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Excerpts from the Inaugural and Valedictory Addresses by Reji Kumar Pillai at India Smart Utility Week (ISUW) 2026

Reji Kumar Pillai
President, India Smart Grid Forum
Chairman, Global Smart Energy Federation

Ladies and gentlemen, it is my privilege and pleasure to extend a very warm welcome to all of you to ISUW 2026 in New Delhi. Thank you for being with us today.

I must acknowledge the extraordinary circumstances in which we have gathered. ISUW 2026 is being conducted against the backdrop of a new and fierce conflict that has broken out closer to India, seriously disrupting international air traffic. Many of our confirmed speakers and exhibitors were unable to reach Delhi. Some will deliver their presentations virtually over the coming days. A very big thank you to all those who made the effort to be here in person - I assure you that these four days will be well worth the journey, and you will cherish this memory.

We Are Entering the Most Transformative Decade in Human History

Despite wars and other dystopian predictions, there are several extraordinary things happening in the world particularly in the realm of technology. I want to touch upon a few of them, because they are all deeply connected to electricity. Nothing works without electricity. Every new technology runs on electrons, and electric utilities are at the very heart of this transformation.

We are entering the most transformative decade in human history. In the next ten years, the world will change more than it has in the last thousand years combined.

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We are witnessing the convergence of exponential technologies. Unlike earlier technological revolutions shaped by one or two major inventions, this era is defined by the simultaneous acceleration of many powerful technologies: Artificial Intelligence, Robotics, Biotechnology, Synthetic Biology, Quantum Computing, Clean Energy and Energy Storage, Blockchain, and Immersive Digital Environments. Individually, each of these technologies is disruptive. Together, they create a multiplier effect accelerating innovation cycles, lowering costs, and compressing decades of progress into just a few years or even months. The world is shifting from linear change to exponential change. And the most important trend is not any single technology. It is their convergence.

AI accelerates robotics by improving perception and decision-making. Robotics accelerates manufacturing by enabling automation at scale. Biotechnology uses AI and quantum computing to design molecules, vaccines, and therapies faster than ever before. Digital twins and IoT sensors feed real-time data into intelligent systems that optimise cities, energy networks, and transport. This interconnected ecosystem means breakthroughs no longer occur in isolation. Innovation now moves in waves, where progress in one domain triggers advancement in others dramatically reducing time to market, increasing scalability, and unlocking possibilities that were unimaginable even a decade ago.

From Scarcity to Abundance: The Economic Transformation

Historically, societies have struggled with scarcity - limited energy, limited food, limited information, limited healthcare access. These exponential technologies are enabling a world where abundance in everything becomes achievable. Consider the numbers: During the four centuries from 1500 to 1900, world GDP grew at just 0.6 percent. In the last 125 years from 1900 to 2025, world GDP grew at 3 percent. That is a fivefold improvement, driven by the industrial revolution: steam engines, IC engines, railroads, automobiles, and electricity. The convergence of technologies I have just described has the potential to deliver a tenfold improvement in GDP growth in the next decade moving from 3 percent to 30 percent or more. Even conservative financial forecasters project GDP growth of 15 percent or more annually from 2030 or 2035 onwards. We are ushering into an era of universal abundance.

This creates the possibility of a Universal High Income society, and ultimately Universal Basic Income for every person and every household. That is the challenge and the opportunity societies must navigate ensuring this abundance is equitably distributed, not concentrated in the hands of a few.

The Humanoid Robot Revolution

One of the most disruptive near-term technologies is the humanoid robot. The latest projections suggest there will be 5 - 10 billion humanoid robots in operation by 2035. Many of you may find that hard to believe today. But consider this: in 1995, when Airtel was launched it was asked how many mobile customers would be there by 2000. The answer was about 30,000, but there were 3 million plus in five years. Those days if anyone had predicted that every person on the street would have a mobile phone with him in 10-15 years, nobody would have believed. A mobile phone cost was thousand dollars, and a one-minute call at peak time was fifty cents. Yet that became reality.

The same trajectory applies to robots. Companies like Figure AI one of the leading robotics firms in USA besides Tesla - are set to commercialise their third-generation robots by end of this year or early next year, available on lease at approximately $300 per month. At $10 per day, running 24 hours, 7 days a week, with no breaks and no holidays! Only electricity to charge it. Compare that to the minimum wages of $22 to $35 per hour.

When one robot in a neural network learns something, all robots in that network learn it simultaneously. And from 2027 onwards, robots will build robots. The factories making today's robots will manufacture the next generation, which will be born already trained with the intelligence of their predecessors. This revolution will transform every industry from construction to healthcare to energy and these robots will also be the first to go to the Moon and Mars to build human colonies. The direct implication for utilities is clear: the rise of the hybrid workforce – part human, part robotic will transform industrial energy demand patterns in ways we must start planning for today.

The Solar Energy Revolution

At $0.03 per kilowatt hour, solar power is the cheapest form of electricity humanity has ever produced. And new developments are driving this cost towards almost zero marginal cost. Let me put this in a deeper historical perspective. For millions of years, life on earth was driven by sunlight absorbed by plants through photosynthesis. All food, all fuel, and all the energy systems we used for millennia are what plants saved through the photosynthesis process. The average efficiency of photosynthesis is just one percent. Now humanity has mastered the art of converting solar energy directly from the sun to electricity. Today's solar cells operate at 20 percent efficiency, a twenty-fold improvement over photosynthesis! Technologies currently in laboratories, expected to be commercialised in a

decade will have 30 percent or more efficiency. So, within the next decade, solar PV systems will be 30 times more efficient than natural photosynthesis. We are moving rapidly towards a Type 1 civilisation on the Kardashev scale - one capable of harnessing most of the energy arriving on the surface of our planet.

One disruptive consequence deserves particular attention for utilities. With robotic taxis and passenger drones, the present automobile stock in the United States, some 140 million cars could shrink to 20 million vehicles or fewer. Most parking lots will be converted to vertical farms, growing food within cities. The energy demand profile of the entire transport sector will be fundamentally rewritten.

Data Centres Going to Orbit

At our Distribution Utility Meet in Bombay in early November 2025, we spent two hours debating how to power data centres that require gigawatt-scale power connections. Within a week of that meeting, an H100 Nvidia GPU was launched on the Starcloud 1 Satellite into orbit and it has reportedly been functioning perfectly for the past few months. In late January, Elon Musk announced plans to launch a million satellites that will host data centres in space. The advantages are obvious: solar energy is available 24 hours a day, 7 days a week, in orbit, and the cooling load for space-based data centres is nearly negligible. If significant share of data centres migrate to orbit, the implications for trillions of dollars of planned grid infrastructure investment are profound and this is something we do not yet have an answer to.

We have dedicated sessions in ISUW 2026 exploring square-mile-size data centres requiring gigawatt-scale connections, as well as the broader impact of breakthrough technologies on power systems. I encourage everyone to participate.

Digital Health, Longevity, and the Future of Human Life

The convergence of technologies is also transforming human health. Today's AI diagnostic systems achieve 97 percent accuracy compared to human doctors who are somewhere in the fifties, and human-plus-AI combinations achieving around 70 percent. AI tutors are delivering personalised education at scale, making learning accessible to every child regardless of geography. Digital health solutions are democratising medical expertise, enabling early detection and preventive care for millions who previously lacked access.

Perhaps most remarkable is the concept of longevity escape velocity. The latest estimates suggest we will achieve this by 2032 or 2033 the point at which medical progress adds more than one year of life expectancy for each calendar year that passes. Thereafter, those who embrace these technologies could potentially extend their lives indefinitely. Vertical farming, precision agriculture, and lab-grown proteins are already transforming food systems to be more efficient and climate-resilient, further supporting humanity flourishing at scale.

