

ECAM

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PROFESSIONAL DEVELOPMENT &
TECHNOLOGY UPGRADATION



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First of all Happy New Year 2024. Wishing you all a prosperous and healthy New Year.

Annual General Meeting (AGM) of our organization was held in Mumbai on 16th December. Around 350 members brothers and sisters from all over the state participated in this. About seventy members from Pune Division registered their participation in this. This turned out to be a remarkable thing.

The annual general meeting is an important platform for the members to present their problems, in which many members participated by presenting their views.

Friends, not only in India but in the entire world there are hundreds of years old organizations to count on fingers, in this our organization ECAM comes.

It is indeed a matter of great admiration and pride in my eyes that we are a member of such an old organization, which has established and maintained it for a hundred long years.

I consider myself fortunate to have the opportunity to work for members like you in the form of President. The first general meeting of the term of this presidency was held in a very flamboyant and playful atmosphere. Congratulations and thanks to all the members present on behalf of all the Board of Directors.

The centenary year of the organization is being celebrated next year. On the occasion of this centenary year, we are organizing many programs throughout the year. The Centenary Year Inaugural Program will be celebrated on Thursday 11th January in Yogi Hall, Mumbai.

Your presence is very important for such a program. Everyone should participate in this with their families and enhance the beauty of this event. Without the presence of all of you, this program is impossible to complete.

All honorable members brothers and sisters, please keep your date of 11th January 2024, followed by ECAMEX24 a grand Exhibition on Electrical Safety keeping international standards at Bombay Exhibition Center (BEC) on 27th, 28th, 29th February 2024. We are organizing a grand exhibition along with various seminars with industry experts in these three days.

ECAM provides a great opportunity for suppliers, manufacturing companies to market their products to contractors. We should invite our suppliers manufacturing companies to participate in this, further organizing department wise programs like technical seminars, trips, family entertainment programs, trips for the members throughout this centenary year. Different committees are working on this day and night to make it flawless series of events.

Members, My brothers and sisters, we should participate in this work. We all need your cooperation to make different programs organized throughout this centenary year. We should all cooperate and join that's only a humble request.



Waman Bhure

President - ECAM



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नमस्कार मित्रहो,

हे नवीन वर्ष मात्र आपणा

सर्वासाठी कसोटीचे, आव्हानांचे आणि मेहनतीचे ठरणार आहे. कारण आपण इकॅम शताब्दीचे शिवधनुष्य हाती धारण केले आहे. शंभर वर्षातून एकदाच येणारा हा क्षण आहे. आपल्यापैकी काहीजण असे भाग्यवान आहेत की ज्यांनी आपल्या लहानपणी वडिलांबरोबर इकॅमचा रौप्य महोत्सव पाहिला, तरुणपणी सुवर्ण महोत्सवात भाग घेतला, नंतर प्लॅटिनम महोत्सवाची अनुभवला आहे आणि ते या वर्षी आपला शताब्दी महोत्सवही पहाणार आहेत. पण या लोकांना शतकोत्तर रौप्य महोत्सव मात्र कदाचित मिळणार नाही.

काही जणांना पहिला रौप्य महोत्सव मिळाला नसेल पण पुढचे सर्व महोत्सव पहाता आले आहेत. काही जणांची एन्ट्री सुवर्ण महोत्सवादरम्यान झाली आणि आज ते शताब्दीमध्ये उत्साहाने भाग घेतील. पण जे इकॅममध्ये सन २००० नंतर आले त्यांच्यासाठी हा पहिलाच महोत्सव आहे आणि पुढची वाटचालही त्यांनाच करायची आहे.

असा वय वर्षे २० ते ९०चा आपला बृहत् परिवार आहे. मोठ्यांचे



जाहीर निमंत्रण

सर्व सदस्यांनी आपल्या पत्नीसह इकॅम शताब्दीच्या उद्घाटन समारंभास यावे, ही विनंती.

गुरुवार, दि. ११ जानेवारी २०२४ रोजी सकाळी ११.०० वाजता

स्थान - योगी सभागृह, दादर, मुंबई. संपर्क - इकॅम, मुंबई ऑफिस



नवीन वर्षाच्या सर्वांना हार्दिक शुभेच्छा!

मार्गदर्शन आणि तरुणांचा उत्साह यांचा हा अनोखा मिलाप आहे.

आज जगही फार बदलले आहे. टेक्नॉलॉजी प्रचंड विस्तार पावली आहे. मोबाईल, लॅपटॉप, सोशल मिडिया, डिजिटल मिडिया, जिपिएस, गुगल या सर्वांनी जगाला एकदम जवळ आणले आहे. गेल्या २५ वर्षांतला हा बदल इतका प्रभावी आहे की जणू जगात एक नवी क्रांतीच घडली आहे. अशावेळी आपण इकॅमची शताब्दी साजरी करणार आहोत. आपल्याला असा एक आदर्श निर्माण करायचा आहे की तो पुढील ५० वर्षे तरी नक्की गिरवला जाईल. 'मी इकॅम शताब्दी'चा साक्षीदार आहे असे आपल्याला अभिमानाने म्हणता येईल असा आपला यामध्ये सहभाग असला पाहिजे.

मित्रहो, गेले १० महिने या शताब्दीची आपण तयारी करत आहोत. पण अजून आपले खूप असे सदस्य आहेत ज्यांनी हे कार्य फारसे मनावर घेतलेले दिसत नाही. माझी सर्वांना कळकळीची विनंती आहे की आयुष्यात एकदाच येणारी ही अनमोल संधी एकाही इकॅम सदस्याने गमावता कामा नये. कंबर कसून प्रत्येकाने कामाला लागावे आणि आपली संघशक्ती प्रगट करावी. उद्घाटन समारंभ, इकॅमेक्स, डायरी, सोव्हेनियर, सेमिनार, सहली, जनसंपर्क, सोशल मिडिया, पत्रकार परिषद, विद्युत सुरक्षा असे असंख्य विषय आहेत. तरुणांपासून ज्येष्ठांपर्यंत प्रत्येकजण करू शकेल अशी अनेक कामे आहेत. फक्त आपण निर्धार करणे आवश्यक आहे. नुकत्याच झालेल्या एजीएममध्ये जो उत्साह दिसून आला तसा पूर्ण महाराष्ट्रात निर्माण करायचा आहे. यासाठी प्रत्येकाने निदान एक संकल्प तरी करावा. यात मुख्य काम आहे जास्तीत जास्त लोकांना भेटून शताब्दीची माहिती देणे. आपले सदस्य सोडले तरी आज महाराष्ट्रात किमान २० हजार विद्युत ठेकेदार आहेत. ते सर्व आपले भावी सदस्य आहेत असे समजून त्या सर्वांना भेटले पाहिजे. त्यांना इकॅमची माहिती दिली पाहिजे. तसेच या इलेक्ट्रिकल क्षेत्रातील उद्योजक, व्यापारी, सल्लागार, इंजिनियर्स, आर्किटेक्ट यांना संपर्क करण्याची एक जबरदस्त मोहीम आखण्याची गरज आहे. या व्यतिरिक्त समाजातील मान्यवर, राजकीय नेते, विविध संघटनांचे नेते आणि जनसामान्य या सर्वांना आपल्या शताब्दी महोत्सवात कसे सहभागी करता येईल याची योजना करायची गरज आहे. आपण ती करूया आणि आपल्या हजारो सदस्यांच्या एकत्रित शक्तीने ती योजना यशस्वी करूया हाच आपला नवीन वर्षाचा संकल्प आहे. सर्व जण यामध्ये सहभागी होतील असा मला विश्वास आहे.

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The date of 11 January 2024 is a historic day in the life of Ecam.

What is Ecam?

Ecarn, Electrical Contractors' Association of Maharashtra is the national level body of Licensed Electrical Contractors, Electrical Traders and associates like electrical manufacturers, engineers, consultants and similar service providers in India and was founded in 1925.

ECAM has a PAN Maharashtra presence with its headquarters in Mumbai and regional offices in Pune, Nasik, Thane, Kokan, Ahmednagar, Dhule, Jalgaon, Western Maharashtra.

Why Ecarn? What is the purpose?

ECAM vision is "To unite and form themselves into a well knit organisation, whose aim is to adopt standards of high business morality and skilled workmanship in pursuance of their Activities".

ECAM has become a pioneer association of the Electrical sector having thousands of active members, encompassing the



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complete value chain in installation, maintenance, repairs and liaisoning of all electrical requirements. The membership base of ECAM ranges from individual wiremen to small, medium and large companies. ECAM is considered as the VOICE of the electrical contractor fraternity.

ECAM members have contributed to more than 70% of the electrical installations in Mumbai and Maharashtra. ECAM members provide direct and indirect employment to over 100 thousand persons across the value chain.

What is the contribution of Ecarn to the electrical industry?

ECAM regularly organises Technical Seminars, Conferences, Workshops etc and works closely with Government agencies, State Electricity Boards, Standardisation bodies, R & D organisations and Testing institutes for formulating Indian Standards for the Electrical sector. ECAM forms various committees like Power Supply Committee, Technical Data book committee, Editorial committee for IECT, Public Relation committee, Taxation committee and Arbitration & Legal committee through which the problems of members are resolved and at the same time, interaction is done with Government bodies and Trade Associations.

What is the media presence of Ecarn?

ECAM publishes a monthly trade journal IECT, Indian Electrical Contractor & Trader, since 1957. It is professionally published by an agency, Campaign Masters since 1999. IECT is a continuing information advisory service for the electrical contractors, traders, manufacturers, consultants, electrical engineers, power sector and Govt officials. It publishes technical articles, interviews of industry leaders and the latest development news of the sector. The editorial contents of IECT include News, Policy Notifications, impact analysis and Monthly performance reports. A special Marathi section is published every month for the readers of rural Maharashtra. Ecarn also has presence on all the platforms of social media.

ECAM organises trade exhibitions on regular basis. Ecarnex exhibition in Mumbai has five editions so far. In addition, we have Pune Expo, Nasik Expo, Nagar Expo, Dhule Expo and Satara western Maharashtra Expo happening every year.

ECAM is now a fruitful course of affording safeguards to the electrical contractors and service providers and for rendering service to the electrical consumers. ECAM members today are serving various types of consumers in many metropolitan cities and towns having highest density of population per square kilometre.

Ecarn demands....

ECAM vehemently demands that the electric contracting work should only be done by Licenced Electrical Contractors. This policy will reduce the electrical accidents and provide Electrical safety to one and all.

To sum up, we can say that ECAM is an Association to unite, educate and train the contracting fraternity and at the same time, to serve the entire society by giving quality services.

We congratulate Ecarn on the occasion of its Centenary and wish a grand success for every activity during the Centenary year.

Satish Sinnarkar Editor, IECT

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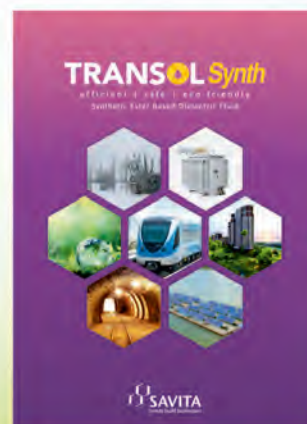
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Insulation Coordination Studies



Insulation Coordination Studies – Electrical power systems are highly nonlinear and dynamic in nature: circuit breakers are closing and opening, faults are being cleared, generation is varying in response to load demand and the power systems are subjected to atmospheric disturbances that is lightning. Thus, the electromagnetic and electromechanical energy is constantly being redistributed in the power systems, among the system components. These energy exchanges cannot take place instantaneously but take some time period which brings about the transient state. The energy status of the sources can also undergo changes and may subject the system to higher stresses resulting from increased currents and voltages.

Objective Insulation Coordination Studies

The objective of the insulation coordination study

is to verify that the already selected equipment is appropriate and it satisfies the performance criteria required for overvoltage switching surge and overvoltage caused by lightning.

Insulation coordination also helps us to determine the selection and verification of surge arrester at right and to limit the various types of overvoltage.

There are various types of studies including in insulation coordination study:

1. Temporary Overvoltage (TOV)
2. Switching Overvoltage (SFO)
3. Fast Front Overvoltage (FFO)
4. Very Fast Front Overvoltage (VFFO)

REFERENCE

Insulation Study is carried out in accordance with the methodology and guidelines outlined in

- IEC Standard 60071-2: Application guide
- IEC Standard 60071-4: Computational guide to insulation co-ordination and modelling of electrical networks
- CIGRE WG 33.01: Guide to procedures for estimating the lightning performance of transmission lines





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Energy Conservation Day: A Call to Action for Sustainable Future



Energy Conservation Day is observed on December 14th every year to raise awareness about the importance of conserving energy and promoting sustainable practices. The day serves as a reminder of the critical role that energy plays in our daily lives and the need to use it judiciously to ensure a sustainable and secure future for our planet.

