

Improving Infrastructure: Equipment manufacturers' views

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The expansion of the power equipment industry is being driven by the shift to renewable energy, the need for grid modernisation, and a focus on sustainability. Significant market opportunities are expected to emerge in areas such as renewable energy infrastructure, smart grid technologies and decentralised energy systems. Equipment manufacturers are focusing on innovation and sustainability to capitalise on these opportunities and will play a crucial role in shaping the future energy landscape. Leading manufacturers reflect on the past year's performance and identify upcoming opportunities and challenges in the market...

What is your assessment of the power sector's progress over the past year?



Manish Agarwal, CEO, Conductor & Telecom Businesses, APAR Industries Limited; and MD, APAR Transmission & Distribution Projects Private Limited

Manish Agarwal

The Indian power sector has undergone a remarkable transformation over the past decade, emerging as a beacon of progress in renewable energy and electricity access. As the country strives to meet ambitious targets for clean energy and infrastructure development, it is essential to assess the achievements, challenges and future opportunities within this dynamic sector. Over the past decade, the power sector has showcased significant achievements despite ongoing challenges. The country has made significant strides in renewable capacity addition. It has achieved nearly 100 per cent electricity access and added approximately 200 GW of generation capacity over the past decade, with around 120 GW sourced from renewables alone. Peak power demand has surged to 250 GW, driven by robust economic growth, emphasising the need to meet increasing energy needs while enhancing electricity availability.

India's power grid, one of the largest unified grids globally, has become a single integrated market. In the past year alone, 14,390 ckt km of transmission lines, 61,591 MVA of transformation capacity and 4,290 MW of inter-regional transfer capacity have been added. The government is committed to expanding non-fossil fuel-based installed electricity generation capacity to over 500 GW by 2030, with a phased transmission plan including infrastructure for evacuating 10 GW of offshore wind energy from Gujarat and Tamil Nadu.

The government has also initiated several ambitious reforms to overcome distribution challenges. These include the launch of the Revamped Distribution Sector Scheme (RDSS) to enhance operational efficiency, and the introduction of the Late Payment Surcharge Rules and the Electricity Amendment Rules 2023 to improve financial discipline among discoms. As per the PFC's 12th Integrated Rating Report, aggregate technical and commercial (AT&C) losses have dropped to 15.4 per cent, driven by increased billing efficiency. Prepaid smart metering is a critical intervention under the RDSS, with a target of installing 250 million prepaid smart meters.

What are the biggest unresolved challenges for the sector? What is your policy wishlist for the government?

Manish Agarwal

Despite the advancements, significant challenges remain. The pace of new renewable energy capacity installation must triple to meet the ambitious target of 500 GW by 2030. A critical concern is whether India's transmission infrastructure can evolve rapidly enough to support this transition. Without a robust grid, the full potential of renewable resources cannot be harnessed. Investments in grid development are essential for ensuring a reliable low-carbon energy future.

Reconductoring and voltage upgrades present a cost-effective solution for enhancing existing transmission capacity. These projects typically cost less than half of what it would take to construct new lines while minimising disruptions. Therefore, it is critical to prioritise large-scale reconductoring initiatives and establish a national policy on this front.

Another key requirement is a dedicated fund aimed at improving the operation, reliability and security within the power system. The existing Power System Development Fund, which has financed strategic projects — including those focused on reliable communication and congestion relief — has been running low on resources. Recently, 57 projects worth approximately Rs 56.90 billion under evaluation were returned, including more than 10 projects worth Rs 23.85 billion aimed at renovating and modernising transmission and distribution systems to alleviate congestion. A well-structured fund would catalyse initiatives necessary for long-term energy security and the fiberisation of transmission lines up to 66 kV. Ensuring long-term energy security and sustainability is imperative.

Given the expected surge in electricity consumption, it is in the national interest to build the highest capacity transmission lines in every available corridor. Leveraging loss capitalisation can fund these efforts and ensure that the country is equipped to meet future energy demands efficiently.

What market opportunities do you foresee in the power industry in the next one to two years?


Manish Agarwal

Looking forward, despite being a low per capita income nation, India is poised for significant investment in its power equipment industry. An estimated \$30 billion will be required by 2030 to integrate 500 GW of non-fossil energy into the grid. This will involve the addition of nearly 50,890 ckt km of transmission lines and almost 400,000 MVA of substation capacity.

India's infrastructure push presents multi-year opportunities across various sectors essential for economic growth and climate commitments. The Ministry of New and Renewable Energy envisions about 30 GW of offshore capacity, creating immense opportunities for transmission equipment manufacturers. Furthermore, initiatives like the One World, One Sun, One Grid project signify a monumental shift towards global energy sharing.

The transportation sector also presents opportunities as the government aims for 30 per cent electric vehicle adoption by 2030, alongside record investments in upgrading Indian Railways and expanding metro systems across major cities. More than 20 Indian cities are developing metro systems, with around 870 km currently operational and an additional 1,040 km under construction. This urban infrastructure development will create significant demand for power equipment.

In conclusion, India's power sector stands at a pivotal moment, having made significant progress while facing unresolved challenges that require strategic interventions. Stakeholders must collaborate to enhance transmission infrastructure while capitalising on emerging market opportunities in renewable energy and electric mobility. With concerted efforts and innovative solutions from government bodies, private enterprises and consumers, India can strengthen its position as a global leader in clean energy transition and sustainable development. As we move forward into an era defined by climate responsibility and technological advancement, embracing these opportunities will be crucial to shaping a resilient energy future for India.

-  **SMART GRID**
- EQUIPMENT**
- ENERGY STORAGE**
- RENEWABLE**
- POLICY**

