of fluctuating power from new energy sources.

Among them, facing the technical difficulties of hydrogen production from renewable fluctuating power sources, Sinopec has developed its own green power hydrogen production configuration optimization

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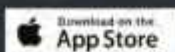
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software to match the synchronous response of electric control equipment and hydrogen production equipment, which greatly improves the adaptability to fluctuations.

The project has completed 10,000-ton electrolytic water hydrogen production process and engineering set technology, green hydrogen storage and transportation process technology, thyristor rectification technology, intelligent control system research and development and other innovative achievements, all of which have been realized in industrial application, and the project has declared more than 10 patents and proprietary technologies.

LONGi's hydrogen production system and "Green Power + Green Hydrogen" solution will greatly promote the development of hydrogen equipment and hydrogen energy industry chain, and realization of "Zero Carbon" goal.

**Image source: China Energy News**

#### About LONGi Hydrogen

LONGi Hydrogen is a global leading green hydrogen production and solution provider, with

focus on alkaline electrolysis technologies. Leveraging on technological innovation, LONGi Hydrogen is dedicated to driving the development and deployment of hydrogen as a clean, reliable and scalable energy source with low LCOH.

#### About LONGi

Founded in 2000, LONGi is committed to being the world's leading solar technology company, focusing on customer-driven value creation for full scenario energy transformation.

Under its mission of 'making the best of solar energy to build a green world', LONGi has dedicated itself to technology innovation and established five business sectors, covering mono silicon wafers cells and modules, commercial & industrial distributed solar solutions, green energy solutions and hydrogen equipment. The company has honed its capabilities to provide green energy and has more recently, also embraced green hydrogen products and solutions to support global zero carbon development. [www.longi.com](http://www.longi.com)



## Fourth partner Energy commission first wind-solar hybrid project in Gujarat

The project comprises 14 Wind turbines supplied and erected by GE. Karan Chadha, H Business Development at Fourth Partner Energy highlighted that combining solar and power results in improving predictability of energy supply and a higher utilisation of evacuation & distribution infrastructure.

New Delhi: Renewable energy solutions platform Fourth Partner Energy today announced the commissioning of its windsolar hybrid project in Gondal, Gujarat. The 70 MW project marks the company's foray into Hybrid RE solutions and will supply clean energy to companies like Filatex, Linde, Nexus Malls (a Blackstone Group Co.), Deccan Chemicals and others. The project comprises 14 Wind turbines supplied and erected by GE. Karan Chadha, Head of Business Development at Fourth Partner Energy highlighted that combining solar and wind power results in improving predictability of



energy supply and a higher utilisation of evacuation & distribution infrastructure.

"This is the first of many hybrid projects in the pipeline for 4PEL as it helps us deliver maximum green power to our clients at highest costsavings per unit. We will soon commission projects across Karnataka, Tamil Nadu and Maharashtra," he said

The C&I renewables market in India is set to grow by over 45 GW in the next 5 years. Hybrid projects can deliver a Capacity Utilisation Factor (CUF) of nearly 60% compared to standalone wind or solar projects at 20-30 per cent. Also, combining hybrid with BESS (Battery Energy Storage System) can take the CUF to 80 per cent. The project is funded by NIIF-backed Aseem Infrastructure Finance which has provided a customized debt solution of up to Rs 300 Cr to meet the specific needs of the project.





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**About Tisva:** Inspired by the concept of Tvsa (light) and Tattva (essence), Tisva was launched as the premium range of lighting products by Usha. True to its name, Tisva goes beyond ordinary lighting concepts to offer aesthetic luminaires designed with love to illuminate contemporary homes. We initially started as a premium home decorative lighting brand, but over a period of time we have evolved into an end-to-end lighting solutions brand. Today, Tisva is a one-stop shop for all things lighting – from architectural to decorative and from minimalistic to opulent.

