

EARTH CONNECT





B.N. College, Kumharon Ka Bhatta,
Central Area, Udaipur

ORGANIZED BY



02,03,04 MAY



Supported By



Event By



COLOR 'n' DESIGN
an advertising network



INSIDE

EDITORIAL BOARD

Sunil Bansal
President RSA

Nitin Agarwal
CEO RSA

Manoj Kumar Gupta
Sr. Vice President RSA

Ramakant Jangid
Vice President RSA

Prateek Agarwal
Vice President RSA



CONTRIBUTING WRITERS

Gaurav Verma
R&D Officer

DESIGNED BY

Sakshi Nahta
Graphic Designer



EDITORIAL

WattPower on Track to Achieve 15 GW Marks a New Era in Solar Technology

Chennai-based **WattPower** has rapidly scaled up, producing and supplying **15 GW of solar string inverters** within just 17 months—solidifying its leadership in India’s renewable energy sector.

Pioneering High-Capacity Manufacturing and Advanced Technology

Established in 2022, WattPower’s state-of-the-art manufacturing facility in Chennai produces solar string inverters and boasts an impressive annual production capacity of 9.9 GW.

Key Achievements & Innovations

- ✓ **High-Capacity Manufacturing** – A 9.9 GW annual production facility in Chennai with a semi-automated assembly line and strict quality control.
- ✓ **Cutting-Edge Technology** – A patented system eliminating DC-side failures, enhancing safety and reliability in solar installations.
- ✓ **Longevity & Efficiency** – Inverters designed for up to 25 years of operation with minimal maintenance.

Future Growth & Expansion

Backed by a **German holding company**, WattPower is expanding into **energy storage** while strengthening its presence in utility-scale, commercial, and industrial solar sectors.

With a strong growth trajectory and a commitment to efficiency, safety, and innovation, **WattPower is shaping India’s clean energy future.** 🚀

WattPower’s milestone close to 15 GW in 17 months stands as a testament to its unwavering commitment to driving India’s renewable energy transition. By combining technological excellence with strategic market positioning, **WattPower** is not only shaping India’s solar future but also setting new global standards for efficiency and safety.

Divya Prakash
Co-Founder and CEO
WattPower

GUJARAT DISCOMS CONTINUE TO LEAD, RAJASTHAN DISCOMS FACE DOWNGRADES

The Ministry of Power's 13th Annual Integrated DISCOM Ratings has been released, evaluating 63 DISCOMs and power departments across India. The report assesses financial and operational performance for FY 2023-24, highlighting Gujarat's dominance while states like Andhra Pradesh, Telangana, and Rajasthan saw downgrades.

Gujarat Maintains Top Spot

Gujarat's four power distribution companies (DISCOMs) retained their A+ ratings, solidifying the state's reputation for efficient power distribution.

- Uttar Gujarat Vij Company sold 28,498 MU, generating revenue of ₹196.72 billion.
- Dakshin Gujarat Vij Company sold 29,554 MU, generating ₹239.33 billion.
- Paschim Gujarat Vij Company sold 37,181 MU, with revenue reaching ₹268.51 billion.

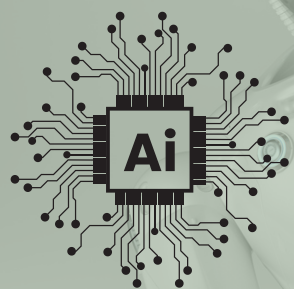
Rajasthan DISCOMs Struggle

Rajasthan's three major DISCOMs saw two downgrades, signaling financial and operational challenges:

- Ajmer Vidyut Vitran Nigam was downgraded from B to B-, selling 24,779 MU with a revenue of ₹195.19 billion.
- Jodhpur Vidyut Vitran Nigam retained its B- rating, selling 26,606 MU and generating ₹201.91 billion.
- Jaipur Vidyut Vitran Nigam was downgraded from B to B-, selling 32,462 MU with revenue of ₹256.73 billion.

Other Highlights

- Telangana DISCOMs received the lowest rating (C-), indicating severe financial stress.
- Maharashtra State Electricity Distribution Company was downgraded from C to C-, reflecting operational inefficiencies.
- Karnataka DISCOMs showed mixed results, with three upgrades and one downgrade.
- Uttar Pradesh DISCOMs maintained their previous ratings, showing stability but limited progress.