OpenClaw: The Latest Revolution in AI

Before I move to our conference programme, I want to briefly highlight a development that is less than two months old and that most of you may not yet have heard of: OpenClaw. Throughout 2025, the AI world has been debating when frontier models will achieve recursive self-learning, the ability to improve themselves without human intervention. Some said Grok 4 was almost there. Some said Claude was close. Then, a one-man company released OpenClaw - an open-source, fully customisable, self-learning, self-improving, and self-evolving personal AI assistant. In less than a month, over 200,000 people downloaded it from Github, and over 1,000 contributors have already created different variants: Peacock Claw, Iron Claw, and dozens more versions. We are witnessing a cambrian explosion of AI Agents. What makes this particularly significant for our sector is that these are compact AI models that run on edge devices and all you need is an Apple Mini or even a smartphone. In the not-too-distant future, we will see one-person companies running 100 to 200 of these AI Agents in parallel, with a Claude Opus or other models orchestrating a full team of specialised agents handling engineering, finance, operations, and more. A single individual with this toolkit could build a unicorn company. This is not a prediction for 2035 it could happen in 2026 itself.

ISUW 2026 have dedicated sessions on AI agents and how to build and deploy them. On 13th March, we will also conduct a hands-on session on building OpenClaw models. I encourage those who are interested to join.

Conference Highlights and Themes

Over these four days, we are discussing several topics that you will be hearing about in other conferences a year or two from now. Among the most important themes being explored by our distinguished speakers and panellists are digitalisation roadmaps, data governance and management for utilities, rise of "flexumers" and digital tools for DER management grid-interactive buildings and campuses, grid integrated vehicles, district cooling systems. We also dedicated an important session to gender balance in the power

sector. Traditionally, the power sector has had a poor gender balance. While we are beginning to see more women in senior positions, the overall percentage remains low. The ongoing wave of energy transition where new technologies are being implemented at an extraordinary pace is a momentous opportunity to correct this historic imbalance. ISGF has signed up for the international program Equal by 2030 movement the first organisation in India to do so at the Clean Energy Ministerial in 2025. We will work with our member utilities and partners to achieve at least 50 percent women representation in utilities by 2030.

Welcome to Our Distinguished Dignitaries

I now have the privilege of welcoming our esteemed dignitaries on the dais.

Closing Remarks and the Road Ahead for ISUW

As we close this twelfth edition of ISUW, we want to express our deep gratitude to every organisation and individual who has supported us. This has been one of our most challenging editions to organise, and your partnership made it possible.

We want to be candid with you about the future of ISUW. As you know the industry is experiencing event fatigue. Every week, sometimes every other day, there is a conference related to power sector. In January, India Energy Week ran for four to five days with a substantial government-backed budget. Next week, the Bharat Electricity Summit is being held as a Ministry of Power event. When ministries organise events at this scale, organisations like ours face genuine difficulty competing for attention, sponsorship, and delegates. Normally at the end of ISUW, we would announce the dates for the next edition a full year in advance. This time, we are pausing. We will consult ISGF Board, ISGF members, our utility partners, and our supporting organizations in the coming months, and we will decide by June 2026 on whether to hold a thirteenth edition of ISUW and if so, in what format, at what time of the year, and in what configuration. The same ISUW format may evolve into something different - a different avatar that better serves the community and the moment we are in. Watch this space. We will communicate our decision clearly.

Ladies and gentlemen, everything I have described today from the humanoid robot revolution to orbital data centres, from the solar energy transformation to longevity escape velocity, all of it runs on electrons. The utility sector is not a passive observer of these changes. You are the essential infrastructure on which this entire technological revolution depends.

The work we do at ISGF, and the conversations we have had over these four days, are how we prepare the sector for the evolving future. Thank you for your engagement, your support, your ideas, and your commitment to this mission. Thank you very much.

YouTube Links:

Inaugural Address (11 March 2026): https://youtu.be/Inaugural

Valedictory Address (13 March 2026): https://youtu.be/Veledictory

GGGI Onboards ISGF to Amplify ALCBT (Asia Low Carbon Buildings Transition) Project Outreach, Accelerating India's Transition to Low-Carbon Buildings

New Delhi, India, May 2026: The Asia Low Carbon Buildings Transition (ALCBT) Project is a five-year initiative aimed at facilitating the nationwide transition towards Low Carbon Buildings (LCBs) across five Asian countries namely Cambodia, India, Indonesia, Thailand, and Vietnam. The project focuses on the successful implementation of technical, planning, and institutional tools for LCBs, streamlined by key public and private sector stakeholders, resulting in direct emissions reductions by 2028.

Supported by the Federal Ministry for the Environment, Climate Action, Nature Conservation and Nuclear Safety (BMUKN), Government of Germany under the International Climate Initiative (IKI), the project is spearheaded by the Global Green Growth Institute (GGGI), in collaboration with consortium partners including the ASEAN Centre for Energy (ACE) from Indonesia; Energy Efficiency Services Limited (EESL) from India; and HEAT International GmbH from Germany.

In India, the project is being implemented across the states of Kerala, Haryana, and Uttar Pradesh with support from State Designated Agencies and subnational governments under the guidance of the Ministry of Housing and Urban Affairs (MoHUA), Government of India.

As of March 2026, the project has made significant progress in advancing the adoption of low-carbon buildings in India. A comprehensive buildings registry covering 1,687 buildings across the three states has been developed, with 302 buildings already assessed using the Building Emission Assessment Tool (BEAT), developed under the project. As a next step, 60 buildings are being identified for targeted cooling retrofits to enhance energy efficiency.

The project has also trained over 2,400 professionals across 18 states in India, with 24% female participation. These include material manufacturers, technology providers, ESCOs, energy auditors, government officials, financial institutions, and other building sector experts.

At the academic level, a detailed curriculum gap assessment has been completed, and four universities have expressed interest in integrating low-carbon building concepts into their syllabuses. These efforts are further supported by the development of a wide range of knowledge products and technical reports available on the ALCBT project website.

To further strengthen outreach and scale up project visibility and replicability across India, the India Smart Grid Forum (ISGF) has been onboarded as the Engagement & Outreach Partner for the ALCBT Project. ISGF will support strategic communications, outreach, and stakeholder engagement, with a focus on amplifying awareness and accelerating the adoption of low-carbon buildings across the country.

Know more about the project: https://alcbt.gggi.org/india/

About GGGI

Global Green Growth Institute (GGGI) is a treaty-based international, inter-governmental organization. It is dedicated to supporting and promoting strong, inclusive and sustainable economic growth in developing countries and emerging economies. Since its establishment as an international organization at the RIO+20 Conference in 2012, GGGI's membership has grown from 18 founding signatories to over 55 Members and 30 Partner States at the end of 2025. GGGI draws upon the lessons learnt from this cross-regional pool of green growth experiences to pursue the transformative green growth agenda alongside its Members and Partners.

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For more information, visit: https://gggi.org

ISGF and GUVNL Partner to Drive AI-Driven Digital Transformation in Gujarat

(L-R): Harsh Sanghavi, Deputy Chief Minister of Gujarat, Government of Gujarat; Hardeep Singh Puri, Minister of Petroleum and Natural Gas of India, Government of India; Bhupendra Patel, Chief Minister of Gujarat, Government of Gujarat; C. R. Patil, Union Minister of Jal Shakti of India, Government of India; Simon Wong Wie Kuen, High Commissioner of the Republic of Singapore to India and Jacqueline Mukangira, High Commissioner of the Republic of Rwanda to India

India Smart Grid Forum (ISGF) and Gujarat Urja Vikas Nigam Limited (GUVNL) executed an MoU to implement "AI/ML-based Data Analytics for GUVNL Subsidiary DISCOMs" on 1st May 2026 at the Inaugural Ceremony of the Vibrant Gujarat Regional Conference held in Surat, Gujarat.