**The Tisva Experience:** If we look at it, the decorative lighting and architectural lighting industry is still very unorganised, and there are players who sell products albeit with a limited shelf life of just about 6 months, so over a period of time, this creates huge gaps for consumers. That is an issue Tisva, as a brand, aims to resolve and our founding philosophy. Ensuring that our consumers get the right products, we give them a 360° experience – this includes detailed lighting consulting, where the customer just has to give us the 2D drawings, as well as walking them through the entire process from consultation to free installations. We aim to offer end-to-end solutions to our consumers from pre-sales to post-sales. Additionally, we also keep three years of spare parts after two years of warranty, meaning the consumer is protected against any broken parts for five years. This becomes critical for consumers buying chandeliers as one damaged crystal/glass can ruin the entire chandelier.

**Our Partner Connect:** On the architectural lighting front our marketing strategy has been going to the clients directly and with the help of professional architects, interior designers, and lighting consultants, who understand the technicalities of our products and therefore are able to explain how it works best for their clients. To put it succinctly, it is our pre-sales consumer experience along with experience within the stores and post sales service that's made our customers our biggest advocates – their word of mouth is the best marketing we have. We currently have 14 stores, and very soon we'll be opening the 15<sup>th</sup> store Kolkata. We feel word of mouth has been our marketing strategy. We have grown manifold since 2014 and have serviced over 10,000 households with complete lighting solutions across India.

In the North, we have stores in Chandigarh,

Ludhiana, Jalandhar, Dehradun, and Delhi. In the West and South, we are present in Mumbai, Ahmedabad, Baroda, Bengaluru, and Hyderabad. We will soon make a debut in the East with a store in Kolkata.

**Evolution of the brand:** We understand that technology is fast evolving and in order to stay ahead of the curve, we absolutely must launch products that are technologically and aesthetically innovative on a regular basis. We embrace the philosophy 'beauty behind every piece' and our focus is on combining cutting-edge technology with impeccable designs. We pride ourselves in bringing numerous world-class, industry-first lighting technologies to India, some of which include liquid lighting with micro-fluid technology, human-centric lighting as well as ultra-low glare ratio technology.

Our latest products are made of Mitsubishi acrylic with microfluidic technology, which transmits more than 90% of the light through the surface, and its malleability allows for innovative and aesthetic designs. Our latest collection features designs that are inspired by gliding birds, and by the hat.

At Tisva, we believe that it is imperative that technology and design go hand in hand. Further, with features such as dimmability and tunability, we give our consumers ease of use with technology that is accessible. This allows them to control the dimmability so they can change colors as the sun moves from morning to evening from warm yellow, to cool white natural light and then again warm yellow as the day ends. This helps them maintain a healthy circadian rhythm and lowers the strain on the eyes as well. Our customers in particular, love the simplicity and versatility of dimmability and tunability – which is easy-to use and comfortable for everyone across generations.

We have recently also launched a range of anti-glare products, where the output of light is not compromised, but through innovative optics, the glare can be reduced – and our products have reduced this by almost 50% with a glare ratio of less than 10. Our new launches under Tisva's signature series are products that reflect the latest innovations in the lighting industry. The core of our business is ensuring that we offer the right consumer experience, and this has been the strength of our strategy.

We currently have a large number of products in the pipeline, probably more than any other brand in the industry. From architectural to general and decorative lighting, Tisva has something to offer every Indian home. We attribute our growth in equal parts to quality and



aesthetics of our offerings as well as the immense support and acceptance we have received from the industry and our customers, all of which has enabled us witness a 10X increase in our ticket size in the past five to six years.

**Future Goalposts:** Our vision for the coming years is to continue expanding and enhancing the experiences of our customers. We also aim to further strengthen our longstanding relationships with architects, interior designers, and lighting consultants who have valued our offerings over the years. With the industry evolving from 2D to 3D, we are also working on AR and VR technology to offer and support both our customers as well as the stakeholders who work with us.

Tisva's long-term objective is to continue expanding and enhancing the customer experience. The result of our work with the consumers is essentially reflected in the numbers. Our relationship with architects, interior designers, and lighting consultants who have valued our offerings over the years, continues to grow stronger and wider. We hope to further our relationship with them by providing them with cutting-edge goods and services.





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LED based human-centric lighting is controllable and tunable across a spectrum of correlated color temperatures (CCTs) to evoke particular human biological responses and behavior in well-designed indoor environments.