Energy conservation is the practice of using less energy while maintaining the same level of productivity and comfort. It is a crucial aspect of sustainable development, as the world grapples with the challenges of depleting natural resources and the environmental impact of excessive energy consumption. Energy Conservation Day encourages individuals, communities, and nations to adopt energy-efficient practices in various aspects of life, including transportation, industry, agriculture, and households.

One of the primary reasons to focus on energy conservation is the finite nature of many energy resources. Fossil fuels, which have been the mainstay of global energy consumption, are not only finite but also contribute significantly to environmental degradation, including air pollution and climate change. By conserving energy, we can reduce our reliance on these depleting resources and mitigate their negative effects on the environment.

Furthermore, energy conservation plays a vital role in addressing the global challenge of climate change. The excessive burning of fossil fuels releases greenhouse gases into the atmosphere, leading to the warming of the planet. Energy conservation measures, such as using renewable energy sources like solar and wind power, can help reduce carbon emissions and combat climate change.

Individuals can contribute to energy conservation in various ways in their daily lives.

Simple practices, such as turning off lights and appliances when not in use, using energy-efficient appliances, and properly insulating homes, can make a significant difference. Additionally, adopting sustainable transportation options, such as carpooling, biking, or using public transportation, can reduce the carbon footprint associated with personal travel.

Businesses and industries also play a crucial role in energy conservation. Implementing energy-efficient technologies, optimizing production processes, and adopting sustainable business practices can lead to substantial energy savings. Governments and policymakers have a responsibility to create and enforce regulations that promote energy conservation and incentivize the transition to cleaner and more sustainable energy sources.

Education and awareness campaigns on Energy Conservation Day are instrumental in fostering a culture of responsibility and mindfulness regarding energy consumption. Schools, colleges, and community organizations can organize events, workshops, and awareness programs to inform people about the importance of energy conservation and empower them to take positive actions.

In conclusion, Energy Conservation Day serves as a timely reminder that the choices we make today regarding energy consumption have a profound impact on the future of our planet. By embracing energy conservation practices, we not only contribute to a sustainable future but also play a role in mitigating climate change and preserving natural resources for future generations. It is a collective responsibility that requires the active participation of individuals, communities, businesses, and governments to create a world where energy is used wisely, efficiently, and sustainably.





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98th AGM of ECAM : Pictorial Report



98th AGM of ECAM was held on Saturday 16th December 2023 at International Convention Center, BSE Tower, Fort, Mumbai. Nearly 275 members attended the AGM.



Shri Amey Kannav conducted the proceedings of the AGM. Shri. Devang Thakur, Gen. Secretary and Shri. Raosaheb Rakibe, Treasurer completed the agenda of the AGM.



Felicitation of New directors of ECAM : Shri Samadhan Patil, Shri Suraj Ahire, Shri Shrikant Ahirrao, Shri Amol Kolapkar and Shri Gopal Kumar Jha



The elected new directors were felicitated by all the regions of ECAM



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H'ble Shri Waman Bhure, President Ecam, gave an inspiring speech. Shri Kadam highlighted the importance of forming a bank for Ecam members. Shri Umesh Rekhe, VP of Ecam, gave details of the entertainment program in the centenary year. Shri Badgujar and Shri Kolhatkar also expressed their views.



The Mumbai team of Ecam members, lead by Shri Kalpesh Patel was felicitated for excellent arrangements made for AGM. Shri Anil Mahajan, chairman of Pune region, was felicitated with his entire team by giving a trophy by President Shri Waman Bhure for the best performance during the year. Shri Vajre was felicitated for his success.



Shri Maruti Mali, chairman, Ecamax, explained the progress of the exhibition being held in Feb 24 in Mumbai. Shri Sachin Fartade, chairman, Centenary inauguration, gave details about the grand event to be held on 11 Jan 24. Shri Prakash Jadhav, chairman, Souvenir committee, updated about the publication of souvenir. Shri Narendra Shindekar, chairman, Diary committee, briefed about the 2024 Ecam diary. Shri Satish Sinnarkar, editor of Iect, spoke about the importance of centenary celebration in a grand way.



Successful Children of ECAM members were duly felicitated



Members were taking active part in the AGM



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New Wireless Light Switch Set To Halve House Wiring Expenses

Explore the potential to reduce construction costs, lower energy bills, and minimize carbon emissions in this game-changing advancement in smart home technology.

Wireless switches have existed for some time, featuring a transmitter on the switch and a receiver near the target appliance. While they have demonstrated their ability to cut material and labor expenses associated with house wiring, their reliance on batteries has been a persistent challenge. This has proved inconvenient for homeowners, especially when dealing with numerous switches in a single residence.

In a groundbreaking development, a researcher at the University of Alberta's engineering department introduced a wireless light switch that could slash house wiring costs by up to 50%. Driven by the pursuit of more efficient and eco-friendly solutions, this wireless switch innovation by Kambiz Moez, the director of electrical engineering, marks a significant leap forward in smart home technology. What sets Moez's system apart is its capacity to function without batteries, drawing energy from ambient sources, such as radio frequency (RF) signals. In this setup, each floor of a building would incorporate one or two RF power transmitters, providing ample energy to power all the switches within the house. Remarkably, Moez has already developed a prototype switch that costs less than a dollar and can be effortlessly mounted

anywhere on a wall. This system is scalable, easily replicable, and adaptable to the unique requirements of homeowners, contractors, and regulatory bodies.

Notably, in 2018, Alberta became the first Canadian province to permit wireless electricity control in new homes, aligning with the current housing crisis in Canada. Moez's innovation holds promise for reducing construction costs, thereby potentially addressing the housing shortage. Moreover, the wireless switch can accommodate various sensors for temperature, humidity, and occupancy. These sensors offer the potential to substantially reduce energy consumption by enabling more competent heating and lighting control. For instance, homeowners can selectively close vents in unoccupied rooms, optimising energy usage in a 3,000-square-foot house.

The system's seamless automation capabilities further enhance its appeal, allowing it to intelligently adjust lighting and other electrical devices as occupants move from one room to another. Ultimately, Moez's innovation holds great promise for not only reducing energy bills but also curbing carbon emissions through more efficient energy management. This light switch is a game-changing innovation in smart home technology and sustainable living. With the potential to revolutionise how homes are wired and managed, it offers a cost-effective and eco-friendly solution that addresses the pressing challenges of our time.



India's industrial growth surges to 16-month high of 11.7% in October

The growth rate of India's industrial output shot up to a 16-month high of 11.7 per cent in October, compared to the same month of the previous year, on the back of a strong performance of the manufacturing, mining and electricity generation sectors, according to figures released by the Ministry of Statistics on Tuesday. The manufacturing sector, which provides quality jobs to young engineers and graduates passing out of the country's universities, posted a double digit growth rate of 10.4 per cent during the month. The mining sector production shot up by 13.1 per cent while electricity generation surged by as much as 20.4 per cent.

However, part of the increase is also due to the fact that the numbers are compared to a low base of the previous year when the industrial growth was low.

Data on the user base classification shows that the output of capital goods, which comprise machines that produce goods and thus, reflect the real investment taking place in the economy, grew at robust rate of 22.6 per cent which augurs well for the economy going ahead.

The output of consumer durables such as refrigerators and TVs also grew in double digits which appears to be a positive sign of demand for these goods picking up in a growing economy.



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ADB backs India's power sector reform with \$250 million loan



The Asian Development Bank (ADB) has given its approval for a \$250 million policy-based loan aimed at enhancing the financial sustainability of India's power sector and promoting the transition towards renewable energy. This policy-based loan would support India's efforts to meet its climate change mitigation targets and will support in lowering obstacles to the expansion of commercial finance for clean energy.

The power sector reform programme (sub-programme 1), is the first component of a two-part initiative focused on enhancing the establishment of markets for power trade and associated ancillary services. Given India's goal of obtaining 50 per cent of its power generation capacity from non-fossil fuel

sources by 2030, this will make the integration of intermittent renewable energy projects easier. Among other things, these policy measures would encourage the utilisation of clean energy sources in the agriculture industry, expedite the adoption of solar and other clean energy technologies, and optimise power plant dispatch to lower emissions.

The loan will additionally facilitate initiatives to enhance the financial viability, corporate governance, and service standards of power distribution companies fostering a favorable setting for private sector investments. The loan will support the execution of a results-oriented incentive-based strategy to enhance the performance of discoms in various aspects such as losses, cost recovery, ensuring proper metering, and timely payment of dues. This approach is crucial for accessing government budget support.

This initiative expands on ADB's efforts in innovative areas like green hydrogen, which is crucial to easing the transition to a more sustainable energy source. ADB will finance capacity building and the execution of policy reforms with grants totaling \$1.5 million from the climate change fund and its technical assistance special fund. The initiative has been developed in collaboration with other development partners, including the German development cooperation through KfW.



MNRE introduces guidelines for upgrading wind turbines with capacity below 2MW

The Ministry of New & Renewable Energy (MNRE) has released the 'National Repowering & Life Extension Policy for Wind Power Projects 2023.' This policy allows for the upgrading of older generation turbines with more efficient ones before reaching the end of their design life. The policy supersedes the 'Policy for Repowering of the Wind Power Projects' from August 5, 2016. It focuses on refurbishing wind turbines for life extension, considering safety and performance assessments based on relevant standards. The goal is to maximize

energy yield per square kilometer of the project area and adopt the latest onshore wind turbine technologies. Eligibility for refurbishment includes non-compliance with the Ministry's quality control order and turbines that have completed their design life, as certified under the type test Certificate or those with a rated capacity below 2 MW, based on commercial or voluntary considerations after 15 years of installation. The National Institute of Wind Energy (NIWE) estimates the country's repowering potential to be 25.406 GW for wind turbines below 2 MW capacity.





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Kerala allocates over Rs 125 billion for green hydrogen valley, green transport corridor



Kerala has designated Rs 0.9 billion for the initial phase of the green hydrogen valley and more than Rs 124 billion for the green transport corridor projects. The allocated budget of Rs 0.9 billion will be used to establish three hydrogen valley platforms, covering the entire hydrogen value chain, including production, distribution, and transportation.

The state plans to create two green hydrogen valleys in Thiruvananthapuram and Kochi. The Department of Science and Technology is currently working on the proposal for the Kochi valley, and efforts are underway to prepare a proposal for the Vizhinjam project. To encourage research and development for affordable and accessible sustainable energy, the European Commission, along with 23 other nations, has launched Mission Innovation. The Department of Science and Technology is accepting applications from organizations to establish hydrogen valleys as part of this initiative.

Kerala's vision includes transforming major transport corridors, such as the west coast canal, coastal, and hill highways, into environmentally sustainable trade corridors. The west coast canal project, with a total cost of Rs 124 billion, includes Rs 24 billion for the project itself and Rs 3 billion

allocated for land acquisition. The hill highway project is estimated to cost Rs 35 billion, while the coastal highway project has a budget of Rs 65 billion. The plan also involves establishing a hydrogen and electric vehicle charging infrastructure network along the Vizhinjam to Kochi corridor.




Sunsure Energy collaborates with Sandoz India to procure 31 million units of renewable energy.

Sunsure Energy Limited has entered into a 25-year agreement to provide Sandoz India with 31 million units of renewable energy. The supply will originate from a 20 MW solar power plant located in Maharashtra. This partnership allows Sandoz India to offset 26 million kg of CO2 annually. Sunsure Energy will establish a dedicated renewable energy plant for Sandoz India, serving as the exclusive power source for the pharmaceutical company. The commitment to green power will be fulfilled through Open Access power supply to Sandoz India's facilities in Maharashtra.



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Fusion Energy Battery: The Future of Power Storage



Summary

Fusion energy batteries represent an advanced concept in energy storage, blending the high-density power generation of fusion reactions with the ability to store and discharge that energy like a conventional battery. This article delves into the feasibility, current research, and potential implications of fusion energy batteries, providing insights into how they might revolutionize power storage in the future.

Understanding Fusion Energy

Before diving into fusion energy batteries, it is essential to understand what fusion energy is. Fusion is the process that powers the sun and other stars, where atomic nuclei combine at extremely high temperatures and pressures to form heavier nuclei, releasing vast amounts of energy in the process. Fusion energy is hailed as a clean, sustainable, and virtually inexhaustible source of power, with water as its primary fuel source in the form of heavy isotopes of hydrogen – deuterium and tritium.