AI IN ACTION: IMMERSION WEEK HIGHLIGHTS! 🤖

AI Immersion Week, organized by CII, was an incredible journey into the future of artificial intelligence! Industry leaders, innovators, and AI enthusiasts gathered to explore the latest trends, tools, and breakthroughs in AI. From insightful keynotes to hands-on workshops, this event was a powerhouse of knowledge and collaboration.

- ◆ Live demonstrations of cutting-edge AI tools
- ◆ Interactive sessions fostering innovation and networking
- ◆ Expert panels discussing the future of AI
- ◆ Engaging workshops with real-world applications

🚀 Special Highlight: AI in Renewable Energy



On March 27, 2025, with support from the Rajasthan Solar Association (RSA), a remarkable session was held as part of AI Immersion Week in Jaipur, where RSA members participated enthusiastically to explore the transformative applications of AI in the renewable energy sector. The session provided valuable insights into leveraging AI technologies for optimizing solar power projects, enhancing efficiency, and driving innovation. Attendees praised the initiative, emphasizing the critical role of AI in shaping the future of solar energy.

Thank you to everyone who participated and contributed to making AI Immersion Week a huge success! Stay tuned for more AI-powered experiences coming soon.



India's Renewable Energy Tendering Solars, But Execution Challenges Loom

Record-Breaking 73 GW of Tenders Issued in 2024, Yet Under subscription and PSA Delays Threaten Market Growth

India's utility-scale renewable energy tendering market is scaling new heights, driven by the Ministry of New and Renewable Energy's (MNRE) 50 GW annual bidding mandate. In 2024, a record 73 GW of tenders were issued, reflecting the country's aggressive push towards a clean energy future. However, despite this historic milestone, key challenges in project execution—such as under subscription, power sale agreement (PSA) delays, and tender cancellations—are raising concerns about the sector's long-term stability.

A Shift Toward Non-Traditional Renewable Energy Technologies

The dynamics of India's renewable energy tenders are evolving, with a significant tilt toward wind-solar hybrid (WSH) and firm and dispatchable renewable energy (FDRE) projects. These technologies are gaining traction as energy off takers demand better power quality and grid stability. Emerging players such as IndiGrid, Gensol, and Hexa Climate are capitalizing on this shift by focusing on storage-integrated and FDRE projects, marking a strategic move in the sector.

Rising Challenges: Under subscription, PSA Delays, and Cancellations

While tender issuance has skyrocketed, the execution of these projects faces hurdles:

Tender Under subscription: In 2024, 8.5 GW of tenders remained undersubscribed, a fivefold increase from 2023. Complex bidding structures, aggressive pricing strategies, and delays in interstate transmission system (ISTS) readiness have deterred developers.

PSA Bottlenecks: More than 40 GW of PSAs remain unsigned, with SECI alone accounting for 12 GW. Energy off-takers are delaying agreements in anticipation of falling tariffs, while DISCOMs face regulatory approval hurdles, causing a backlog in project finalization.

Tender Cancellations: From 2020 to 2024, 38.3 GW of tenders were cancelled, representing 19% of total issued capacity. Key reasons include un-favourable tender conditions, lack of investor confidence, and off-take uncertainties.

Market Shift: From SECI-Led Tenders to Direct Off taker Engagement

With PSA delays mounting, the market is witnessing a transition away from SECI-led tenders toward those directly initiated by energy offtakers. These tenders typically lead to faster PSA signings, reducing project execution risks and attracting more investor interest.

The Road Ahead: Bridging the Tendering-Execution Gap

To sustain India's renewable energy momentum, a holistic approach to tendering is essential. The government must:

- ✓ Set Annual Targets for PSA Signings and Project Execution, not just tender issuance.
- ✓ Ensure Tender Feasibility Before Issuance, securing offtake agreements in advance.
- ✓ Enforce Renewable Purchase Obligations (RPOs) with Stricter Penalties, boosting demand certainty.
- ✓ Expand Energy Storage and Grid Infrastructure, enabling smoother renewable integration.

RSA KNOWLEDGE ADDA

OPTIMIZING HIGH-VOLTAGE INVERTERS

⚡ Carrier-Based PWM Techniques – Which One Wins?



High-voltage inverters are the backbone of renewable energy systems, ensuring efficient power conversion. But how do we optimize their performance? The answer lies in Pulse Width Modulation (PWM). Let's dive into a comparative analysis of three key carrier-based PWM techniques – Sawtooth, Triangular, and Sinusoidal PWM – and find out which one is the best!