The MoU was formally exchanged between Shalini Aggarwal, MD, GUVNL, and Reena Suri, Executive Director, ISGF, marking a significant milestone in strengthening collaboration between the two institutions.

(L -R):Shalini Aggarwal, MD, Gujarat Urja Vikas Nigam Ltd. (GUVNL), and Reena Suri, Executive Director, India Smart Grid Forum (ISGF)

The partnership focuses on the following strategic areas:

- Smart Grid Modernisation: Development and deployment of advanced smart grid technologies to upgrade existing distribution infrastructure
- Digital Transformation: Accelerating digitalisation across Gujarat's power distribution utilities
- AI/ML-Driven Forecasting: Leveraging advanced analytics to accurately predict electricity demand patterns
- Data-Driven Loss Reduction: Using data insights to minimise technical and commercial losses across the network

The collaboration will further support state-wide planning, policy advisory, and capacity-building initiatives, including pilot demonstrations and scalable deployment of AI-enabled analytics platforms, digital energy solutions, renewable energy integration, electric mobility, and cyber-secure, data-driven power infrastructure across GUVNL and its subsidiary DISCOMs in Gujarat.

Together, ISGF and GUVNL are powering Gujarat's journey towards a smarter, sustainable, and digitally transformed energy future.

ISGF Signs MoU with NSEFI to Drive India's Renewable Energy Transition

India Smart Grid Forum (ISGF) is pleased to announce the signing of a Memorandum of Understanding with the National Solar Energy Federation of India (NSEFI), India's apex renewable energy policy advocacy body marking a significant step towards building a smarter, more resilient, and future-ready power system for India.

This strategic collaboration combines ISGF's expertise in grid modernization, digitalization, and smart technologies with NSEFI's deep connect across the renewable energy value chain spanning solar developers, manufacturers, EPC players, and SMEs.

According to the MoU, ISGF and NSEFI will jointly work on:

- Grid Integration: Developing best practices for integrating variable RE (Solar, Wind, Green Hydrogen) into smart grids.
- Policy and Standards: Advocating for regulatory frameworks and standards that streamline energy sharing, storage, and trade.
- Technological Advancement: Enhancing AI/ML-based forecasting and promoting advanced smart inverters with real-time telemetry (as per BIS/IEEE standards).
- Self-Reliance: Supporting "Make in India" and PLI schemes to strengthen domestic manufacturing of inverters and storage.
- Knowledge Leadership: Hosting joint policy roundtables and training for DISCOMs, developers, and regulators.

Together, ISGF and NSEFI aim to bridge the gap between solar generation and smart grid technology to power a cleaner energy future.

ISGF organized a Workshop on Building a Future-Ready, Resilient, Secure and AI-Enabled Network for Power Utilities on 24th April 2026 in Collaboration with its Technology Partner, Nokia

Speakers (L-R): Sangita Nair, Partner Marketing, Nokia; Vikram Saluja, Executive Director & Head of India Enterprise Business, Nokia; Sudhir Bajpai, Director IP-Business, Nokia; Dominique Verhulst, Energy Segment Head, Nokia; Hardik Gohil, Head of Mission Critical Segment, Nokia; Reena Suri, Executive Director, ISGF; Navodit Hyanki, DGM, PGCIL (LNDC); Shiv Kumar Gupta, Senior DGM, Central Transmission Utility of India (CTUIL); JP Singh, Business Group Head – IP Market India, Nokia; Sanjeev Rana, HoD – IT Communications, EIC Smart Metering, Tata Power Delhi Distribution Limited; Arjun Agarwal, Assistant Director – Power Communication Development Division, Central Electricity Authority

India Smart Grid Forum organized a high-level workshop on "Building a Future-Ready, Resilient, Secure and AI-Enabled Network for Power Utilities" in collaboration with its technology partner Nokia on 24 April 2026 at The Westin Gurgaon. The event brought together 109+ senior government officials, utility leaders, policymakers, and technology experts from 22+ organizations representing India's transmission and distribution ecosystem.

The workshop commenced with a Welcome Address by Reji Kumar Pillai, President, ISGF and Chairman, Global Smart Energy Federation. This was followed by the Context Setting session by JP Singh, Business Group Head – IP Market India, Nokia.

Introductory remarks were delivered by Sanjeev Rana, HoD – IT Communications, EIC Smart Metering, Tata Power Delhi Distribution Limited, who shared practical perspectives on communication challenges faced by utilities and emphasized the urgent need for resilient, secure, and future-ready infrastructure.

A key highlight of the workshop was the technical presentation on "Technology Options for Power Utility Networks — Deep Dive into Global Trends" by Dominique Verhulst, Energy Segment Head, Nokia. The session examined evolving communication architectures, emerging technologies, and global best practices for creating scalable, secure, and intelligent utility networks.

This was followed by a presentation on Nokia Solutions for Power Utilities by Sudhir Bajpai, Director IP-Business, Nokia, who showcased Nokia's advanced portfolio of solutions tailored for power utilities, including real-world use cases across transmission and distribution networks.

The workshop also featured an engaging panel discussion moderated by Reena Suri, Executive Director, ISGF. Distinguished panelists included Sanjeev Rana, HoD – IT Communications, EIC Smart Metering, Tata Power Delhi Distribution Limited; Shiv Kumar Gupta, Senior DGM, Central Transmission Utility of India (CTUIL); Arjun Agarwal, Assistant Director – Power Communication Development Division, Central Electricity Authority; Navodit Hyanki, DGM, PGCIL (LNDC); and Hardik Gohil, Head of Mission Critical Segment, Nokia.

The discussion focused on the role of advanced technologies such as IP-MPLS and AI-driven network operations in addressing evolving transmission and distribution challenges while enabling intelligent and future-ready utility networks.

The workshop concluded with closing remarks by Vikram Saluja, Executive Director & Head of India Enterprise Business, Nokia, and a Vote of Thanks by Sneha Singhania, Assistant General Manager, India Smart Grid Forum. The evening ended with a networking dinner reception, enabling participants to continue discussions and strengthen industry collaboration.

Reji Kumar Pillai, President ISGF

JP Singh, Business Group Head – IP Market India, Nokia

Sanjeev Rana, HoD – IT Communications, EIC Smart Metering, Tata Power Delhi Distribution Limited

Dominique Verhulst, Energy Segment Head, Nokia

Sudhir Bajpai, Director IP-Business, Nokia

(L-R): Reena Suri, Executive Director, ISGF; Hardik Gohil, Head of Mission Critical Segment, Nokia; Navodit Hyanki, DGM, PGCIL (LNDC); Arjun Agarwal, Assistant Director – Power Communication Development Division, Central Electricity Authority; Shiv Kumar Gupta, Senior DGM, Central Transmission Utility of India (CTUIL); Sanjeev Rana, HoD – IT Communications, EIC Smart Metering, Tata Power Delhi Distribution Limited

Vikram Saluja, Executive Director & Head of India Enterprise Business, Nokia

Sneha Singhania, AGM, ISGF

Glimpses from the Networking Reception after the Workshop




ISGF Welcomes New Members

ISGF Welcomes Transmission Corporation of Andhra Pradesh (APTRANSCO) as a Utility Member

ISGF Welcomes All India Council for Robotics & Automation (AICRA) as Associate Member