The Concept of a Fusion Energy Battery

The idea of a fusion energy battery combines the principles of nuclear fusion with energy storage technology. Unlike conventional chemical batteries, such as lithium-ion, which store energy through chemical reactions, a fusion energy battery would use the energy generated from fusion reactions to either directly provide electricity or store it for later use. This concept holds the promise of delivering large quantities of energy with minimal environmental impact, potentially solving the intermittency issues associated with renewable energy sources.

Current Research and Feasibility

As of the current state of technology, fusion energy batteries remain theoretical. The challenge lies in miniaturizing the fusion process to a scale that could be utilized within a battery architecture, while also ensuring it is safe, stable, and efficient. The primary hurdles include achieving the necessary conditions for sustained fusion reactions and handling the high-energy neutrons produced during the process.

Top scientific organizations and private companies are in the process of researching and developing practical fusion reactors. However,

significant advancements would be needed before a viable fusion battery could become a reality. Ongoing research in materials science, magnetic confinement, and inertial confinement aims at overcoming these technical barriers.

Potential Implications of Fusion Energy Batteries

If successful, fusion energy batteries could revolutionize energy storage, distribution, and transportation. They could provide high-density, long-duration storage without the degradation issues that affect current battery technologies. This could greatly benefit electric vehicles, aerospace, and even remote and off-grid power systems, making renewable energy more reliable and widespread.

FAQs about Fusion Energy Batteries

Q: What is nuclear fusion?

A: Nuclear fusion is a reaction in which two atomic nuclei combine to form a heavier nucleus, releasing energy in the process.

Q: Are fusion energy batteries currently available?

A: No, fusion energy batteries are still at the conceptual stage, with significant scientific and engineering challenges remaining before they can be realized.

Q: How would fusion energy batteries impact the environment?

A: Fusion energy is considered a clean power source, producing no greenhouse gas emissions and limited long-lived radioactive waste. Thus, fusion energy batteries could significantly reduce the environmental impact compared to fossil fuels.

Q: Where can I find more information on fusion energy research?

A: More information can be found through various scientific organizations and research institutes focused on fusion energy, such as the ITER project (iter.org) or reputable science journals.

It is crucial to note that while the potential of fusion energy batteries is considerable, it is ultimately contingent upon overcoming the substantial scientific and technical challenges that currently exist. The fruition of such technology would mark a significant milestone in the quest for sustainable and clean energy solutions.

Michał Rogucki is a pioneering figure in the field of renewable energy, particularly known for his work on solar power innovations. His research and development efforts have significantly advanced solar panel efficiency and sustainability. Rogucki's commitment to green energy solutions is also evident in his advocacy for integrating renewable sources into national power grids. His groundbreaking work not only contributes to the scientific community but also plays a crucial role in promoting environmental sustainability and energy independence. Rogucki's influence extends beyond academia, impacting industry practices and public policy regarding renewable energy.





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21 firms bid for incentives for electrolyser manufacturing, 14 companies for green hydrogen production



The SECI statement showed that 21 firms have bid for incentives for setting up 3.4 GW of electrolyser manufacturing capacity annually against 1.5 GW on offer.

Reliance Electrolyser Manufacturing, Adani New Industries, L&T Electrolysers and Bharat Heavy Electricals are among 21 companies that have bid for government's incentives to set up 3.4 GW of annual capacity for manufacturing electrolyser, a critical component required for hydrogen production.

According to an official statement, the bids came in response to a tender by Solar Energy Corporation of India (SECI) inviting players for setting up 1.5 GW manufacturing capacity for electrolyser manufacturing. Bids for electrolyser manufacturers were invited on July 7 this year.

On July 10, state-owned SECI also invited bids for selection of green hydrogen producers for setting up production facilities of 4,50,000 tonnes of green hydrogen under the Strategic Interventions for Green Hydrogen Transition (SIGHT) Scheme (Mode-1-Tranche-I).

The SECI statement showed that 21 firms have bid for incentives for setting up 3.4 GW of electrolyser manufacturing capacity annually against 1.5 GW on offer.

The other companies that have bid for incentives under the scheme are Hild Electric Private, Ohmium Operations, John Cockerill Greenko Hydrogen Solutions, Waaree Energies, Jindal India, Avaada Electrolyser, Green H2 Network India, Advait

Infratech, ACME Cleantech Solutions, Oriana Power, Matrix Gas and Renewables, HHP Seven, HomiHydrogen, Newtrace, C. Doctor & Company, Pratishna Engineers and LiveHy Energy, showed the statement.

Meanwhile, 14 companies have evinced interest for incentives to set up production facilities of 5,53,730 tonnes of green hydrogen, against the offered capacity of 4,50,000 tonnes.

These firms are ACME Cleantech Solutions, Torrent Power, UPL, GH4INDIA, Aneeka Universal, Sembcorp Green Hydrogen India, Greenko ZeroC, CESC Projects, JSW Neo Energy, Welspun New Energy, Avaada GreenH2, Reliance Green Hydrogen and Green Chemicals, HHP Two, and Bharat Petroleum Corporation.

In January 2023, the Union Cabinet had approved the National Green Hydrogen Mission (NGHM) with an outlay of Rs 19,744 crore with an aim to make India a global hub for manufacturing this clean source of energy. The mission is expected to lead to the development of 5 million metric tonnes per annum of green hydrogen production capacity by 2030.

The mission aims to develop India as a global hub for production, usage and exports of green hydrogen and its derivatives. It is expected to promote multilateral engagement and collaboration with various international efforts in hydrogen and fuel cells. The mission provides for setting up of two green hydrogen hubs in the initial phase.

The ministry of ports, shipping and waterways has identified three major ports -- Deendayal, Paradip and V O Chidambaranar (Tuticorin) Ports -- to be developed as hydrogen hubs.



Fundamentals of Insulation Coordination

Transient overvoltages occur on all power systems. While arresters can be used to effectively control the most frequent type of such overvoltages, namely those caused by switching operations, transients due to lightning are more difficult to mitigate. How the insulation on any power system is protected is basically an economic issue. Clearly, it would not be reasonable to insulate only for the operating voltage and thereby allow any transients to trigger insulation failure. Similarly, it seems equally unreasonable to insulate for all transient events, even if this were possible. An intermediate solution that requires some reasonable investment in insulation and protective equipment is therefore the compromise most often taken. This carefully selected combination of insulators and arresters is then referred to as insulation coordination.

Insulation coordination has become a well-developed engineering practice and one where the characteristics of the system in terms of insulation and arresters cross paths. The task of coordinating insulation withstand with the desired performance

levels of the system can be significantly different if arresters are applied versus not applied. This coordination task as well as the task of selecting and locating arresters can be simple while at other times complex, requiring computer simulation. However, as a good first approximation, system performance can be modeled using the formulas presented in IEC 60071-1, 60071-2 and 60071-4. These standards cover 99% of what needs to be known to perform a lightning or switching surge insulation coordination study. IEEE 1313.1 and 1313.2 are another excellent source for better understanding this engineering practice while a third highly acclaimed reference is "Insulation Coordination of Power Systems" by Andrew Hileman (1999).

This edited past contribution by arrester expert, Jonathan Woodworth, offered a basic review of fundamentals. The goal was to help power system engineers decide whether or not a comprehensive study needs to be undertaken and what might be the benefits.



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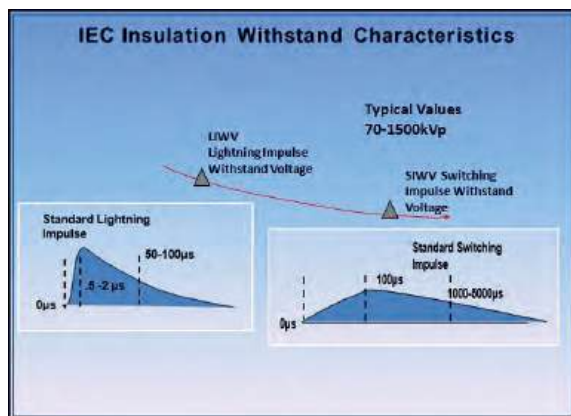
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Insulation Characteristics

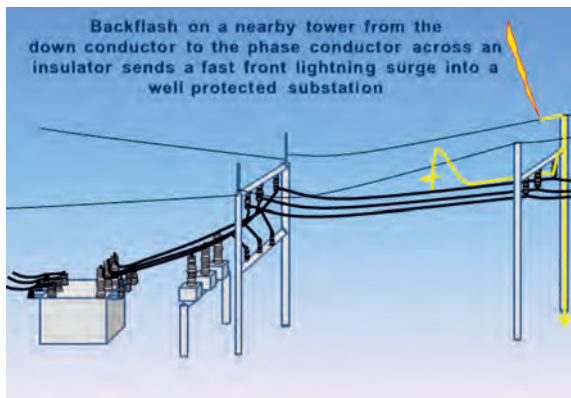
All insulation has limits to its withstand capability. Because it is not possible to insulate sufficiently to withstand all lightning surges, insulators are designed and tested to determine the levels at which they will flash over.

Insulation has two fundamental characteristics: lightning impulse withstand and switching impulse withstand, shown graphically in Fig. 1. The LIWV characteristics of external self-restoring insulation (see Fig. 2) are universally tested and verified under dry conditions. The actual direct length between the

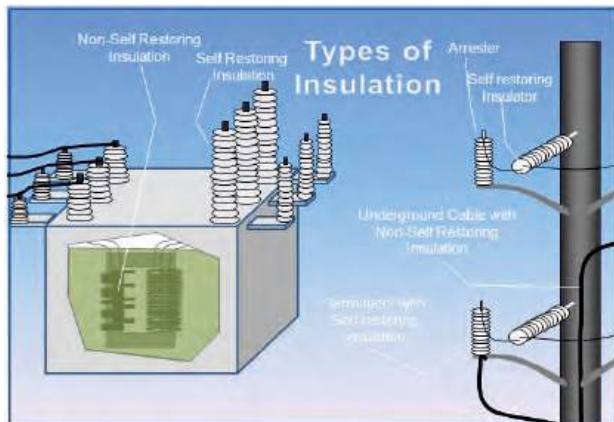


insulator terminals is the most significant factor in determining these fast impulse characteristics. The SIWV of external self-restoring insulation is universally tested under wet conditions because this withstand characteristic depends on an insulator's creepage or leakage distance when wet (this being the total distance between the two terminals along the surface of all sheds).

Substation Insulation Coordination for Lightning Surges



Substations are subject to two types of overvoltages that can stress insulation. Even if a station is well shielded, lightning surges can enter indirectly. All stations connect to the rest of the system via incoming and outgoing overhead conductors. In the case of air-insulated substations, if lightning strikes these lines within the span of one or two towers from the substation, a



surge is likely to enter the station along the conductors.

Even well shielded transmission lines can allow a fast rising surge to enter a nearby station if there is a backflash to the conductor during a switching or lightning surge (see Fig. 3). However, owing to the high insulation withstand on systems above 245 kV, such back-flashovers are much less probable than on systems below this voltage level. Moreover, they are rare on systems of 500 kV or higher.

Fast rising surges on an incoming conductor have a high probability of flashing over insulation in the station if there are no arresters. The amplitude of these incoming surges will be equal to the flashover level of the backflashed insulator. If the only mitigation tool is an arrester at the transformer, it will protect the transformer if properly coordinated with the transformer insulation. The arrester may even protect equipment on the surge side to some extent. In this type of coordination scenario, the probability of occurrence is quite low over the expected life of the transformer, which is probably 30-40 years. However, if a properly selected arrester is not located near the transformer, it only takes one such event to cause failure of a very expensive asset in the circuit.

Another important part of this coordination scenario is the state of the circuit breaker. If the breaker is in the open position, it will become an end point on the circuit. Because endpoints represent a significant change in impedance, voltage will be reflected and cause a doubling effect at the breaker. This voltage doubling effect (i.e. traveling wave theory) will likely cause the breaker insulator to flashover resulting in yet another path for

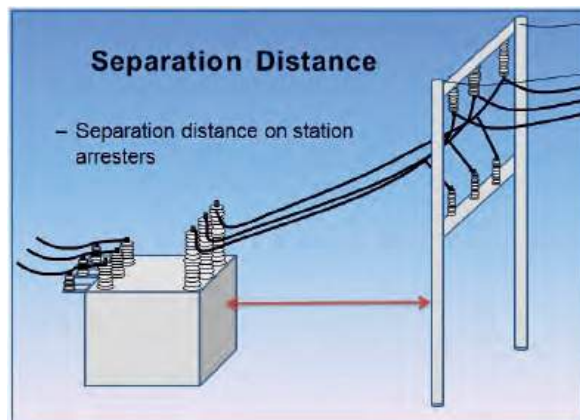
current to flow to ground.