Recent innovations in human-centric lighting (HCL) focus on enhancing well-being, productivity, and health by considering individuals' biological and emotional needs. These advancements include tunable white lighting, which allows users to adjust color temperature and intensity to mimic natural daylight patterns. Circadian lighting systems automatically adjust lighting throughout the day, promoting better sleep and mood regulation. Personalized lighting controls enable users to tailor lighting environments based on preferences and tasks. Dynamic lighting in workplaces helps reduce eye strain, increase alertness, and improve concentration. Emotional lighting systems create atmospheres that support relaxation, reduce stress, or stimulate creativity using different colors and intensities. Integration with the Internet of Things (IoT) allows for connectivity and control, enabling lighting to respond to occupancy, ambient light levels, and user preferences. Biometric feedback systems personalize the lighting experience by monitoring metrics and adjusting lighting parameters in real-time.

## ELECTRICAL FIRE & ITS ROOT CAUSES: UNDERSTANDING THE IMPORTANCE OF SAFETY

Electrical negligence is a major cause of accidents and loss of lives. Shockingly, over 40% of building fires are attributed to electrical issues, often stemming from improper connections, short circuits, overloading, faulty insulation in household appliances, and inadequate maintenance. These fires can start unexpectedly, originating from seemingly harmless sources such as hair dryers or overused phone chargers. It is crucial to address the root causes of electrical fires to prevent such incidents from occurring and protect lives and property.

### Balancing Quality and Price

The cable industry plays a vital role in ensuring electrical safety. However, the emergence of numerous local players has led to a decline in prices, often at the expense of compromised quality. This

compromises the reliability of cable lines, leading to deteriorating climatic characteristics such as heat resistance, cold resistance, and moisture resistance. Similarly, prioritisation of cost over quality, increases the risk of fire incidents. Cable manufacturers must raise awareness among end customers regarding the risks associated with installing low-quality wires and cables. While some customers prioritize safety over cost, but the number remains relatively low.

### A Call for a Stricter Regulatory Framework

To prevent electrical fires, there is a pressing need for a comprehensive and legally binding regulatory framework that emphasizes electrical safety in both public and residential buildings. The current National Disaster Management Authority (NDMA) guidelines

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cover fire safety requirements for public buildings but lack clear guidelines for electrical safety. The National Building Code (NBC) of India, through their recommendatory, expected to incorporate the mandatory recommendation into local building bylaws. State governments must work towards enforcing regulations that mandate the use of quality electrical equipment and require regular maintenance and updates by builders and contractors.

Recently, the Maharashtra state government passed a fire safety bill mandating the presence of fire safety officers and supervisors in high-rise buildings with 22 floors or more. Additionally, both residential and industrial buildings engaged in hazardous activities must implement an Internet of Things (IoT) enabled fire safety mechanism. Such initiatives are steps in the right direction, highlighting the importance of fire prevention measures and the use of advanced technologies.

### A Long Journey Ahead

Despite periodic reviews and safety measures, there remains a significant gap between expectations and reality. The industry and the government must collaborate closely to bridge this gap. The industry can provide insights based on ground realities, while the government can leverage its authority to implement relevant suggestions. Stricter regulations and policies are necessary to standardize electrical and fire safety across India. For instance, the industry can work with the government to formalize and enforce legislation for the use of fire survival cables and wires in high-rise buildings, malls, hospitals, and schools—places with high population density. Such measures can significantly reduce the number of fire-related deaths.

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**Mr. Milind Ghongde**

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LUMAPRO LEDs BY Greatwhite recently launched , HONEYCOMB RECESSED LED DOWN LIGHT, a pinnacle of modern design and functionality. With its sleek profile and small height, this recessed down light seamlessly integrates into any space, bringing a touch of elegance to hospitality and high-end residential projects. The HONEYCOB is equipped with an antiglare, honeycomb filter, ensuring optimal visual comfort and a glare-free lighting experience. Designed for professional installations, this down light illuminates with precision, highlighting the finest details and creating a welcoming ambiance. Crafted with meticulous attention to quality, the GREATWHITE guarantees long-lasting performance and energy efficiency. Illuminate your space with the HONEYCOMB RECESSED LED DOWN LIGHT and indulge in the perfect blend of style, functionality, and sophistication.