Leadership Updates and Institutional Developments

Abhay Karandikar has been appointed as Member, NITI Aayog, Government of India

Ashish Goyal has been appointed Additional Chief Secretary, Government of Uttar Pradesh. He will continue as Chairman, UP Power Corporation and General Secretary, All India DISCOMs Association (AIDA)

Pankaj Kumar has been appointed as Joint Secretary, Ministry of Power, Government of India

Ravinder Singh has been appointed as as Director, Uttar Pradesh New and Renewable Energy Development Agency (UPNEDA). He will continue as Managing Director for The Uttar Pradesh Renewable and EV Infrastructure Limited (UPREV)

Vamsi Rama Mohan, has been appointed as Chairman & Managing Director, Power Grid Corporation of India Limited

Nitish Kumar has been appointed as Managing Director, Uttar Pradesh Power Corporation Limited

Shruti has been appointed as Managing Director, Dakshinanchal Vidyut Vitaran Nigam Ltd

Archana MS has been appointed as Managing Director, CESC Mysore

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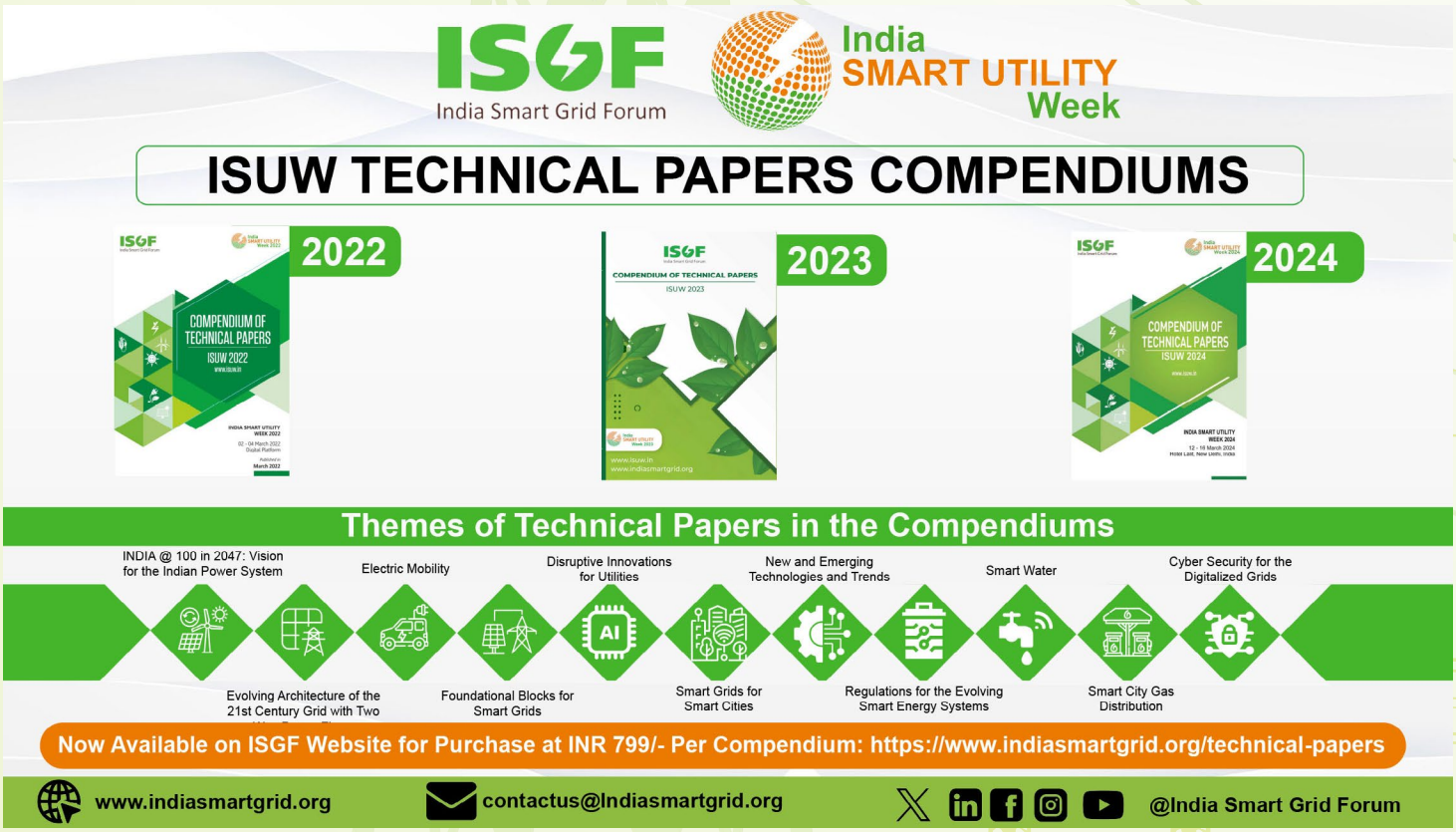

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Solid-State Transformers and Energy Efficiency: The Future of Smart Power Grids (Adapted from Electronics Buzz)

Electric power infrastructure is undergoing a massive transformation. As renewable energy sources, electric vehicles, and distributed energy systems become increasingly common, traditional power equipment is struggling to keep up with modern requirements. One such piece of infrastructure that has remained largely unchanged for over a century is the transformer.

Traditional transformers have served the grid reliably, but they are bulky, limited in functionality, and designed for one-directional power flow. In an era where power systems must be flexible, digital, and highly efficient, the emergence of Solid-State Transformers (SSTs) is gaining attention as a promising alternative.

Solid-state transformers combine power electronics, high-frequency transformers, and advanced control systems to create a new class of intelligent power conversion devices. Beyond simply stepping voltage up or down, SSTs enable higher efficiency, real-time control, renewable energy integration, and smart grid compatibility.

This article explores how solid-state transformers work, why they matter for energy efficiency, and how they could reshape future power systems.

Understanding Traditional Transformers

Conventional transformers rely on electromagnetic induction to transfer electrical energy between circuits. A transformer consists of primary and secondary windings wrapped around a magnetic core. When alternating current flows through the primary winding, it produces a magnetic field that induces voltage in the secondary winding.

Traditional transformers are widely used in:

- Power generation plants
- Electrical substations
- Industrial facilities
- Residential power distribution networks

Their main advantages include reliability, simplicity, and long operational lifespans. However, these systems come with several limitations:

- Large size and weight
- Limited control capabilities
- Low adaptability to variable power sources
- Inefficient integration with DC-based systems

As modern power networks evolve, these limitations are becoming increasingly evident.

What Are Solid-State Transformers?

A Solid-State Transformer (SST) replaces the traditional electromagnetic transformer with a power-electronics-based architecture that performs voltage conversion using semiconductor devices and high-frequency transformers.

Unlike conventional transformers that operate directly at line frequency (50–60 Hz), SSTs convert power through multiple stages:

1. AC to DC Conversion
2. DC to High-Frequency AC Conversion
3. High-Frequency Isolation through a compact transformer
4. AC/DC or DC/AC output conversion

This architecture allows SSTs to deliver features that conventional transformers cannot provide.

Key characteristics of SSTs include:

- Bidirectional power flow
- Voltage regulation and power quality control
- Reduced size due to high-frequency operation
- Integration with DC and renewable energy sources
- Digital monitoring and smart grid compatibility

Because of these features, SSTs are increasingly viewed as intelligent nodes within modern power grids.

Architecture of Solid-State Transformers

Solid-state transformers typically follow a three-stage architecture.