The voltage doubling effect can also occur if the breaker is open during operation to break the power frequency fault back at the tower. Since lightning seldom occurs as only a single stroke, another stroke along the original path can send a second fast rising surge down the same line. Due to these two potential open breaker scenarios, it is advisable to apply arresters at the line entrance of the station to eliminate the voltage doubling at the breaker and an almost certain flashover of its insulation.

Yet another variable to consider in substation coordination for lightning is the number of incoming lines to the station. Fortunately, more lines make it harder to flashover insulators at the substation but, at the same time, increase the likelihood of an incoming surge. Both factors are therefore used in the formulas used to determine proper coordination.

Separation Distance

Separation distance is another important consideration when it comes to protection of substations and their insulation coordination. Arresters will limit or clamp a fast rising surge



according to their own UI characteristics immediately in their vicinity. However, as protected insulation is located further from the arrester, it is increasingly less protected from fast rising surges as described above. (Note: There are no separation distance issues for slow rising surges from switching sources.)

This reduced protection is again due to the effects of traveling waves and reflections. For this reason, the location of and distance between critical insulation points in the substation need to be known before a proper insulation coordination study can be

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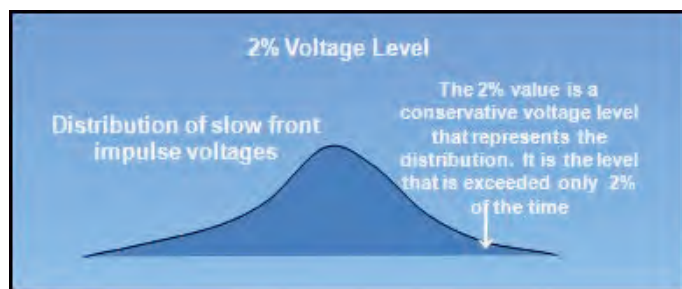
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completed. Of course, the non-self restoring insulation of the transformer is generally of highest consideration when it comes to separation distance issues. The formula for determining the farthest possible distance between an arrester and the transformer it protects is found in the above references as well as in IEC 60099-5. The higher the system voltage, the shorter the separation distance becomes because the ratio of transformer withstand voltage to system voltage is reduced.

Substation Insulation Coordination for Switching Surges

Switching surges are of concern only on systems of 245 kV and above since their magnitudes for systems below that level generally do not exceed 1.5 pu of the system phase-to-ground voltage. This is due to the fact that line capacitance, length and voltage are not high enough to result in challenging surges.

There are numerous sources of slow front switching surges at substations and circuit breakers or switching devices are involved in all forms of such surges. Fault and fault clearing overvoltages are generated in the unfaulted phase when the fault is first initiated and when the voltage is re-established.

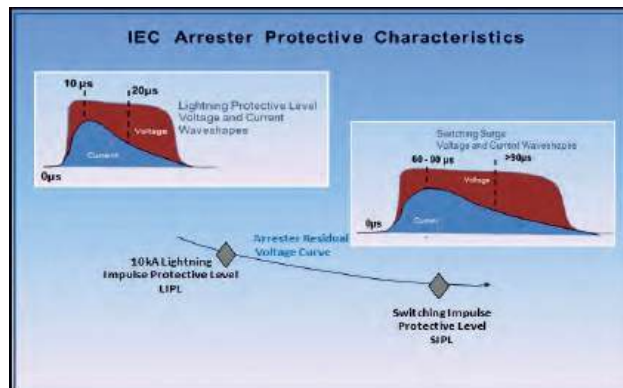
Switching surge statistical level, known as the 2% voltage (see Fig. 5), range from 1-2 per unit of the crest phase-to-ground voltage if they are mitigated with pre-insertion resistors or arresters. However, if they are not mitigated, their levels can easily exceed 2.0 pu. When energization and re-energization surges are mitigated, load rejection surges need attention. Switching inductive and capacitive currents need particular attention when the associated breakers experience pre-strike or restrike. In this case the range of 2% voltages is 2 – 2.5 pu.

There are two methods used in the practice of insulation coordination for this scenario. The deterministic method is used exclusively when applied to non self-restoring insulation. When coordinating self-restoring insulation, statistical (also known as probabilistic) methods are almost

universally used. The basic difference between these methods is that in the deterministic method absolute maximum and minimum values are coordinated. For example, the maximum residual voltage of an arrester for a slow front surge is coordinated and compared to the minimum withstand level of transformer switching impulse. When using the statistical method in determining the flashover rate of the 25 self-restoring post insulators in the substation, the probability of flashover occurrence and magnitude of the surge are used in the calculation. The results are a probability distribution representing the overall switching surge flashover rate.

Arrester Characteristics & Substation Insulation Coordination

Arresters are a fundamental part of insulation coordination in the substation. They are used universally to protect the non self-restoring insulation of power transformers. As stated above, the coordination of non-self restoring insulation is accomplished using the deterministic method. This is because there are no acceptable test methods that can determine the probability of disruptive discharge in oil/paper insulation systems. Therefore the only option is to accept a deterministic approach.



Arresters applied in substations characterized by three voltages relative to insulation coordination; the arrester operating voltage (U_c), the lightning impulse protective level (LIPL) and the switching impulse protective level (SIPL). These are shown in Fig. 6. For non self-restoring insulation, a deterministic comparison is undertaken. After the insulation and arrester characteristics are determined, they are coordinated to ensure there is ample safety margin between them. The comparative graph is shown in Fig. 7 and referred to as the Margin of Protection.

Environmental Effects on Insulation Coordination

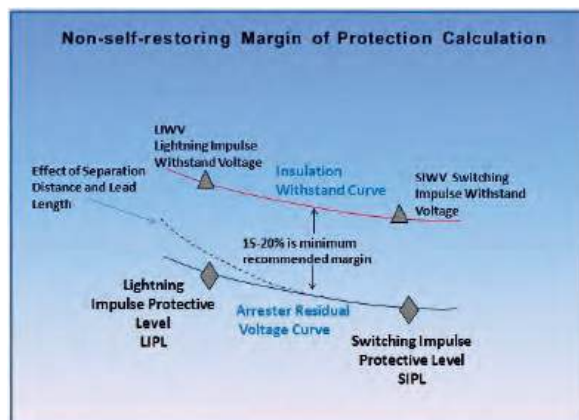
Flashover voltages for air gaps depend on the

moisture content and density of air. Insulation strength increases with absolute humidity up to the point where condensation forms on the insulator surfaces. Because insulation strength decreases with decreasing air density, longer strike distance is required to attain the same flashover voltage at 2000m elevation then at 100m above sea level. A detailed description of the effects of air density and absolute humidity are given in IEC 60-1 for different types of voltage stresses. When determining the co-ordination withstand voltage, it should be kept in mind that most adverse conditions from the strength point of view (i.e. low absolute humidity, low air pressure and high temperature) do not usually occur simultaneously. In addition, at any given site the corrections applicable for humidity and ambient temperature variations basically cancel each other. Therefore, the estimation of strength can usually be based on the average ambient conditions at the location.

When contamination from salt or industrial pollution is present, the response of external insulation to power-frequency voltages becomes important and may dictate longer creepage or leakage distances. This type of contamination does not adversely affect lightning and fast front withstand levels. Flashover of insulation generally occurs when the surface is contaminated and becomes wet due to light rain, snow, dew or fog without any significant accompanying washing effect.

Transmission Line Insulation Coordination

Transmission line insulation coordination is also separated into two categories: lightning and switching. The performance assessment methods are based on expected lightning and switching overvoltages and their corresponding insulation levels. Since line



insulation is self-recovering, their performances are usually determined by the statistical method. The



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basic practices outlined in substation insulation coordination also apply to line coordination.

The sum of the back flashover rate (BFR) and shielding failure rate (SFR) determine the flashover rate (FOR), expressed in flashovers/100km/year. The back flashover rate is the most significant cause of outages on transmission lines. While the fast-rising surge associated with a backflash seldom makes it to the substation due to corona effects, the resulting fault current and breaker operation is felt over the entire length of the system. Oftentimes, a switching surge is experienced immediately following any lightning induced flashover.

Another significant variable usually involved in lightning flashover coordination is the system elevation. The CFO of a line insulator can be reduced by as much as 20% at higher elevations and, since transmission lines often traverse high elevations, this factor must be considered. For higher elevations, insulators might need to be lengthened or arresters applied. Both are excellent means of mitigation.

Switching impulse studies need only be considered for lines exceeding 245 kV. For lines below this level, switching surge magnitudes generally do not overstress normal insulation configurations but, for levels above 245 kV, the stresses can be significant.

The switching surge flashover rate (SSFOR) is determined by numerical integration of the Stress-Strength relationship. The stress in this case is the switching impulse voltage or switching overvoltage (SOV) quantified by a probability distribution. Strength is the switching impulse withstand voltage (CFO). IEC 60071-2 defines this process in detail. If arresters are used to mitigate the SSFOR, the evaluation method is modified to accommodate the change in the SOV since it will no longer be a normal distribution but instead a truncated distribution.

Distribution Systems Insulation Coordination

The practice of distribution system insulation coordination is limited. Still, there are a number of specific deterministic practices that are quite important. The margin of protection calculations for some system configurations can determine when and when not to use arresters. For example, on underground circuits where voltage doubling is common, a margin of protection calculation can reveal that applying an arrester only at the riser pole for systems above 25 kV can be essential. When this is the case, then open point arresters are recommended to provide a lower risk of cable

failure.

On delta distribution systems, a close check of the margin of protection can often show that there is little margin compared to well-grounded systems. This is due to the fact that higher rated arresters are applied to these circuits to give them ample overvoltage withstand capability. By raising the operating voltage of the arrester, the clamping voltage is also increased and the margin between the transformer's withstand curve and the arrester's clamping curve is decreased.

Another factor that can have a major impact on insulation coordination on distribution systems is the lead lengths on arresters. Long leads can effectively render an arrester unable to protect non self-restoring insulation on distribution equipment.

Conclusions

While a number of variables can be involved in the engineering of insulation coordination and which can make this task quite complex, optimization of application of arresters can result in significant savings on insulation cost for all types of systems.



HOMAGE



Shri Shamji Kannav

**Director of RYB Electricals and
father of Mr. Amey Kannav,
Director, ECAM**

**passed away on Sunday
17th December at 10.00 pm due
to a brief illness.**

May God give him Sadgati

विश्वास इलेक्ट्रिकल्सच्या शॉपचे उदघाटन



कसबा विधान सभेचे महाराष्ट्रातील लोकप्रिय आमदार श्री. रवींद्रभाऊ धंगेकर यांच्या हस्ते बुधवार दिनांक ६ डिसेंबर २०२३ रोजी संपन्न झाले. त्या प्रसंगी माझे वर्ग मित्र, मनसेचे नेते श्री. बाळा शेडगे, सोमवार पेठेतील प्रतिष्ठित व्यावसायिक माऊली जाधव हडपसर विभागातील मा. नगरसेवक बंडू तात्या गायकवाड, माझे हितचिंतक श्री. बाळा साहेब (आण्णा) दाभेकर, शिवसेना शहर प्रमुख श्री. संजय मोरे, भवानी विभाग प्रमुख श्री. राजेश मोरे, माझे बंधू श्री दिलीप बहिरट, मा. नगरसेविका कल्पना वाहिनी बहिरट, सोमवार पेठेतील माझे लहानपणीचे मित्र श्री प्रकाश फुलावरे, राजू संगम, नितीन वाबळे, शेट्टी, राजाभाऊ जाधव, प्रमोद घाडगे, वकील मित्र हरी खाडे, सचिन बगरे, पिटू शेट घोडके, माझा सोमवार पेठेतील, पुणे शहर मित्रपरिवार. आमच्या इलेक्ट्रिकल कॉन्ट्रॅक्टर्स असोसिएशनचे पुणे विभागाचे अध्यक्ष श्री. अनिल महाजन, संघटनेचे पुणे व महाराष्ट्रातील पदाधिकारी, २०० हुन अधिक सभासद उपस्थित होते. विश्वास इलेक्ट्रिकल्स शॉप नंबर ११, लंबोदर हौ. सोसायटी, इलेक्ट्रिकल मार्केट जवळ, कसबा गणपती मंदिर समोर, कसबा पेठ, पुणे ११.