## Key changes in GST rates and compliance measures

In terms of recommendations relating to GST rates on goods, it has been decided to reduce the rate on uncooked/unfried snack pellets from 18 per cent to 5 per cent. It also decided to exempt IGST on imported medicines and also Food for Special Medical Purposes (FSMP) used in the treatment of rare diseases listed under the National Policy for Rare Diseases, 2021. It was also decided to clarify that supply of raw cotton including kala cotton, by agriculturists to cooperatives is taxable. GST on imitation zari thread or yarn is reduced from 12 per cent to 5 per cent. The council also decided to reduce the GST rate on LD slag from 18 per cent to 5 per cent to encourage better utilisation of this product and for protection of the environment. GST rate on fish soluble paste was also reduced from 18 per cent to 5 per cent.

Further, the GST council also reduced the GST rate from 18 per cent to 5 per cent on foods served in cinema halls. "The GST Council's decision to levy GST at 5 per cent on food and beverages supplied in cineplexes is a welcome relief to consumers and businesses alike. This is a positive development for the Indian economy, as it will boost consumer spending and encourage investment in the entertainment sector. It is also a sign that the GST Council is committed to simplifying the tax regime and making it more business-friendly," said Saurabh Agarwal, Tax Partner, EY.

The GST Council has also recommended the rules governing appointment and conditions of President and Members of the proposed GST Appellate Tribunal for enabling smooth constitution and functioning of GST Appellate Tribunal. It also recommended that the

relaxations provided in FY 2021-22 in respect of various tables of FORM GSTR-9 and FORM GSTR-9C be continued for FY 2022-23. Further, for easing compliance burden on smaller taxpayers, exemption from filing of annual return for taxpayers having aggregate annual turnover upto Rs 2 crore, to be continued for FY 2022-23 also. The council said a circular would be issued to provide clarification regarding TCS liability in cases where multiple e-commerce operators (ECOs) are involved in a single transaction of supply of goods or services or both.

Meanwhile, the GST Council also announced measures clarifying that mere holding of securities of a subsidiary company by a holding company cannot be treated as a supply of services and therefore, cannot be taxed under GST. "This will be a significant relief to the taxpayers and also will put to rest the controversy surrounding the specific entry in the Services Accounting Code 997171 which covers Services of holding equity of subsidiary companies. While this is a first one, there still remains a lot of debate and interpretational issues around the deemed supply provisions specifically for cross border transactions. Industry should continue its engagement with the policy makers on these aspects," said Mahesh Jaising, Partner, Deloitte India.

He further explained that input service distributor is a concept borrowed from the Service Tax regime which requires input tax on common services to be distributed to different registrations of the same PAN as per the prescribed rules. "While the provision has been there since July 2017, ambiguities have been raised due to the language of the law and clarifications in early days of law about the concept being optional in nature," he said, while adding that this will be a huge relief to the industry as a whole and lay to rest disputes around this.





## Maharashtra Becomes First State To Announce Green Hydrogen Policy With An Outlay Of Rs 8,500 Crore; Here Are The Key Features

In a move to promote renewable energy, the Maharashtra state cabinet on Tuesday (4 July) approved the state's Green Hydrogen Policy.

Maharashtra, thus, became the first state to announce a policy for green hydrogen — hydrogen produced by splitting water by electrolysis using renewable energy.

The state cabinet also sanctioned a budget of Rs 8,562 crore for the implementation of the policy by way of subsidies and benefits to companies generating the green hydrogen.

The policy aims to "make Maharashtra a



leader in green hydrogen and its derivatives ecosystem in the country". The current hydrogen demand of the state is 0.52 million tonnes per annum

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and may reach 1.5 million tonnes by 2030.

The state policy is in line with the National Green Hydrogen Mission (NGHM) approved by the Union Cabinet in January 2023 with an outlay of Rs 19,744 crore from FY 2023-24 to FY 2029-30.

The overarching objective of the National Green Hydrogen Mission is to make India a global hub for production, usage and export of Green Hydrogen and its derivatives.

To achieve the above objectives, the Mission will build capabilities to produce at least 5 Million Metric Tonne (MMT) of Green Hydrogen per annum by 2030, with potential to reach 10 MMT per annum with growth of export markets.