1. Rectification Stage

The first stage converts incoming AC power into DC using power electronic converters such as IGBTs or MOSFET-based rectifiers. This stage also enables power factor correction and grid stabilization.

2. High-Frequency Isolation Stage

The DC power is converted into high-frequency AC, which is then passed through a high-frequency transformer. Operating at higher frequencies significantly reduces transformer size and weight.

High-frequency transformers are much smaller because:

- Magnetic cores can be smaller
- Energy transfer per cycle increases
- Reduced copper and core losses

3. Output Conversion Stage

The final stage converts the isolated power back into AC or DC, depending on the application.

This stage allows SSTs to provide:

- Multiple voltage outputs
- DC distribution capability
- Integration with renewable energy systems

Why Energy Efficiency Matters

Energy efficiency has become a critical priority for power systems worldwide. According to energy studies, a significant portion of electricity losses occur during transmission and distribution.

Traditional transformers contribute to losses through:

- Core losses
- Copper losses
- Reactive power inefficiencies

Although these losses seem small individually, they accumulate across thousands of transformers in power networks.

Solid-state transformers help reduce these inefficiencies by offering:

- Advanced power conversion techniques
- Dynamic voltage regulation
- Reduced idle losses
- Improved power quality

These improvements can significantly reduce overall grid energy losses.

How SSTs Improve Energy Efficiency

1. High-Frequency Operation

Traditional transformers operate at low frequencies, requiring large cores and windings. SSTs operate at higher switching frequencies, which enables compact magnetic components and improved energy transfer.

High-frequency power conversion reduces:

- Core losses
- Magnetic material usage
- Overall system footprint

This results in higher power density and better efficiency.

2. Intelligent Power Flow Management

SSTs enable real-time power flow control, allowing utilities to dynamically regulate voltage levels and optimize energy distribution.

Smart power management helps:

- Reduce transmission losses
- Balance grid loads
- Improve voltage stability

This capability is particularly valuable in smart grid architectures.

3. Renewable Energy Integration

Renewable energy sources such as solar panels and wind turbines often generate variable and DC-based power.

Traditional transformers are not designed to directly handle such sources.

Solid-state transformers provide built-in converters that allow seamless integration with:

- Solar photovoltaic systems
- Wind turbines
- Energy storage systems
- Microgrids

By enabling efficient renewable integration, SSTs help reduce dependence on fossil fuel-based generation.

4. Bidirectional Power Flow

Modern power systems increasingly involve two-way power flow, especially with the rise of distributed energy resources.

For example:

- Homes with rooftop solar panels may feed electricity back into the grid.
- Electric vehicles may supply stored energy during peak demand.

Traditional transformers are designed for one-directional power flow. SSTs, however, naturally support bidirectional energy transfer, improving grid flexibility and efficiency.

5. Power Quality Improvement

Poor power quality leads to energy waste and equipment damage.

Solid-state transformers can actively regulate:

- Voltage fluctuations

- Harmonic distortion
- Reactive power

This leads to improved power quality and reduced system losses.

Key Applications of Solid-State Transformers

SSTs are gaining attention across several industries due to their efficiency and smart control capabilities.

Smart Grids

In smart grid systems, SSTs act as intelligent nodes capable of monitoring and controlling power flows.

They allow utilities to:

- Detect faults quickly
- Manage distributed generation
- Optimize energy distribution

Electric Vehicle Charging Infrastructure

Electric vehicle charging stations require efficient power conversion and high power density.

Solid-state transformers provide:

- Compact power electronics
- High-efficiency power conversion
- Fast charging support

As EV adoption grows, SSTs could play a key role in future charging networks.

Renewable Energy Systems

Renewable energy farms require efficient integration with the power grid.

SSTs enable:

- Direct DC connections
- Reduced conversion losses
- Flexible voltage management

These features make SSTs highly suitable for solar and wind power plants.

Railway Electrification

Railway systems often operate at different voltage levels and require efficient power conversion.

Solid-state transformers provide:

- Compact onboard power conversion
- Improved regenerative braking energy recovery
- Enhanced system efficiency

Data Centers

Modern data centers demand high efficiency and reliable power systems.

SSTs can improve:

- Power distribution efficiency
- Backup energy management
- Integration with renewable sources

Challenges in Solid-State Transformer Adoption

Despite their advantages, SSTs still face several challenges before widespread deployment.

High Cost

Power electronic components and advanced control systems increase the overall cost of SSTs compared to traditional transformers.

However, costs are expected to decrease as semiconductor technologies improve.

Thermal Management

Power electronic devices generate heat during operation.

Effective cooling systems are required to maintain reliability and efficiency.

Reliability Concerns

Traditional transformers can operate for 30–40 years with minimal maintenance.

SSTs contain many semiconductor devices, which may reduce lifespan if not properly designed.

Protection and Standardization

Power grids require strict protection systems.

Integrating SSTs into existing grid infrastructure requires new standards and protection mechanisms.

Advances Driving SST Development

Several technological trends are accelerating the development of solid-state transformers.

Wide Bandgap Semiconductors

Materials such as silicon carbide (SiC) and gallium nitride (GaN) enable higher switching frequencies and lower losses.

These devices allow SSTs to achieve:

- Higher efficiency
- Smaller form factors
- Improved thermal performance

Digital Control Systems

Advanced microcontrollers and digital signal processors allow precise control of power electronics.

This enables real-time monitoring, predictive maintenance, and automated grid management.

Modular Power Electronics

Modular SST architectures improve scalability and reliability.

Faulty modules can be replaced without shutting down the entire system.

The Future of Solid-State Transformers

Researchers and power companies are actively exploring SST deployment in next-generation power networks.

Several pilot projects are already demonstrating SSTs in:

- Smart grid substations
- Electric vehicle infrastructure
- Renewable energy farms

In the future, SSTs could become essential components of digital energy networks, enabling decentralized power systems that are flexible, efficient, and resilient.

As global energy demand rises and sustainability goals become more urgent, technologies that enhance power efficiency will play a crucial role in shaping the future of electricity.

Conclusion

Solid-state transformers represent a significant evolution in electrical power technology. By combining power electronics, high-frequency transformers, and intelligent control systems, SSTs offer capabilities far beyond traditional transformers.

Their ability to enable efficient energy conversion, renewable integration, bidirectional power flow, and smart grid compatibility makes them a powerful tool for modern energy systems.

While challenges such as cost, thermal management, and reliability remain, ongoing advancements in semiconductor devices and digital control technologies are steadily addressing these barriers.

As power grids transition toward more sustainable and decentralized models, solid-state transformers could become one of the key technologies driving the next generation of energy-efficient power infrastructure.

Article Link: https://electronicsbuzz.in/solid-state-transformers-energy-efficiency-the-future-of-smart-power-grids/

Policy, Regulatory Innovations, and Market Reforms

Egypt Allocates EGP 104 billion for Power Network Strengthening

Egypt's Ministry of Finance has allocated about EGP 104 billion to the electricity sector in the 2026-27 budget for grid infrastructure development and wider energy sector improvements. The allocation, up 39 percent year on year, will be used mainly for strengthening electricity transmission and distribution networks to support reliable power supply, renewable energy integration and efficiency improvement measures.

Read More: https://shorturl.at/zjUDL

UERC Grants Post-Facto Approval for INR 4.23 billion RDSS Works

The Uttarakhand Electricity Regulatory Commission (UERC), Uttarakhand, India has granted post-facto approval to Uttarakhand Power Corporation Limited for an additional investment of INR 4.23 billion under the revamped distribution sector scheme (RDSS). The approved works cover additional smart metering, border area electrification, electrification under the vibrant villages programme, auxiliary cable deployment for distribution transformer smart metering, and electrification of tribal households and public institutions.