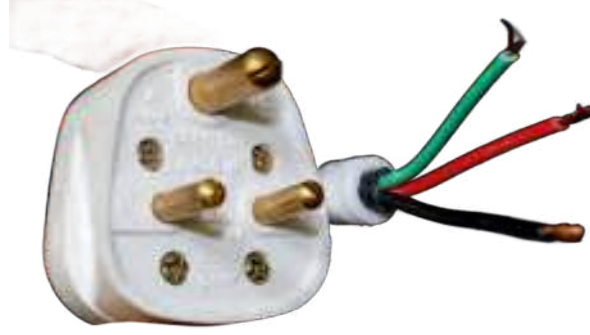
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इलेक्ट्रिक वस्तूंची तिसरी पिन वाचवते तुमचा जीव; असं आहे मुख्य काम



तुमच्या घरांमध्ये अनेक विद्युत उपकरणे असतील, त्या सर्वांना विजेशी जोडण्यासाठी त्यांना जोडलेले तीन पिन प्लग सॉकेटमध्ये लावावे लागतात. पण, प्लगला तीन पिन का असतात? याचा कधी विचार केला आहे का?

तुम्ही तुमच्या घरांमध्ये सकाळी उठल्यापासून रात्री झोपेपर्यंत अनेक विद्युत उपकरणे वापरत असाल. यामध्ये एक गोष्ट तुमच्याही नजरेतून सुटली नसेल. ती म्हणजे जेव्हा तुम्ही त्यांचे प्लग त्यांच्या वापरासाठी सॉकेटमध्ये लावता तेव्हा ते सहसा तीन पिनचे असतात. बहुतेक इलेक्ट्रिकल प्लगमध्ये तीन पिन असतात. पण, तुमच्याकडे असलेल्या सर्वच विद्युत उपकरणांना तीन पिन असेलच असं नाही. काही वस्तू फक्त दोन पिनच्याच असतात. असं का? याचा कधी विचार केला आहे का? एखादी पिन जर कधी खोलून पाहिली तर लक्षात येईल की त्याच्या तीन पिनमध्ये तीन तारा जोडलेल्या आहेत.

या तीन पिनपैकी दोन पिनचा आकार समान आणि सारखा असतो. मात्र, तिसरी पिन या दोन पिनपेक्षा थोडी जाड असते. ही पिन सहसा हिरव्या वायरला जोडलेली असते. या वायरला अर्थ वायर म्हणतात. प्लगमधील या तिसऱ्या पिनचे कार्य काय आहे हे तुम्हाला माहिती आहे का?

सामान्य परिस्थितीत तिसऱ्या पिनमधून आणि हिरव्या वायरमधून कोणताही विद्युतप्रवाह वाहत नाही. या वायरचे एक टोक तुम्ही वापरत असलेल्या विद्युत उपकरणाला जोडलेले असते. आणि प्रत्येक रंगाच्या वायरसह पिन प्लगद्वारे पॉइंटला जोडलेला असतो, तो त्यास अर्थिंग किंवा पृथ्वीशी जोडतो. त्याला इलेक्ट्रिक ग्राउंडिंग देखील म्हणतात.

तेव्हा विजेचा धक्का बसतो

काहीवेळा असे होते की विद्युत उपकरणांमध्ये बिघाड होतो, त्यानंतर या उपकरणात विद्युत प्रवाह वाहू लागतो. अशा परिस्थितीत जर कोणी त्या उपकरणाला स्पर्श केला तर त्याला विजेचा धक्का बसतो. विद्युत शॉकची तीव्रता मानवी शरीरातून किती विद्युत प्रवाह वाहते यावर अवलंबून असते. जर त्याचे हात ओले असतील तर शरीरातून अधिक विद्युत प्रवाह वाहतो. याचे कारण म्हणजे कोरड्या त्वचेपेक्षा ओली त्वचा ही वीजवाहक असते आणि अशा स्थितीत व्यक्तीला भयंकर धक्का बसतो. यामुळे त्याचा मृत्यूही होऊ शकतो.

थर्ड पिनद्वारे अर्थिंगचे काम

तिसऱ्या पिनचा वापर किंवा अर्थिंग ही अशी पद्धत आहे जी सदोष उपकरणांपासून विजेच्या धक्क्यांपासून संरक्षण प्रदान करते. सर्व मेन पॉवरच्या उपकरणांसाठी हे खूप महत्वाचे आहे की ते पृथ्वीशी योग्यरित्या जोडलेले आहेत, प्लगचा तिसरा पिन हेच कार्य करतो.

त्यामुळे विजेचा धक्का लागणार नाही

पॉवरच्या तिसऱ्या पिनद्वारे जर अर्थिंग योग्य प्रकारे केले जात असेल, तर विद्युत उपकरणे बिघडल्याने आपल्या शरीरात विद्युत प्रवाह वाहू लागला, तरी ते फारसे धोकादायक ठरणार नाही किंवा धक्का बसणार नाही. अशाप्रकारे, पॉवर प्लगचा तिसरा पिन तुम्हाला सर्वात जास्त संरक्षण देणारा असतो.



बॅटरी, पेट्रोलवर नव्हे तर समुद्राच्या पाण्यावर चालते इलेक्ट्रिक कार, २ हजार किमी रेंज, ३ सेकंदात १००चं स्पीड

क्वांटिनो इलेक्ट्रिक व्हेईकल (Quantino Electric Vehicle) अनेक वर्षांपासून चर्चेत आहे. ही कार प्रॉडक्शन रेडी मॉडेल आहे. ही कार बॅटरी नसल्याच्या कारणामुळेही चर्चेत आली आहे. म्हणजेच ही इलेक्ट्रिक कार बॅटरीशिवाय चालवता येते. नॅनोफ्लोसेलने ती यूकेमध्ये विकसित केली आहे आणि ती bi-ION टेक्नॉलॉजीवर कार्य करते.

आता, बिडेन इन्फ्लेशन रिडक्शन ॲक्ट लागू झाल्यामुळे, कंपनी यूएस मार्केटसाठी उत्पादन वाढवण्याच्या तयारीत आहे. डिसेंबरमध्ये एका घोषणेमध्ये, नॅनोफ्लोसेलने सांगितले की ते “क्वांट ई-मॉडेलच्या मालिका-उत्पादनासह मोठ्या प्रमाणात bi-ION प्रॉडक्शन फॅसेलिटी तयार करण्यासाठी सज्ज आहे.”

बॅटरीशिवाय कार कशी चालते?

या इलेक्ट्रिक कारला क्वांटिनो ट्रेंटिफाइव्ह असं नाव देण्यात आलं आहे. यामध्ये लिथियम आयन बॅटरीएवजी

समुद्राचं पाणी किंवा इंडस्ट्रियल वॉटर वेस्टचे नॅनो-स्ट्रक्चर्ड बाय-आयओन रेणू इंधन म्हणून वापरला जातो. सोप्या भाषेत सांगायचे तर, समुद्राचे पाणी किंवा इंडस्ट्रियल वॉटर वेस्ट इंधन म्हणून वापरून तुम्ही ही इलेक्ट्रिक कार चालवू शकता.

२०००KM पर्यंत श्रेणी –

हे पाणी बायोफ्यूलप्रमाणं कार्य करते आणि बायोफ्यूल बिनविषारी, ज्वलनशील असून ते घातक नाही. म्हणजेच ते पर्यावरणाला कोणत्याही प्रकारे हानी पोहोचवत नाही. यातून वीज तयार होते, जी कारच्या मोटरला उर्जा देते. कारच्या चारही चाकांवर इलेक्ट्रिक मोटरचा वापर करण्यात आला आहे. एकदा टाकी भरली की कार २००० किलोमीटरची रेंज देऊ शकते. त्याचा कार्बन फूटप्रिंट नगण्य आहे, म्हणजे त्यामुळे कोणतेही प्रदूषण होत नाही.



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मुंबईतल्या लायगर मोबिलिटी या स्टार्टअपने जगातली पहिली ऑटो-बॅलन्सिंग इलेक्ट्रिक स्कूटर ऑटो एक्सपोमध्ये सादर केली आहे. विशेष म्हणजे ही स्कूटर पूर्णतः भारतीय बनावटीची आहे.

इंधनाचे वाढते दर आणि प्रदूषणामुळे अनेकांचा इलेक्ट्रिक वाहनांकडे कल वाढत आहे. सध्या बाजारात विविध फीचर्स असलेल्या इलेक्ट्रिक स्कूटर्स, कार्स पाहायला मिळत आहे. यापैकी काही वाहनांमध्ये खास तंत्रज्ञानाचा वापर केला गेला आहे. सध्या ऑटो एक्सपोमधली एक स्कूटर आणि ती तयार करणाऱ्या दोन व्यक्ती जोरदार चर्चेत आहेत. अर्थात त्यामागे कारणदेखील तितकंच खास आहे. मुंबईतल्या लायगर मोबिलिटी या स्टार्टअपने जगातली पहिली ऑटो-बॅलन्सिंग इलेक्ट्रिक स्कूटर ऑटो एक्सपोमध्ये सादर केली आहे. विशेष म्हणजे ही स्कूटर पूर्णतः भारतीय बनावटीची आहे. यातलं ऑटो बॅलन्सिंग फीचर चर्चेचा विषय ठरलं आहे. याशिवाय स्कूटरमध्ये आणखी काही खास फीचर्स आहेत.

ऑटो एक्सपोचं व्यासपीठ जगभरातील आघाडीच्या वाहन उत्पादक कंपन्यांच्या, प्रगत तंत्रज्ञान आणि वैशिष्ट्यपूर्ण संकल्पना असलेल्या वाहनांच्या सादरीकरणाने सजलं आहे. दरम्यान, या एक्सपोमध्ये देशातल्या दोन आयआयटीयन्सचं वेगळं टॅलेंट पाहायला मिळत आहे. मुंबईतल्या लायगर मोबिलिटी या कंपनीने या ऑटो एक्सपोत जगातली पहिली ऑटो बॅलन्सिंग इलेक्ट्रिक स्कूटर सादर केली आहे. ही स्कूटर पूर्णतः भारतीय बनावटीची आहे. ही स्कूटर लवकरच विक्रीसाठी लाँच केली जाणार आहे.

लायगर मोबिलिटीचे सहसंस्थापक विकास पोतदार हे इंदूरचे असून, मद्रास आयआयटीचे माजी विद्यार्थी आहेत. तसंच आशुतोष हे खरगपूर आयआयटीचे माजी विद्यार्थी आहेत. ही ऑटो बॅलन्सिंग स्कूटर तयार करण्याची कल्पना कशी सुचली, त्यांची वाटचाल कशी होती आणि या ब्रँडच्या नावामागची कहाणी काय आहे, हे सांगितलं.

‘ही स्कूटर आणि त्यातल्या तंत्रज्ञानावर आमचं स्टार्टअप गेल्या सहा वर्षांपासून काम करत आहे. या स्कूटरमध्ये ऑटो बॅलन्सिंग तंत्राचा वापर करण्यात आला आहे. हे मुळात आर्टिफिशियल इंटेलिजन्स अर्थात एआयवर आधारित तंत्रज्ञान आहे. या तंत्रज्ञानामागे गायरोस्कोपिक प्रिन्सिपल ऑफ फिजिक्स हे तत्त्व काम करतं. त्यामुळे ही स्कूटर स्थिर राहते आणि यात वापरल्या गेलेल्या सेन्सरच्या मदतीने ती एक जागेवर स्थिर उभी राहू शकते. यातला सेन्सर स्कूटरभोवतीचा सर्व डेटा जमा करतो आणि एआय त्यावर प्रक्रिया करतं,’ असं विकास पोतदार यांनी सांगितलं. लायगर मोबिलिटीने हे तंत्रज्ञान पूर्णपणे इन-हाउस विकसित केलं आहे. यापूर्वी महिंद्रा ड्युरो स्कूटरवर या तंत्रज्ञानाची चाचणी घेण्यात आली होती. त्याचा व्हिडिओ डेमो कंपनीने दाखवला होता. या वेळी ऑटो एक्सपोमध्येही कंपनीने या इलेक्ट्रिक स्कूटरचा डेमो दाखवला आहे. त्यात एक व्यक्ती स्कूटरवर बसली आहे आणि ती कोणत्याही आधाराशिवाय स्कूटर कमी वेगात मागे-पुढे करताना दिसत आहे.