Understanding Carrier-Based PWM

Carrier-based PWM works by comparing a modulating signal with a high-frequency carrier waveform to control inverter switching. This impacts:

- ✓ Harmonic Distortion (THD) – Less distortion = Better power quality!
- ✓ Switching Efficiency – Lower losses = Higher reliability!
- ✓ Electromagnetic Interference (EMI) – Minimized noise = Smooth operation!



- Cons: Requires precise control & implementation
- Best For: High-voltage grid-tied inverters & renewable energy systems

Comparative Analysis of PWM Techniques

1.Sawtooth PWM – Fast but Noisy!

- Key Features: Linear rise, sharp drop
- Pros: Fast response, high-speed switching
- Cons: High THD, difficult filtering
- Best For: High-speed, low-precision applications

2.Triangular PWM – Balanced & Efficient!

- Key Features: Symmetrical waveform
- Pros: Moderate THD, predictable harmonics
- Cons: Not the best for ultra-low distortion needs
- Best For: General-purpose inverters & motor drives

3.Sinusoidal PWM – The Gold Standard!

- Key Features: Closely mimics the reference signal
- Pros: Lowest THD, high efficiency, smooth waveforms

The Verdict: Which PWM Technique is Best?

- For the BEST power quality → Choose Sinusoidal PWM!
- For balanced performance → Go for Triangular PWM!
- For high-speed switching → Sawtooth PWM works!

The Future of Inverter Optimization

With renewable energy booming, optimizing carrier-based PWM techniques is key to maximizing inverter performance and seamless grid integration

India Supercharges EV Manufacturing: MHI Mandates 100% Local Content for 18 Critical Components

No More Imports: A Bold Move to Strengthen India's EV Ecosystem

In a game-changing policy shift, the Ministry of Heavy Industries (MHI) has mandated 100% Domestic Content Requirement (DCR) for 18 key electric vehicle (EV) components under the PM E-Drive program. This decision prohibits the import of battery modules across all EV segments and ensures that original equipment manufacturers (OEMs) localize critical components to qualify for government subsidies.

The move is part of the Phased Manufacturing Program (PMP) under FAME-II, aimed at accelerating EV adoption and strengthening India's self-reliance in EV technology. With an allocation of ₹109 billion (~\$1.29 billion), PM E-Drive focuses on:

1. Demand incentives for EV buyers
 2. Scaling up domestic EV production
- Developing robust charging infrastructure

Whats CHANGING?

- Complete knockdown (CKD) imports of battery modules and critical EV parts are now prohibited.
- Testing agencies will issue strict guidelines to ensure compliance with domestic manufacturing norms.
- Traction battery packs, vehicle control units, traction motors, and more must now be manufactured in India.
- Two and three-wheeler DCR compliance extended until May 1, 2025.
- E-bus compliance for key PMP components extended by 12 months.



EV Industry Outlook: India Races Ahead

With EV sales hitting 1.95 million units in 2024—a 27% year-on-year surge—India is rapidly emerging as a global EV powerhouse. The new DCR mandate is expected to boost domestic manufacturing, attract fresh investments, and reduce supply chain dependencies on imports.



INDIA'S ROOFTOP SOLAR INSTALLATIONS HIT A RECORD 3.2 GW IN 2024



India's rooftop solar sector experienced unprecedented growth in 2024, with a record 3.2 GW of capacity installed—an 86% increase from 2023, according to Q4 & Annual 2024 Rooftop Solar Market Report. This surge brought India's cumulative rooftop solar capacity to 13.7 GW by the end of the year.

KEY GROWTH DRIVERS:

- PM Surya Ghar: Muft Bijli Yojana: The residential sector dominated installations, accounting for 74% of the total capacity added in 2024.
- Commercial & Industrial (C&I) Segment: Contributed 19% (industrial), 6% (commercial), and 0.8% (government).
- Operational Expenditure (OPEX) Model: Played a role in non-residential installations.
- State Rooftop Solar Tenders: 2.8 GW of tenders were floated in 2024, with 43% targeting government buildings.

TOP PERFORMING STATES:

1. Gujarat – 36% of total installations.
2. Maharashtra – 20% of total installations.
3. Kerala – 9% of total installations.
4. Rajasthan & Uttar Pradesh – 15% and 7%, respectively.