Read More: https://shorturl.at/ivu1D

CEA Notifies CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulation, 2026

The Central Electricity Authority (CEA) has notified the CEA (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2026. The amendments insert a new chapter covering technical standards for solar, floating solar, onshore wind, offshore wind and battery energy storage systems (BESS), while also introducing fresh definitions for BESS components and operating parameters such as state of charge, state of health, c-rate and cycle. Among the key provisions, renewable energy plants above 10 MW will be required to install automatic weather stations, while plants will also need power plant controllers, segregated communication systems, power quality meters, ride through capability and reactive power control modes in line with grid connectivity norms.

Read More: https://shorturl.at/sfZfb

Ministry of Power Launches Insurance Surety Bonds as Alternative to Bank Guarantees across Power Procurement Frameworks

The Ministry of Power (MoP), Government of India (GoI) has launched insurance surety bonds as an acceptable alternative to bank guarantees for bid security and performance security across

power procurement frameworks. The provisions for insurance surety bonds have already been incorporated in the standard bidding guidelines for renewable energy, pumped storage and transmission projects and MoP has advised all states, union territories and procuring utilities to include them in their bidding documents for long-term, medium-term and short-term power procurement, as well as battery energy storage systems.

Read More: https://tinyurl.com/ynae3tc3

AfDB Approves USD 5.65 Million Grant to Support Minigrids Portfolio Across Africa

The African Development Bank Group (AfDB) has approved a USD 5.65 million reimbursable grant from the Sustainable Energy Fund for Africa to pilot the peace renewable energy certificate (P-REC) aggregation facility. The initiative will use renewable energy certificates as a primary financing mechanism to support a portfolio of mini-grid projects across Africa. Furthermore, the facility will sign long-term agreements with mini-grid developers across 14 countries: Burundi, Central African Republic, Chad, the Democratic Republic of Congo, Ethiopia, Liberia, Mali, Niger, Nigeria, Sierra Leone, Somalia, South Sudan, Sudan, and Uganda.

Read More: https://tinyurl.com/44zatu55

ADB Launches $25 Million Facility to Support ASEAN Power Grid Integration

The Asian Development Bank (ADB) has launched the regional connectivity fund for Energy in Southeast Asia, a USD 25 million multi-partner trust fund aimed at accelerating the development of the ASEAN Power Grid. The facility will support early-stage preparation of cross-border energy and transmission projects across the region, including feasibility studies, engineering design, financial structuring and safeguard assessments. It will also provide technical assistance, policy advice and capacity building to strengthen regulatory frameworks and improve project readiness.

Read More: https://tinyurl.com/mtmmjny3

MNRE Approves 500 MW Renewable Energy Pilot for CfD Programme

The Ministry of New and Renewable Energy (MNRE) has approved a pilot for the contract for difference (CfD) programme for renewable energy. Under the approved framework, the Solar Energy Corporation of India Limited (SECI), acting as the nodal agency for this implementation, will issue a tender for 500 MW of renewable energy capacity. The selected projects will be required to supply 1,500 MWh of power during three non-solar hours each day. Furthermore, SECI will define the specific supply hours within a designated time band, providing operational flexibility to developers.

Read More: https://tinyurl.com/4sxcypp3

Singapore Upgrades EV Charging Framework with New National Standard

The Government of Singapore has upgraded its electric vehicle (EV) charging framework by elevating Technical Reference 25 to a full national standard. The revised standard introduces tighter technical requirements to improve the safety, reliability and consistency of EV charging infrastructure across the country. It expands the regulatory scope to cover wireless power transfer, mobile charging systems and battery swapping for two-wheelers, four-wheelers and heavy goods vehicles. The framework also brings in stricter electrical safety norms, enhanced temperature controls, stronger cable integrity checks for direct current charging systems, cybersecurity provisions and guidelines for smart grid integration and smart charging.

Read More: https://tinyurl.com/5d7va72a

Projects and Technology Update

Electric Mobility and Charging Infrastructure

Walmart, ABB E-mobility Deploy 400 kW DC Fast Chargers at U.S. Stores

Walmart and ABB E-mobility have begun installing A400 All-in-One DC fast chargers at seven Walmart locations in metropolitan Phoenix, alongside initial sites in Colorado, Florida, and Georgia. The deployments mark the start of a planned nationwide rollout that will embed high-power EV charging at Walmart and Sam's Club properties across the United States.

Read More: https://tinyurl.com/ycxetmn2

XCharge GridLink Wins 2026 E+E Leader Award for Grid-Friendly EV Charging

XCharge North America's GridLink battery-integrated DC fast charger has been named a 2026 Judges' Choice Winner in the Environment+Energy Leader Awards' Business + Infrastructure category. The recognition, announced by XCharge North America, highlights GridLink's role in enabling high-power charging at sites where conventional infrastructure is constrained by grid limits, cost, or timeline. It marks a second consecutive year of E+E Leader recognition for the system.

Read More: https://tinyurl.com/2jutfhe4

Electric Mobility Global Strategic Industry Research Report 2026: Market to Reach $3 Trillion by 2030 with China Dominating-

The global market for Electric Mobility was valued at US$930.8 Billion in 2024 and is projected to reach US$3.0 Trillion by 2030, growing at a CAGR of 21.5% from 2024 to 2030. This comprehensive report provides an in-depth analysis of market trends, drivers, and forecasts, helping you make informed business decisions. Electric mobility is rapidly transforming the transportation landscape, offering a sustainable alternative to traditional internal combustion engine vehicles. Electric vehicles (EVs), including cars, buses, bikes, and scooters, utilize electric powertrains to reduce carbon emissions and dependence on fossil fuels.

Read More: https://tinyurl.com/ys9zr755

To make Gurgaon, Faridabad EV-ready, Haryana aims to Boost Charging Infra

With an aim to address the challenges hindering the adoption of electric vehicle (EV) in cities of Haryana, the state government has proposed an amendment to the Haryana Building Code, 2017, to scale up mandatory charging infrastructure in residential and non-residential premises. Gurgaon and Faridabad, among other cities in the state, lag behind neighbouring Delhi in EV adoption. These two cities will be in focus when the new rule comes into force, said officials..

Read More : https://tinyurl.com/294fu829

India EV Boom 2026: Electric Cars Race Ahead – Until Price, Policy and Reality hit the Brakes

India's EV story, on the surface, is one of rapid acceleration. Electric vehicle sales jumped around 25% year-on-year in FY26 to 24.5 lakh units, data from Federation of Automobiles Dealers Association (FADA). The surge was powered by new model launches, improving supply chains and rising urban acceptance. The direction is unmistakable: electric is gaining ground.

Read More : https://tinyurl.com/46xhv5n6

Grid Modernization and Smart Metering

Google Secured Discom Licence for Vizag Data Centre Hub

Google has secured a power distribution (discom) licence for its upcoming 1 GW data centre hub in Visakhapatnam (Vizag), marking a key milestone for the $15 billion project. The approval enables Google to directly procure and distribute electricity for its operations, improving cost efficiency and ensuring reliable power supply for the hyperscale AI-ready facility. The project is considered one of India's largest foreign direct investments and is expected to significantly boost Andhra Pradesh's digital infrastructure ecosystem.

Read More: https://sl1nk.com/0csx02n

Metering as a Service (MaaS) - A Practical Path to Financial Sustainability for African Water Utilities

Smart metering is widely recognised as a solution to improve visibility into consumption, leakage, and billing. Yet adoption remains uneven, particularly in emerging markets, due to high upfront capital expenditure (CapEx). Many utilities remain trapped in a cycle of ageing infrastructure, operational inefficiency, and declining revenue. In January 2026, Hangzhou LAISON Technology Co., Ltd. (LAISON) released its Metering as a Service (MaaS) White Paper 2026, introducing an innovative model that shifts from 'selling products' to 'delivering service outcomes'.