परंतु, या स्कूटरमध्ये साइड स्टँड देण्यात आलेला आहे. त्याविषयी विकास यांनी सांगितलं, ‘ऑटो बॅलन्सिंग तंत्रज्ञान

स्लो-स्पीडसाठी आहे. कारण स्कूटर जास्त वेगात स्वतःला संतुलित करते; पण जेव्हा स्कूटर चालू असते आणि तिचे सर्व सेन्सर सक्रिय असतात तेव्हाच हे तंत्रज्ञान काम करतं. स्कूटर बंद असेल तेव्हा स्थिर उभं राहण्यासाठी तिला साइड किंवा मेन स्टँडची गरज असेल.'

सर्वसाधारणपणे असं दिसून येतं, की रस्त्यावर स्कूटर चालवताना अनेकांचा स्लो-स्पीडमध्ये बॅलन्स जातो आणि त्यामुळे अपघात होण्याची शक्यता वाढते. याशिवाय सिंगलवर थांबताना किंवा खराब रस्त्यावरून टू व्हीलर चालवताना वाहन चालकाला वारंवार पाय जमिनीवर ठेवावे लागतात. त्यामुळे त्याची दमछाक होते आणि प्रवासही जोखमीचा होतो. तुम्हाला सुरक्षित आणि आरामदायी राइड प्रदान करणं हा ऑटो बॅलन्सिंग तंत्रज्ञान वापरण्यामागचा मूळ उद्देश आहे. चिखलात, खराब रस्त्यांवर कमी वेगाने गाडी चालवत असाल किंवा सिंगलवर थांबत असाल तर तुम्हाला पाय जमिनीवर ठेवण्याची गरज नाही.

या ब्रँडनेमविषयी बोलताना विकास यांनी सांगितलं, 'दुचाकी असूनही ही स्कूटर चारचाकी वाहनाप्रमाणे आरामदायी आहे. स्लो-स्पीडमध्ये असताना किंवा थांबताना तुम्हाला पाय जमिनीवर ठेवण्याची गरज भासत नाही. अशी दोन्ही प्रकारची वैशिष्ट्यं तुम्हाला या स्कूटरमध्ये पाहायला मिळतात. त्यामुळे या ब्रँडला लायगर नावाच्या एका हायब्रिड प्राण्याचं नाव देण्यात आले आहे. हा प्राणी डळेप आणि ढळसशी या दोन प्राण्यांची संमिश्र आवृत्ती आहे.'

या इलेक्ट्रिक स्कूटरचे लायगर एक्स आणि लायगर एक्स प्लस असे दोन व्हॅरिएंट्स लाँच होणार आहेत. लायगर एक्स ही ऑटो बॅलन्सिंग स्कूटर ६० किलोमीटरपर्यंत रेंज देईल. लायगर एक्स प्लस सिंगल चार्जमध्ये सुमारे १०० किलोमीटरपर्यंतची ड्रायव्हिंग रेंज देईल. यातल्या हायर व्हॅरिएंटमध्ये डिटॅचेबल बॅटरी दिली जाणार आहे. ही बॅटरी काढून तुम्ही घरी किंवा ऑफिसमध्ये चार्ज करू शकता. ही बॅटरी साध्या १५ ॲम्पियरच्या घरगुती वापरातल्या सॉकेटला कनेक्ट करून चार्ज करू शकता. या स्कूटरसोबत चार्जर देण्यात येईल. या चार्जरद्वारे बेस व्हॅरिएंटची बॅटरी चार्ज होण्यासाठी सुमारे तीन तास, तर हायर व्हॅरिएंटची बॅटरी चार्ज होण्यासाठी साडेचार तासांचा वेळ लागेल. फास्ट चार्जरदेखील मिळेल; पण त्यासाठी ग्राहकांना जास्त पैसे खर्च करावे लागतील. या स्कूटरमध्ये ४४ आणि जीपीएस कनेक्टिव्हिटी दिली जाणार आहे. सध्या तरी कंपनीने या इलेक्ट्रिक स्कूटरच्या स्पेसिफिकेशन्सबाबत एवढीच माहिती शेअर केली आहे. या वर्षाच्या मध्यापर्यंत कंपनी इतर फीचर्स आणि स्पेसिफिकेशन्स स्पष्ट करील.

विकास यांनी सांगितलं, 'या वर्षी दिवाळीपर्यंत ही स्कूटर अधिकृतपणे विक्रीसाठी मार्केटमध्ये लाँच केली जाईल. त्यापूर्वी जुलैमध्ये या स्कूटरसाठी बुकिंग सुरू होऊ शकतं. ही इलेक्ट्रिक स्कूटर टप्प्याटप्प्याने बाजारात आणली

जाणार आहे. ही स्कूटर पहिल्यांदा कोणत्या शहरात लाँच केली जाणार हे अद्याप स्पष्ट झालेलं नाही; पण ही स्कूटर सर्वप्रथम पुण्यात लाँच होईल, असा अंदाज आहे.'

बेस लायगर एक्स व्हॅरिएंटची किंमत सुमारे ९० हजार रुपये असेल. तसंच लायगर एक्स प्लस व्हॅरिएंटच्या किंमतीविषयी अद्याप खुलासा करण्यात आलेला नाही; पण या व्हॅरिएंटची किंमत यापेक्षा जास्त असणार हे नक्की. एकूण पाच रंगांमध्ये ही स्कूटर बाजारात दाखल होणार आहे. एक्सोदरम्यान, कंपनीने लाल, पांढरा आणि स्काय ब्लू रंगांमधली मॉडेल्स प्रदर्शित केली. कंपनी या स्कूटरसाठी एक एक्सपिरियन्स सेंटर सुरू करणार असून, ऑनलाइन विक्रीचंही नियोजन केलं जात आहे. सुरुवातीला २० हजार युनिट्सचं उत्पादन करण्याचं कंपनीचं उद्दिष्ट आहे, जे भविष्यात एक लाख युनिट्सपर्यंत वाढवलं जाईल.


कंपनीने या स्कूटरचे सर्व पार्ट्स स्थानिक पातळीवर तयार केले आहेत. याचाच अर्थ ही ऑटो बॅलन्सिंग स्कूटर पूर्णतः भारतीय बनावटीची आहे. कंपनीने औरंगाबादमध्ये स्कूटर उत्पादनाचा कारखाना उभारला आहे. 'आत्तापर्यंत जगातल्या कोणत्याही कंपनीने प्रॉडक्शन रेडी लेव्हलवर कोणतंही ऑटो बॅलन्सिंग इलेक्ट्रिक वाहन सादर केलेलं नाही; मात्र होंडा आणि यामाहा सारख्या ब्रँड्सने कन्सेप्ट मॉडेल दाखवलं होतं,' असं विकास यांनी सांगितलं.







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तरुणानं बनवली ६ सीटर इलेक्ट्रिक बाईक, ८ रुपयांत चालते १५० किमी, महिंद्रांनीही केलं कौतुक

धनाचे दर वाढल्याने नवनवीन टेक्नॉलॉजीच्या मदतीने वाहन निर्मात्या कंपन्या इलेक्ट्रिक बाईक आणि कार्सची निर्मिती करत आहेत. पण मोठमोठ्या कंपन्यांच्या वाहनाना तगडी टक्कर देईल, अशा भन्नाट बाईक्स भारतीय तरुणही बनवत आहेत. सध्या एका अशाच ई-बाईकची चर्चा आहे. ही बाईक सहा सीटर असून, तिला बनवण्यासाठी केवळ १०,००० रुपयांचा खर्च आलाय. ही सिंगल चार्जमध्ये १५० किलोमीटरपर्यंत जाते. या बाईकने उद्योगपती आनंद महिंद्रा यांचंही लक्ष वेधून घेतलंय. त्यांनी ट्रिटरवर या बाईकचा एक व्हिडिओ शेअर करत त्यांच्या कंपनीचे चीफ डिझायनर प्रताप बोस यांना इंजिनीअरिंगबाबत एक प्रश्नही विचारला आहे.

आनंद महिंद्रा यांनी खेड्यात बनवलेल्या इलेक्ट्रिक बाईकचा व्हिडिओ शेअर केला आहे. यामध्ये चालकासह ६ लोक बसू शकतात. तसंच ती एका चार्जमध्ये १५० किमी जाते आणि ८ ते १० रुपये खर्च करून पूर्ण चार्ज होते, असं व्हिडिओमध्ये सांगण्यात आलंय.

या इलेक्ट्रिक बाईकची खास गोष्ट म्हणजे यात जास्त फीचर्स नाहीत, पण ग्रामीण भागात फिरण्यासाठी हा एक उत्तम पर्याय आहे. इतकंच नाही तर ही बाईक शेतातही आरामात चालते म्हणजेच ती ऑफ-रोडदेखील उत्तम चालते. ही बाईक

बनवण्यासाठी खर्च १०,००० ते १२ हजार रुपये असल्याचं या व्हिडिओमध्ये सांगितलं आहे. ही बाईक पाहून महिंद्रा कंपनीचे सर्वेसर्वा आनंद महिंद्रा खूपच प्रभावित झाल्याचं दिसतंय.

आनंद महिंद्रा ट्रिटरवर खूप सक्रिय आहेत. ते आपल्या देशातील अशा अनोख्या आणि भन्नाट टॅलेंटचे व्हिडिओ त्यांच्या ट्रिटर अकाउंटवरून शेअर करत असतात. हा व्हिडिओ त्यांनी शेअर करून या बाईकबद्दल आनंद महिंद्रा यांनी त्यांच्या कंपनीचे चीफ डिझायनर प्रताप बोस ज्यांनी महिंद्रा दणत ७०० आणि चरहळपवीर डल्लेळिछ सारख्या कारची डिझाईन्स केली आहेत. त्यांना विचारलं की, 'चेसिससाठी एक सिलेंड्रिकल सेक्शन बनवून आणि बाईकच्या डिझाईनमध्ये किरकोळ बदल करून, ही बाईक जगभरात वापरली जाऊ शकते. या बाईकचा वापर युरोपमधील व्यस्त पर्यटन केंद्रांवर 'टूर बस' म्हणूनही करता येईल.'

'खेडेगाव आणि ग्रामीण भागात ट्रान्सपोर्टसाठी होणाऱ्या नवनवीन शोधांनी मी नेहमीच प्रभावित होतो. तिथं खरंच, गरज ही शोधाची जननी आहे,' असं आनंद महिंद्रा यांनी म्हटलंय. दरम्यान, आनंद महिंद्रा या बाईकमुळे चांगलेच प्रभावित झाले आहेत. त्यामुळे येत्या काळात महिंद्राने अशी बाईक बनवली तर त्यात आश्चर्य वाटणार नाही.



बुलेट ट्रेनपेक्षाही वेगानं धावते 'ही' इलेक्ट्रिक कार, क्रोएशियन एतनं रचला विश्वविक्रम

गेल्या काही वर्षांत जगभरात इलेक्ट्रिक कारची मागणी झपाट्याने वाढली आहे. पेट्रोल आणि डिझेलच्या वाढत्या किमती आणि कार्बन उत्सर्जन कमी करणं, ही या मागील कारणं आहेत. आजकाल अनेक अॅडव्हान्स, लक्झरी आणि हायटेक लक्झरी कार बाजारात आल्या आहेत. विविध प्रकारच्या आधुनिक तंत्रज्ञानानं या कार सुसज्ज आहेत. असं असूनही, इलेक्ट्रिक कारच्या क्षमतेवर अजूनही प्रश्न उपस्थित होत आहेत. पण, लवकरच इलेक्ट्रिक कारदेखील हवेच्या वेगाशी स्पर्धा करताना दिसतील.

क्रोएशियन इलेक्ट्रिक कार उत्पादक कंपनी रिमॅकनं (Rimac) अलीकडेच आपल्या नवीन 'नेवेरा' हायपरकारसह एक सर्वाधिक वेगाचा जागतिक विक्रम प्रस्थापित केला आहे. ४१२ किलोमीटर प्रतितास वेगाने धावण्याचा विक्रम नोंदवत नेवेरानं जगातील सर्वात वेगवान इलेक्ट्रिक कारचा किताब पटकावला आहे. ही क्रोएशियन हायपरकार रिमॅकचे चीफ टेस्ट अँड डेव्हलपमेंट ड्रायव्हर मिरो जर्नसेविक यांनी चालवली.