Q4 2024 RECORD-BREAKING GROWTH:

- 1.3 GW installed, marking a 64% increase over Q3 (791.1 MW).
- Residential segment led with 85% of installations, driven by the PM Surya Ghar program.
- Gujarat (33%), Maharashtra (26%), and Uttar Pradesh (8%) were the leading contributors in Q4.
- Over 1 GW of tenders were issued in Q4, marking a 185% quarter-over-quarter (QoQ) increase.

CHALLENGES & FUTURE OUTLOOK:

- Supply chain constraints and module cost fluctuations remain concerns.
- Exemptions from the Approved List of Models and Manufacturers (ALMM) are awaited for better clarity in procurement.
- Gujarat's strong policy push is expected to drive further growth in 2025.

With the PM Surya Ghar scheme accelerating adoption, India's rooftop solar sector is poised for continued expansion, potentially crossing the 15 GW mark in 2025.



Brookfield Transfers 1.6 GW Renewables Portfolio to Gentari, Reshaping India's Clean Energy Landscape

Brookfield's sale of its 1.6 GW renewables portfolio in India to Gentari Renewables India marks a significant shift in the country's renewable energy market. The transaction, completed in two phases, aligns with Brookfield's strategy of portfolio monetization while reinforcing Gentari's presence in India's clean energy sector.

Key Highlights of the Deal:

- 1.6 GW Sale in Two Phases
- 1 GW of operating assets already transferred.
- Remaining 600 MW to be completed in the second phase.

Stake Transfer:

Gentari acquired full ownership of 21 Special Purpose Vehicles (SPVs), including those under TerraForm, Axis, Electryone, NTPC, and NHPC.

Gentari's India Expansion:

Won 400 MW in SJVN's 1,200 MW wind-solar hybrid auction in November 2024 at a tariff of ₹3.19/kWh (~\$0.0379).

Market Impact:

- Brookfield exits one of its largest renewable portfolios in India, indicating profit-taking and capital reallocation for new projects.
- Gentari strengthens its foothold in India, aligning with its parent company Petronas' goal of expanding clean energy investments.
- The transaction highlights investor confidence in India's renewable sector, potentially attracting more foreign capital.

UNREGULATED BOS COMPONENTS POSE A CHALLENGE TO INDIA'S ROOFTOP SOLAR GROWTH

LACK OF STANDARDS THREATENS THE SUCCESS OF PM SURYA GHAR INITIATIVE

India's rooftop solar sector is witnessing unprecedented growth, fueled by government-backed initiatives like PM Surya Ghar: Muft Bijli Yojana. However, a critical challenge remains unaddressed—the lack of standardized Balance of System (BoS) components, particularly mounting structures, which threatens the structural integrity and long-term sustainability of rooftop solar installations.

THE HIDDEN RISK: STRUCTURAL STABILITY OF ROOFTOP INSTALLATIONS

While solar panels and inverters adhere to international standards, mounting structures remain largely unregulated. In many residential rooftops in India were never designed to bear the load of solar systems for 25 years. In the absence of clear technical guidelines, poor-quality structures could lead to safety hazards, increased maintenance costs, and even system failures.

The risk is particularly acute in Tier 2 and Tier 3 cities, where local craftsmen (“mistris”) install solar systems without engineering expertise. The lack of standardized frameworks delays procurement, increases costs, and hampers large-scale deployment under government schemes.

A CALL FOR REGULATORY ACTION

The unregulated nature of BoS components could undermine confidence in India's residential solar push. Industry leaders stress the need for a dedicated regulatory framework that establishes clear guidelines for:

- ✓ Load-bearing evaluations to ensure rooftops can support solar installations.
- ✓ Material durability standards for longer lifespan and minimal maintenance.
- ✓ Uniform certification processes to prevent low-quality imports from flooding the market.

Countries like Germany and the U.S. have already adopted stringent BoS regulations, ensuring safer installations and boosting investor confidence. India must follow suit to protect the long-term viability of PM Surya Ghar and the broader solar ecosystem.

EARTH CONNECT

The Newsletter brings out News , Views , Opinions, Trends , Policy Changes , Technology Advancements and other Developments in the Solar Industry



Love what you're reading? Don't miss out on future insights and updates in the world of solar energy and renewables! Subscribe to our newsletter and be the first to receive:

-  Exclusive industry reports
-  Invitations to upcoming events and webinars
-  Latest news and trends in the renewable energy sector
-  Special offers and partner promotions

Advertise with Us!

 Full Page Ad – ₹50,000

 Half Page Ad – ₹25,000

Reach a targeted audience passionate about clean energy.

CONTACT US!