Read More : https://tinyurl.com/mrxkfdvs

Cybersecurity, Standards and Data Privacy in Energy Systems

Microsoft Deepens its Commitment to Japan with $10 billion Investment in AI Infrastructure, Cybersecurity, and Workforce

Microsoft today announced a $10 billion (approx. ¥1.6 trillion) investment in Japan from 2026 through 2029, built around three pillars: Technology, Trust, and Talent. The commitments include expanding our own in-country infrastructure, collaboration with domestic partners to expand AI infrastructure options within Japan, deepening public-private cybersecurity partnerships with Japan's national institutions, and training more than one million engineers, developers, and workers across Japan's most strategically important industries by 2030.

Read More : https://tinyurl.com/vvs87ckx

Anthropic launches AI cybersecurity initiative with big tech partners:

The organization has unveiled "Project Glasswing", a cybersecurity initiative allowing partners including Amazon, Microsoft, Apple, Google, Nvidia, CrowdStrike and Palo Alto Networks to preview and test its unreleased AI model "Claude Mythos Preview" for defensive security work. The company says the model has already identified thousands of vulnerabilities across software systems and will be made available to selected organisations alongside support for open-source security groups.

Read More : https://tinyurl.com/596hynsh

Green Hydrogen and Green Ammonia Ecosystem Development

Breakthrough Solar-to-Hydrogen Technology Eliminates Electrolysers

A startup from Karlsruhe Institute of Technology introduced a novel photoreactor technology capable of producing green hydrogen directly from sunlight and water without using electrolysers or grid electricity. This innovation could significantly

reduce production costs and simplify hydrogen deployment in remote and distributed applications

Read More: https://sl1nk.com/6pqdh05

Global Green Hydrogen Prices Show Early Stabilization

Green hydrogen prices in Europe showed a decline to around $6.69/kg in April 2026, indicating early signs of market stabilization after years of volatility. The trend is driven by improved electrolyser efficiency, falling renewable energy costs, and increased project commissioning globally

Read More: https://acesse.one/m5sof2m

Green Hydrogen Integrated with Sustainable Aviation Fuel Projects

India is integrating green hydrogen hubs with sustainable aviation fuel (SAF) production, including a new ethanol-to-jet fuel plant at NTPC's hydrogen hub in Visakhapatnam. This reflects emerging sector coupling between hydrogen, biofuels, and aviation decarbonization pathways

Read More: https://l1nq.com/9ipxym0

Energy Storage Systems

NLC India Signs EUR 100 million Loan Agreement with KfW for Solar and BESS Projects

NLC India Limited has signed a EUR 100 million loan agreement with KfW Germany to support the development of solar power and battery energy storage system (BESS) projects. The funding will help expand its renewable energy portfolio, improve grid reliability, diversify its borrowing base and provide access to competitively priced capital. NLC India has also indicated plans to scale up its renewable energy capacity in line with its longer-term targets.

Read More: https://shorturl.at/3ypWK

Andhra Pradesh Plans 3,000 MWh Battery Energy Storage Systems

The Andhra Pradesh government, India is planning 3,000 MWh of battery energy storage systems to improve grid reliability, support renewable energy integration and manage peak demand. The planned systems are expected to reduce dependence on costly thermal power during peak hours, with power purchase costs estimated to decline from about INR 10 per unit to INR 4.85 per unit once the projects become operational.

Read More: https://shorturl.at/nuomR

Neuron Energy Commissions 5 GWh BESS Manufacturing Facility in Maharashtra, India

Neuron Energy has commissioned a battery energy storage system (BESS) manufacturing facility in Talegaon, Maharashtra, India. The facility has been developed to manufacture containerized BESS for deployment across solar and grid infrastructure. The manufacturing unit has an annual production capacity of 5 GWh. Additionally, the facility can produce up to 1,000 containerized BESS units annually. It has been established with an investment of Rs 1 billion and spans an area of seven acres.

Read More: https://tinyurl.com/mr2refab

Smart Infrastructure: Cities, Buildings, and Digital Twins

London Borough Cuts Maintenance Costs with Digital Twin

The London borough of Harrow has launched a new digital twin enabling remote building inspections and more immersive online experiences for citizens. Using Site Scan drone software from Esri UK, Harrow is capturing and processing drone data to create detailed 3D models of key sites, including leisure centres, parks, arts venues and other council buildings. High resolution drone imagery is allowing faster and more cost-effective maintenance surveys while 3D maps of parks are helping to increase the use of green space by the public.

Read More: https://shorturl.at/4CYa7

Tech Mahindra Inks MoU with IIT Bombay to Build 3D Digital Twin to Enable Smart Infrastructure

Tech Mahindra announced the signing of a Memorandum of Understanding (MoU) with the Indian Institute of Technology, Bombay, to develop a 3D Digital Twin of the institute's Gymkhana building. The collaboration seeks to develop a comprehensive digital replica of the facility, showcasing how immersive digital technologies can enable smart infrastructure and drive campus innovation. This collaboration will leverage advanced 3D modeling and rendering technologies, Digital Twin frameworks, Building Information Modeling (BIM) integration, spatial data integration, and a cloud-based visualization platform to build an immersive, web-based interface of the Gymkhana building.

Read More: https://shorturl.at/MsNTh

New York City Launches Urban Forest Plan

New York City has unveiled its Urban Forest Plan, the city's first comprehensive framework for protecting existing canopy, expanding tree planting, and cultivating long-term stewardship across public and private land. Spearheaded by the Mayor's Office of Climate & Environmental Justice (MOCEJ) in collaboration with

NYC Parks and a broad coalition of public and civic partners, the plan establishes a coordinated approach to increasing New York City's tree canopy coverage.

Read More: https://shorturl.at/kVFxv

Toronto Announces Streetlight Modernisation Programme

The City of Toronto and Toronto Hydro have announced a plan for an enhanced 10-year investment in Toronto's streetlighting system across neighbourhoods by 2035. It aims to improve safety, reliability and sustainability of one of Canada's largest and most complex streetlighting systems. The City's 2026 Budget sets out a $577m total investment through Toronto Hydro's subsidiary, Toronto Hydro Energy Services Inc, which will fund the conversion of Toronto's streetlights to energy-efficient LED lighting with smart lighting controls. It also includes the ongoing renewal of Toronto's streetlighting infrastructure.

Read More: https://shorturl.at/kVFxv

Decentralized Renewables and Resilient Microgrids

Tata Power Launches Solar + Bio-CNG Renewable Microgrid in Paska Bazar, Uttar Pradesh

TP Renewable Microgrid (Tata Power) deepened its rural transformation push with a hybrid solar microgrid plus biogas solution in Paska Bazar, UP. The project serves around 2,500 flood-prone households, powers bulk milk coolers and replaces diesel generators, while biogas units convert cattle dung into household cooking fuel.

Read More: https://tinyurl.com/3mb5ty2n

India's First FDRE Project Begins Commissioning

Juniper Green Energy has begun commissioning India's first firm and dispatchable renewable energy (FDRE) project under the Ministry of Power's 2023 guidelines. This marks its yet another historic first after the commissioning of India's first merchant battery energy storage system (BESS) in Bikaner. The project combines 259 MWp solar, 280 MW wind, and 200 MWh BESS spanning Rajasthan and Gujarat, to deliver reliable, firm and dispatchable clean power aligned to grid demand.