जर्मनीतील ऑटोमोटिव्ह टेस्टिंग पॅपेनबर्ग ट्रॅकवर चार किलोमीटर अंतराच्या दोन स्ट्रेट रनिंगदरम्यान नेवेराने हा विश्वविक्रम केला. या वेळी कार हायस्पीड मोडमध्ये चालवली गेली. ज्यामुळे ड्रॅग आणि डाउनफोर्समध्ये चांगलं संतुलन निर्माण

झालं. नेवेरानं प्रथमच प्रतितास ४१२ किलोमीटर वेग गाठला आहे. रिमॅक टीमनं हे टारगेट ठेवलं होतं. २०१८ च्या जीनिव्हा मोटर शोमध्ये उमढे संकल्पनेच्या रुपात ही कार प्रथम दाखवण्यात आली होती.

अतिशय शक्तिशाली कार

नेवेरा कारमध्ये चार इलेक्ट्रिक मोटर्स वापरण्यात आल्या आहेत. या चारही मोटर एक हजार ९१४ हॉर्स पॉवर जनरेट करतात. कार निर्मात्याच्या म्हणण्यानुसार, ही गाडी केवळ १.९५ सेकंदात प्रतितास ० ते १०० किलोमीटर आणि ४.३ सेकंदात प्रतितास ० ते १६० किलोमीटरपर्यंत वेग गाठू शकते. याशिवाय, ८.५८२ सेकंदात एक चतुर्थांश मैलांपेक्षा जास्त अंतर कापणारी ही जगातील सर्वात वेगवान कार बनली आहे.

ग्राहकांना मिळणार कमी वेगवान कार

जेव्हा ही कार मार्केटमध्ये लाँच केली जाईल, तेव्हा तिची वेग मर्यादा प्रतितास ३५२ किलोमीटर इतकी असू शकते. पण, विशेष परिस्थितींमध्ये तिचा वेग प्रतितास ४१२ किलोमीटरपर्यंत पोहोचेल अशी अँडजस्टमेंट केली जाऊ शकते. जरी नेवेरा ही जगातील सर्वात वेगवान इलेक्ट्रिक कार असली तरी, ती अद्याप नियमित पेट्रोल फ्रंट रनर कार्सना मागे टाकू शकलेली नाही.



पालघर जिल्ह्यातील किनारा लगतच्या ३९ गावांना मिळणार भुयारी विद्युत वाहिनीद्वारे वीजपुरवठा



राष्ट्रीय चक्रीवादळ जोखीम शमन परियोजना अंतर्गत सातपाटी गावाला भूमिगत वाहिनीद्वारे विद्युत प्रवाह करण्याची यंत्रणा कार्यान्वित झाली असताना समुद्रकिनारी असलेल्या अन्य ३९ गावांना पुढील वर्ष दीड वर्षात अशाच पद्धतीद्वारे विद्युत प्रवाह मिळण्याची योजना मंजूर झाली आहे. त्यामुळे निमखाच्या वातावरणात जीर्ण होणाऱ्या विद्युत वाहिनी व उपकरणांमुळे सातत्याने खंडित होणाऱ्या वीज पुरवठ्याच्या समस्येपासून नागरिकांना आगामी काळात दिलासा मिळण्याची आशा निर्माण झाली आहे.

वादळी वातावरणाच्या परिस्थितीत किनाऱ्यालगतच्या भागात विद्युत उपकरणे नादुरुस्त झाल्याने अनेक दिवस बाधित भाग अंधारात राहत असल्याचे तसेच दैनंदिन कामकाज बाधित होत असल्याचे दिसून आल्याने राष्ट्रीय चक्रीवादळ जोखीम शमन परियोजना अंतर्गत भूमिगत विद्युत वाहिनी टाकण्याचे काम हाती घेण्यात आले होते. पालघर तालुक्यातील सातपाटी गावात या प्रकल्पाची अंमलबजावणी पावसाळ्यापूर्वी झाली अजून वादळी वातावरणात या योजनेमुळे नागरिकांना मोठ्या प्रमाणात दिलासा मिळत असल्याचे दिसून आले आहे.

याच योजनेचा भाग म्हणून पालघर जिल्ह्यातील समुद्रकिनार्यापासून तीन किलोमीटर अंतरावर असणाऱ्या अन्य ३९ गावांचा या योजनेमध्ये समावेश करण्यात आला असून त्यासाठी १९९ कोटी रुपयांचा निधी मंजूर झाला आहे. सातपाटीप्रमाणेच लघु दाब विद्युत वाहिन्या (११ केव्हीए वाहिन्या) या योजनेअंतर्गत टाकण्याचे काम हाती घेण्यात आले असून या कामासाठी सध्या निविदा प्रक्रिया राबविण्यात येत आहे. या कामांसाठी निविदा अंतिम करून

पुढील वर्षी फेब्रुवारी ते मार्च महिन्या दरम्यान या गावांमध्ये टप्प्याटप्प्याने कामे सुरू करण्याचे प्रस्तावित असून ही कामे वर्षभराच्या कालावधीत पूर्ण करण्याचे अपेक्षित आहे.

सद्यस्थितीत किनारपट्टीच्या गावांमध्ये अनेक विद्युत खांब व विद्युत वाहिन्या जीर्ण व गंजलेल्या अवस्थेत असून त्यामुळे तांत्रिक बिघाड उद्भवत आहेत. तसेच वादळी परिस्थितीत विद्युत वाहिनी तुटण्याचे प्रकार अथवा विद्युत खांब पडल्यामुळे अपघात होऊन प्राणहानी झाल्याच्या घटना गेल्या काही वर्षात घडल्या आहेत. भूमिगत विद्युत प्रणालीमुळे विद्युत प्रवाह खंडीत होणाऱ्या अधिकांश कारणांवर नियंत्रण येणार असून अखंडित विद्युत पुरवठा मिळण्यास किनारपट्टीच्या गावांमधील नागरिकांना आशा निर्माण झाली आहे.

पालघर वीज मंडळाच्या विभागात राष्ट्रीय चक्रीवादळ जोखीम शमन परियोजनेत समाविष्ट गावांचा तपशील उपविभागनिहाय पुढीलप्रमाणे:

पालघर उपविभाग- वडराई, शिरगाव.

डहाणू उपविभाग- बोर्डी, झाई, बोरीगाव, घोलवड, नरपड, डहाणूगाव, चिखले, आंबेमोरा, खडीपाडा, बागपाडा

सफाळे उपविभाग-दातीवरे, खाडी, केळवा, कोरे, डोंगरे, एडवन, मथाने, भाताने, उसरणी, दांडा खटाळी

बोईसर ग्रामीण उपविभाग- मुरबे, नांदगाव, आलेवाडी, नवापूर, दांडी, उनभाट, उच्छेळी, धिवली, कांबोडा, चिंचणी, वरोर, वाढवण, धुमकेत, अब्राहम, गुंगवाडा, तडीयाळे, धाकटी डहाणू



पूर्वसूचना न देता वीज कनेक्शन तोडणे महागात! ग्राहकाला ३० हजार नुकसान भरपाई

ग्राहकांना वीज तोडण्यापूर्वी १५ दिवसांची लेखी सूचना देणे बंधनकारक



मार्च महिन्यात मुलांच्या परीक्षा सुरू असतानाच कोणतीही पूर्वसूचना न देता सरस्वती देवी यांचं वीज कनेक्शन तोडण्यात आलं. याविरोधात त्यांनी कायदेशीर लढा दिल्याने त्यांना ३० हजार नुकसान भरपाई मिळाली.

भारतीय विद्युत कायदा (IEA) २००३ च्या कलम ५६ (१) नुसार, महाराष्ट्र राज्य विद्युत वितरण कंपनी लिमिटेड (MSEDCL) साठी कनेक्शन तोडण्याच्या १५ दिवस आधी ग्राहकांना नोटीस बजावणे बंधनकारक आहे. हे कलम देशभरातील सर्व विद्युत पुरवठा कंपन्यांना लागू करण्यात आले आहे. याबाबत महाराष्ट्र राज्य विद्युत वितरण कंपनी मर्यादितच्या वेबसाईटवरसुद्धा ग्राहकांचा अधिकार या भाग ६ मध्ये थकीत बिलासाठीही १५ दिवसांची लेखी पूर्वसूचना ही ग्राहकांचा अधिकार म्हणून जाहीर करण्यात आला आहे.

अशाच एका प्रकरणात वीज कंपनीला २५ हजारांचा दंड

ही केस राजस्थान राज्यातील पुंजला भागातील चैनपुरा बावडी येथील आहे. बावडीतील सरस्वती देवी यांनी जिल्हा ग्राहक विवाद निवारण आयोगाकडे जोधपूर डिस्कॉम या वीज वितरण कंपनीविरोधात तक्रार दाखल केली होती. सरस्वती म्हणाल्या की, मार्च २०१४ मध्ये एकाच वेळी २४ हजार रुपयांचे बिल पाठवण्यात आले. त्यानंतर कोणतीही सूचना न देता ३० मार्च २०१४ रोजी त्यांचे वीज कनेक्शन तोडण्यात आले. तेव्हा मुलांच्या परीक्षा सुरू होत्या. यावर बिलात वारंवार थकबाकी जोडूनही तक्रारदाराने रकम भरली गेली नसल्याचे डिस्कॉमच्या वतीने सांगण्यात आले. त्यामुळे कनेक्शन तोडण्यात आलं. थकबाकी जमा न केल्यास कनेक्शन तोडण्यापूर्वी ग्राहकाला वेगळी नोटीस देण्याची गरज नाही. वीज बिलात दिलेली माहिती नोटीस मानली जाईल,

असंही डिस्कॉमने सांगितले.

आयोगाच्या अध्यक्षा डॉ. श्याम सुंदर लता, सदस्य डॉ. अनुराधा व्यास, आनंदसिंग सोळंकी यांच्या खंडपीठाने दोन्ही पक्षांचे म्हणणे ऐकून घेतलेल्या निर्णयात म्हटले आहे की, जोधपूर डिस्कॉमने अटी व शर्तीनुसार थकीत रकमेसाठी कनेक्शन तोडण्याच्या १५ दिवस आधी लेखी नोटीस ग्राहकांना देणे आवश्यक आहे. या प्रकरणात तक्रारदाराचे कनेक्शन बिल भरण्याच्या अंतिम तारखेनंतर पंधरा दिवस संपण्यापूर्वीच खंडित करण्यात आले आहे.

तक्रारदाराने सतत चुकीची बिले पाठवणे आणि नोटीस न देता कनेक्शन तोडणे याला डिस्कॉमच्या सेवांमधील कमतरता आणि सदोष असल्याचे आयोगाने म्हटले आहे. तक्रारदाराला झालेल्या शारीरिक आणि मानसिक त्रासाच्या भरपाईपोटी २५ हजार रुपये भरपाई देण्याचे आदेश आयोगाने जोधपूर डिस्कॉमला दिले. यासोबतच तक्रार खर्च म्हणून पाच हजार रुपये देण्याचेही आदेश दिले होते. खाजगी असो किंवा सरकारी प्रत्येक वीज पुरवठादारास थकीत बिलाअभावी वीज जोडणी तोडण्यापूर्वी लेखी पूर्वसूचना देणे बंधनकारक करण्यात आले आहे. (कायदे वेळोवेळी बदलत असतात. वरील माहिती राज्य शासनाच्या वेबसाईटवरील माहितीचा अभ्यास करून लिहली आहे. त्यामुळे कोणतीही कायदेशीर कारवाई करण्याअगोदर कायदेतज्ज्ञांचा सल्ला घ्यावा.)



ग्राहकांनो, आता मोबाईलवरूनच करा तक्रार! महावितरणचा उपक्रम; मोबाईलची नोंदणी करा

बिल न भरल्यामुळे वीज कापलीये ?

अशी करा तक्रार, मोबाईलवर नोंदणी करून

व्हा त्रासमुक्त

वीजपुरवठा खंडित झाल्यास अनेकदा त्याची पूर्वकल्पना नसल्याने ग्राहकांना नाहक मनस्ताप सहन करावा लागतो. ही गैरसोय टाळण्यासाठी तसेच वीज देयके व इतर महत्वाच्या गोष्टींची माहिती आता ग्राहकांना मोबाईलवरच उपलब्ध होणार आहे. वीज जाणार असेल, तर याची ग्राहकांना मिळणार पूर्वसूचना असल्याचे महावितरणचे म्हणणे आहे. ग्राहकांना सूचना मिळविण्यासाठी महावितरणकडे मोबाईल क्रमांकाची नोंदणी करणे गरजेचे आहे. ग्राहकांना आता वीज देयकासोबतच वीजजोडणी, डिमांड भरणे, मीटर रीडिंग पाठविणे, वीज बिल बघणे यात वेळ वाचेल तसेच महावितरणच्या विविध सेवांची माहिती व ग्राहकांच्या तक्रार निवारणासाठी महावितरणकडून टोल फ्री सेवा असून, नोंदणी केलेल्या क्रमांकावरून तक्रारही करता येणार आहे.