### Green Hydrogen

Hydrogen is a key industrial fuel that has a variety of applications including the production of ammonia (a key fertilizer), steel, refineries and electricity.

The energy industry refers to different 'types' of hydrogen to differentiate how it is produced. Although the production of hydrogen remains primarily 'grey' at the moment, the future of hydrogen is 'green'.

The vast majority of industrial hydrogen is currently produced from natural gas through a conventional process known as steam methane reforming (SMR). The standard SMR process produces what is known as Grey Hydrogen and has the major disadvantage of releasing large quantities of by-product CO<sub>2</sub> into the atmosphere - the main culprit for climate change.

Grey hydrogen has increasingly been produced also from coal, with significantly higher CO<sub>2</sub> emissions per unit of hydrogen produced so much that it is often called brown or black hydrogen instead of grey.

The diverse pathways to produce hydrogen mean we can produce it using renewable energy sources, such as wind or solar. That makes green hydrogen the cleanest option - hydrogen from renewable energy sources without CO<sub>2</sub> as a by-product.

Green hydrogen is defined as hydrogen produced via electrolysis, the splitting of water into hydrogen and oxygen with electricity generated from renewable energy sources such as solar or wind. This

is the most environmentally sustainable way of producing hydrogen

### Key Features

- The policy aims to incentivize projects that procure renewable energy through open access, whether from in-state or out-of-state power distribution companies, power exchanges, or for self-consumption.
- According to the policy, there will be a 50 per cent concession in transmission charges and a 60 per cent concession in wheeling charges for the next ten years from the implementation of the project.
- Standalone power plants will receive a 100 per cent concession in power tariff for the next ten years, while hybrid power plants will receive this concession for the next 15 years. Additionally, both types of plants will be exempted from cross subsidy and surcharge.
- Projects related to green hydrogen production will also need to be registered with the Energy Office.
- Land designated for green hydrogen projects will receive complete exemptions from local body tax, non-agricultural tax, and stamp duty.
- A subsidy of Rs 50 per kg will be provided for blending green hydrogen into gas for a period of five years.
- First 20 green hydrogen refueling stations will receive a 30 per cent capital cost subsidy, with a maximum limit of Rs 4.50 crore.
- First 500 green hydrogen-based fuel cell passenger vehicles will be eligible for a capital cost subsidy of up to Rs 60 lakh per vehicle, subject to a 30 per cent subsidy.
- Rs 4 crore per annum for ten years for recruitment of skilled manpower, their training, skill development, single window facility



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## Govt floats tender to set up 4.5 lakh tonne green hydrogen production facility in India

According to the tender document, the total capacity available for bidding is 4.5 lakh tonne per annum including 4.1 lakh tonne under Technology Agnostic Pathways and 40,000 tonne under Biomass Based Pathways.

Solar Energy Corporation of India (SECI) has floated a tender for setting up a production facility of 4.5 lakh tonne of green hydrogen in India under the Strategic Interventions for Green Hydrogen Transition (SIGHT) scheme. SECI is a Government of India enterprise under the administrative control of Ministry of New & Renewable Energy (MNRE). It is a nodal agency for implementing various schemes for renewable energy in the country. According to the tender document, the total capacity available for bidding is 4.5 lakh tonne per annum including 4.1 lakh tonne under Technology Agnostic Pathways and 40,000 tonne under Biomass Based Pathways.

The total capacity to be allocated under this tender is 450,000 tonne per annum of green hydrogen

(GH2), it stated. It provided that a bidder, including its parent, affiliate or ultimate parent or any group company shall submit a single bid undertaking to set up a GH2 production facility. The projects shall be quoted in multiples of 500 tonne only, it stated. Under the Technology Agnostic Pathways (Bucket I), minimum bid capacity would be for 10,000 tonne while maximum would be 90,000 tonne.

Under Biomass Based Pathways (Bucket II), the minimum bid capacity would be 500 tonne while maximum would be 4,000 tonne.

The maximum time allowed for commissioning (SCD) would be 30 months from the date of the Letter of Award.

The tender was floated on July, 10, 2023 and pre-bid meeting is scheduled on July 28, 2023. Hard copies of the bids can be submitted by September 11, 2023 and these would be opened on September 12, 2023.



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