Read More: https://tinyurl.com/56jymuvd

India Crosses the 150 GW Solar Milestone

India officially crossed the 150 GW installed solar capacity mark, with rooftop solar contributing a record share. PV Magazine notes that rooftop solar additions grew 69% YoY, reaching about 8.7 GW in the latest cycle, driven primarily by the PM Surya Ghar scheme.

Read More: https://tinyurl.com/5zsjwjw6

PM Surya Ghar Utsav Launched in Andhra Pradesh with 100% Subsidy for SC/ST Households

Andhra Pradesh launched a state-level outreach campaign offering 100% rooftop solar subsidy for SC/ST beneficiaries and up to 40% for other eligible categories. The drive is positioned as a free-electricity guarantee for low-income households under the central PM Surya Ghar framework.

Read More: https://tinyurl.com/bddr9h7k

AI, Predictive Analytics, and Autonomous Energy Systems

Siemens Energy and TCS partner on AI for energy operations and data-centre demand

TCS signed strategic AI MoUs with Siemens Energy AG and Siemens Energy India. Siemens Energy India will support TCS' HyperVault data-centre platform with power-systems, electrification and grid-technology expertise, while joint AI workflows will target intelligent operations across grids and industrial assets.

Read More: https://tinyurl.com/32dpe72z

Meta Books Up to 1 GW of Space-Solar and Long-Duration Storage to Power AI Data Centres in America

Meta announced has become one of the first major technology companies to secure a capacity reservation for orbit-to-grid space solar energy, alongside new long-duration storage partnerships in America. The deals are designed to deliver firm clean power for Meta's expanding AI data-centre fleet and represent one of the most ambitious frontier-energy procurements by a hyperscaler to date.

Read More: https://tinyurl.com/39vwr8sp

Turbo Energy Deploys AI-Driven Energy Storage Systems in International Military Operations

Turbo Energy announced active deployment of its modular, AI-driven Sunbox Industry hybrid energy system with the Spanish Army. The containerized, off-grid platform integrates PV generation, battery storage and auxiliary generation, can be operational in under 10 minutes, and targets mission-critical defense and energy-security applications. The platform uses predictive analytics to optimize energy flows, reduce fuel dependence and enable autonomous, resilient power for command, communications and other critical systems in infrastructure-constrained environments.

Read More: https://tinyurl.com/5jtsd374

Web3.0, Blockchain and Digital Trust in Energy Transactions

D.Energy Announces Official Sustainability Partnership with TGR Haas F1 Team

D.Energy, the world's first Layer 1 blockchain built on a Proof of Energy consensus mechanism, today announced it has become the Official Sustainability Partner of TGR Haas F1 Team. The partnership brings verifiable, real-time energy accountability to one of Formula 1's most closely watched teams, as it enters a new era alongside Toyota Gazoo Racing.

Read More: https://tinyurl.com/r9j568t2

HOYA BIT Becomes First Carbon-Neutral Exchange

HOYA BIT, a Taiwan-based cryptocurrency exchange, recently announced that it has become the world's first crypto exchange to achieve BSI ISO 14068-1 carbon neutrality certification. Bryn Sutton, Vice President of BSI, and Aiman Ali, Global Head of Sustainability, traveled to Taiwan to present the certification in person, reflecting BSI's high regard for HOYA BIT.

Read More: https://tinyurl.com/776pzn9b

India's Web3 Dominance: Startup Trends 2026

India has emerged as one of the few countries building global-scale Web3 infrastructure simultaneously. Teams behind EigenLayer, Avail, and Sentient are defining new global protocol categories. Enterprise adoption is accelerating, with Reliance Jio's partnership with Aptos integrating blockchain into 500 million consumer lives, while companies such as Flipkart and Nazara deploy across digital and consumer ecosystems. The government's National Blockchain Framework has processed 396M+ verifications across 105 million records. That this is unfolding under sustained regulatory ambiguity, makes India's output all the more significant and points to the scale of the opportunity ahead.

Read More: https://tinyurl.com/2fc4vwbk

Innovation Showcases, Partnerships, and Global Events

INDIAN EVENTS

08th – 10th July 2026
12th India Energy Storage Week (IESW) 2026, New Delhi
www.energystorageweek.in/

27th - 28th October 2026
Distribution Utility Meet, Jaipur, Rajasthan
https://www.dumindia.in

INTERNATIONAL EVENTS

19th – 21st May 2026
Enlit Africa 2026, Cape Town, South Africa; www.enlit-africa.com/

8th – 11th June 2026
Asia Clean Energy Forum (ACEF) 2026, Manila, Philippines
www.asiacleanenergyforum.adb.org/

09th - 10th June 2026
CIRED Brussels (Belgium); www.2026brussels.cired.net/

15th -18th June 2026
Finland 2026 Symposium on Microgrids Lappeenranta-Tampere
microgrid-symposiums.org

22nd - 23rd June 2026
Iredonline 2026: Battery Energy Storage Plants in Power Systems – Markets, Technologies and Regulation
ired-online.der-lab.net/

23rd – 28th August 2026
CIGRE Session 2026, Paris, France; session.cigre.org/

1st – 3rd September 2026
Middle East Energy, Dubai World Trade Centre, UAE
www.middleeast-energy.com/en/home.html

22nd – 24th September 2026
Enlit Asia 2026, Jakarta, Indonesia; www.enlit-asia.com/

6th -7th October, 2026
18th Latin Amercian Smart Grid Forum, Sao Paulo, Brazil
www. Smartgrid.com.br/eng

11th - 13th October, 2026
17th Clean Energy Ministerial, Riyadh, Kingdom of Saudi Arabia
https://www.cleanenergyministerial.org/

11th -15th October, 2026
25th WPC Energy Congress, Riyadh, Saudi Arabia
wwwwpcenergy.org

26th - 30th October 2026
SIEW 2026, Singapore; www.siew.gov.sg/

02nd – 05th November, 2026
Future Power Expo Riyadh Front Exhibition & Conference Center Adipec, Abu Dhabi, United Arab Emirates; www.adipec.com/

02nd – 05th November, 2026
ADIPEC 2026, Abu Dhabi, UAE; www.adipec.com

10th – 12th November 2026
Enlit Europe 2026, Vienna, Austria; www.enlit.world/enlit-europe/

09th- 20th November, 2026
COP 31- UN Climate Change Conference, Antalya, Türkiye
www.unfccc.int/cop31

Announcing ISGF Training on Advance Metering Infrastructure on 15th and 16th July 2025 in New Delhi

To register and for inquiries, please Email us at: Aashima@indiasmartgrid.org

International Smart Grid Action Network (ISGAN) with Global Smart Energy Federation (GSEF) Calls Global Clean Energy Leaders for Prestigious Award Recognition

The theme of this edition is "Excellence in Long-Term Planning of Smart Distribution Grids under Uncertainty." This theme highlights the importance of forward-looking planning approaches that can help distribution grids respond effectively to changing conditions, including evolving demand, distributed energy resources, climate-related risks, and other sources of uncertainty. It aims to recognise projects and initiatives that demonstrate practical and impactful efforts to strengthen the planning, development, and operation of smart distribution grids over the long term.

Important Dates

- Deadline for Submission of Applications:31 May 2026
- Notification of Assessment Results:20 July 2026
- Awards Ceremony: During the 17th Clean Energy Ministerial (CEM17)
  October 2026, Riyadh, Kingdom of Saudi Arabia
- Publication: Immediately following the ceremony and thereafter

For More Information - Visit: www.iea-isgan.org

Announcing Distribution Utility Meet (DUM) 2026