रामटेक येथील महावितरण विभागाचे उपविभागीय अभियंते भारत बालपांडे म्हणाले की महावितरणच्या विविध सोयीसुविधांची माहिती ग्राहकांना मोबाईलवर दिली जाते. यामध्ये त्यांना त्यांचे वीजबिल, तसेच त्यांच्या भागातील खंडित होणाऱ्या वीजपुरवठ्याची माहितीही दिली जाते. त्यामुळे ज्या ग्राहकांनी नोंदणी केली नाही, त्यांनीही नोंदणी करून घ्यावी.

मोबाईल क्रमांक कसा नोंदवाल ?

ज्या ग्राहकांनी मोबाईलची नोंदणी केली नाही त्यांनी एमआरईजी टाइप करून 9930399309 या क्रमांकावर एसएमएस पाठवावा किंवा www.mahadiscom.in या संकेतस्थळावर किंवा 421830060800 या क्रमांकावर नोंदणी करता येते.

सत्तेचाळीस हजार पाचशे ग्राहकांची मोबाईल नोंदणी

रामटेक तालुक्यात महावितरणच्या घरगुती, वाणिज्यक तसेच औद्योगिक क्षेत्रातील जवळपास सात लाख ग्राहकांनी मोबाईल क्रमांकाची नोंदणी महावितरणकडे केली. या ग्राहकांना एसएमएसद्वारे वीजबिलाची माहिती तसेच वीजपुरवठा कधी आणि किती तास जाईल याची माहिती दिली जाते.

एसएमएसद्वारे मिळणार सुविधा

महावितरणमध्ये ज्या ग्राहकांनी मोबाईल क्रमांकाची नोंदणी केली आहे. अशा नागरिकांना वीजबिल येण्याआधीच एसएमएसच्या आधारे वीजबिलाची माहिती मोबाईलवर मिळत आहे. ज्या ग्राहकांनी आपला मोबाईल क्रमांक महावितरणमध्ये जाऊन नोंदविला आहे. अशांना संपूर्ण माहितीही एसएमएसवर देण्यात येत आहे.



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The Exit Light - Why Prolite's Product Defines Safe Escape Best

When we visit an auditorium or theatre and the room gets pitch dark, the only really visible light that gets our attention immediately, is the Exit lights on top of the various doors leading in and out of the hall. When we need too out in the middle of a performance for maybe a toilet break or to have a cigarette, we easily move in the direction of the closest Exit light and easily find our way out. But Exit lights are not just meant for auditoriums and cinema halls alone.

Emergency exit lights for example, are battery backed exit lights, usable when the power fails in any enclosed premises or a blackout/fire situation where smoke and fire may be life threatening. Here, it is the speed at which you can exit the place actually matters most, since visibility maybe poor and suffocation due to smoke may be slowly choking you. The brightness of the light must cut through the smog and darkness and meet your eye. You can follow the light and escape before the smoke or fire immobilizes you.

There are many different types of exit signs available today and choosing the correct model is important for any use. There are a number of factors to consider when deciding on the type of exit sign to install. Price point, application, construction, design appeal, maintenance requirements, lifespan, and installation profile are all important factors. But most important, is that the product is genuine and authorized by the concerned safety bodies governing the premises. Prolite is a safe bet here, because Prolite Exit lights are manufactured to NBC and fire safety authority specifications and tested for quality so they don't fail when it matters most. In hazardous environments, Prolite's Flame proof exit lights (See Fig.) become important, because any safety light just won't do.

Prolite cares for your life and that is precisely why our motto is "We don't take it lightly".



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Launch of Professional Series of Digital Clamp Meters (MECO Models : DTT 54+, DTT 90+ and DTT 99+) **DTT 54+ :** 3 ¾ Digit 4000 Counts having Current Range up to 600A AC TRMS, Voltage Range up to 600V DC & AC TRMS, Capacitance Range up to 4mF, and Resistance Range up to 40M Ohms. It has special features like Data Hold, Audible Continuity, Diode Test, Backlight, Torchlight, NCV (LED, Buzzer & EF Strength), Auto Power Off & Low Battery Indication. This Clamp Meter can be used for Cable Dia. 30mm (Max.).

DTT 90+ : 3 ¾ Digit 4000 Counts having Current Range up to 600A AC TRMS, Voltage Range up to 600V DC & AC TRMS, Temperature Range from -20°C to 1000°C, Frequency range up to 4KHz, Capacitance Range up to 4mF, and Resistance Range up to 40M Ohms. It has special features like Data Hold, Audible Continuity, Diode Test, Backlight, Torchlight, NCV (LED, Buzzer & EF Strength), Auto Power Off & Low Battery Indication. This Clamp Meter can be used for Cable Dia. 30mm (Max.).

DTT 99+ : 3% Digit 6000 Counts having Current Range up to 600A DC & AC TRMS, Voltage Range up to 600V DC & AC TRMS, Temperature Range from -20°C to 1000°C, Frequency range up to 100KHz, Duty Cycle range from 0.1% to 99.9%, Capacitance Range up to 100mF, and Resistance Range up to 60M Ohms. It has special features like Data Hold, Audible Continuity, Diode Test, Backlight, Torchlight,



NCV (LED, Buzzer & EF Strength), LoZ (DCV/ACV), VFC, Auto Power Off & Low Battery Indication. This Clamp Meter can be used for Cable Dia. 30mm (Max.).

For more details please feel free to contact

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Cummins Powerica introduce CPCB IV+ compliant gensets, embodying 'Cleaner outside, Reliable Inside'—a power revolution that sets new standards in emissions reduction and environmental friendliness

In a significant stride toward environmental sustainability, Cummins India has introduced CPCB IV+ compliant gensets, marking a paradigm shift in the Power Regulation industry. These generators, engineered to adhere to the stringent emission norms set by the Ministry of Environment, Forest, and Climate Change, have garnered praise for their remarkable achievements in emissions reduction and cutting-edge technology. Powerica Limited has been associated with Cummins since 3 decades.

The CPCB IV+ emission standards, aimed at controlling air pollution, apply to stationary generators with a capacity of up to 800 kVA. These standards not only streamline regulatory complexities for manufacturers but also align with the broader environmental objectives of reducing greenhouse gas emissions and fuel consumption.

Launched on July 5, 2023, Cummins India's CPCB IV+ compliant generators have undergone a transformative evolution. These machines, now equipped with advanced electronic technologies, intelligent control systems, and real-time monitoring capabilities, have achieved an impressive 90 percent reduction in particulate matter (PM) and nitrogen oxide (NOx) emissions compared to the previous CPCB II standards delivering innovative and environmentally conscious power generation solutions.

The closed-loop system with real-time monitoring is a key feature that enhances the performance of these gensets. By constantly evaluating operational parameters and emission standards, this system ensures optimal efficiency and prompts immediate corrective measures in case of any deviations. Notifying users of irregularities through SMS and email further minimizes downtime, allowing generators to consistently operate at peak performance levels, ultimately extending their lifespan.

These gensets employ advanced after-treatment systems, including Diesel Oxidation Catalyst (DOC), Selective Catalytic Reduction (SCR), and Diesel Particulate Filter (DPF)/Partial Flow Filter (PFF). These systems are meticulously designed to improve fuel efficiency, enhance pollutant control,

and meet stringent emission norms.

Remote monitoring and control capabilities enable users to manage generator operations from any location, improving efficiency and responsiveness. Swift deployment of generators in urgent situations becomes possible, and users can access real-time system status, detect faults, and receive essential notifications, leading to lower operational and maintenance expenses.

Fuel and Diesel Exhaust Fluid (DEF) sensors play a crucial role in ensuring optimal efficiency. Real-time monitoring of diesel consumption and precise control of DEF injection contribute to performance improvements, operational cost reduction, and compliance with environmental regulations.

Cummins Powerica emphasizes its commitment to innovation and environmental responsibility, leveraging advanced digital tools to address climate change challenges. The CPCB IV+ compliant generators exemplify this dedication by offering clean and efficient power solutions without the need for additional retrofit devices or dual fuel kits throughout their product lifecycle. The integration of advanced engine technologies ensures superior performance, improved fuel efficiency, and equipment reliability, establishing Cummins India as a leader in emissions compliance and environmental stewardship.



Polar Lighting Poles

'K-LITE' surface mounted **Polar Lighting Pole**, integrated with LED Lighting Module is an exclusive choice of designers for city beautification lighting blended with architectural appeal. It is designed for a complete range of contemporary designs with single arm, double arm, L-arm, V-Arm, Square arm and Parallel arm.

The pole is engineered to meet the adverse conditions and the pole sections are duly welded using special grooving techniques and high end MIG welding process. The control box is integral and built-in with service door, locking arrangement and safety chain. The MS pole is coated with epoxy zinc phosphate primer and finished using environmentally stable polyurethane based paint. The pole is supplied with necessary foundation hardwares for normal soil condition.

The Polar Lighting Pole lighting arms are integrated with the LED modular lighting system, which is environmental friendly under green lighting category. The LED lighting offers more lumens with lesser power consumption. The module is IP 68 protected and the various models were evaluated by an extensive research and understanding of illumination requirements for urban spaces. Choice of drivers for LED takes into consideration the harmonic distortion level (not exceeding 10%) power factor greater than 0.9 and surge protection. The LED modules are individually rated 60 watts. The control gear tray is prewired with terminal connectors, MCB and loop-in loop-out arrangement and located in the control box, integral with the pole.



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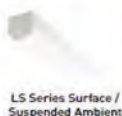
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“The facility is well-lit, clean and you know what to expect every day. From that standpoint, you’re in the mood of, ‘alright, let’s go to work, let’s get this done.’”



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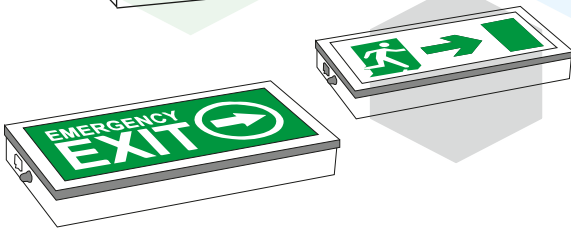
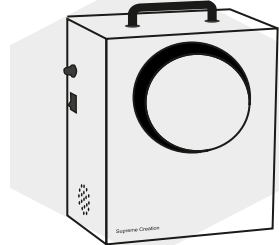
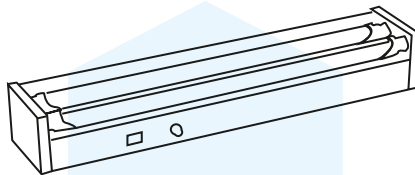
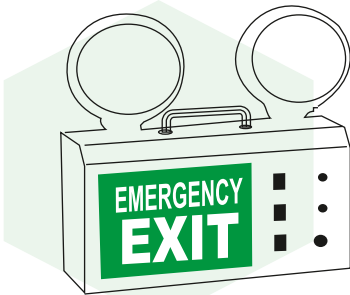
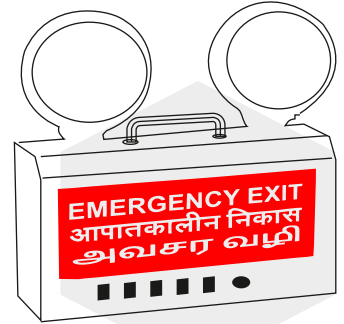
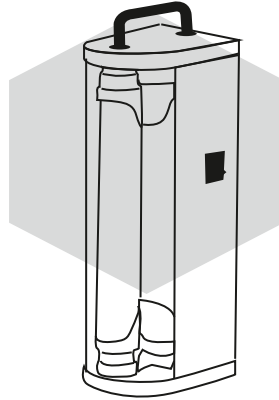


Photoluminescent Safety Signages
(Glow in the Dark)



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Enhancing Safety
through Emergency
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Safety Signage for
Effective Evacuation

Safety is of paramount importance in any environment, whether it's a commercial building, an industrial facility, or a public space. One of the critical elements of ensuring safety is the ability to provide clear and efficient evacuation procedures in case of emergencies. In this article, we will explore how emergency lighting and photo-illuminated safety signage contribute to enhancing safety and facilitating safe evacuations.



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