



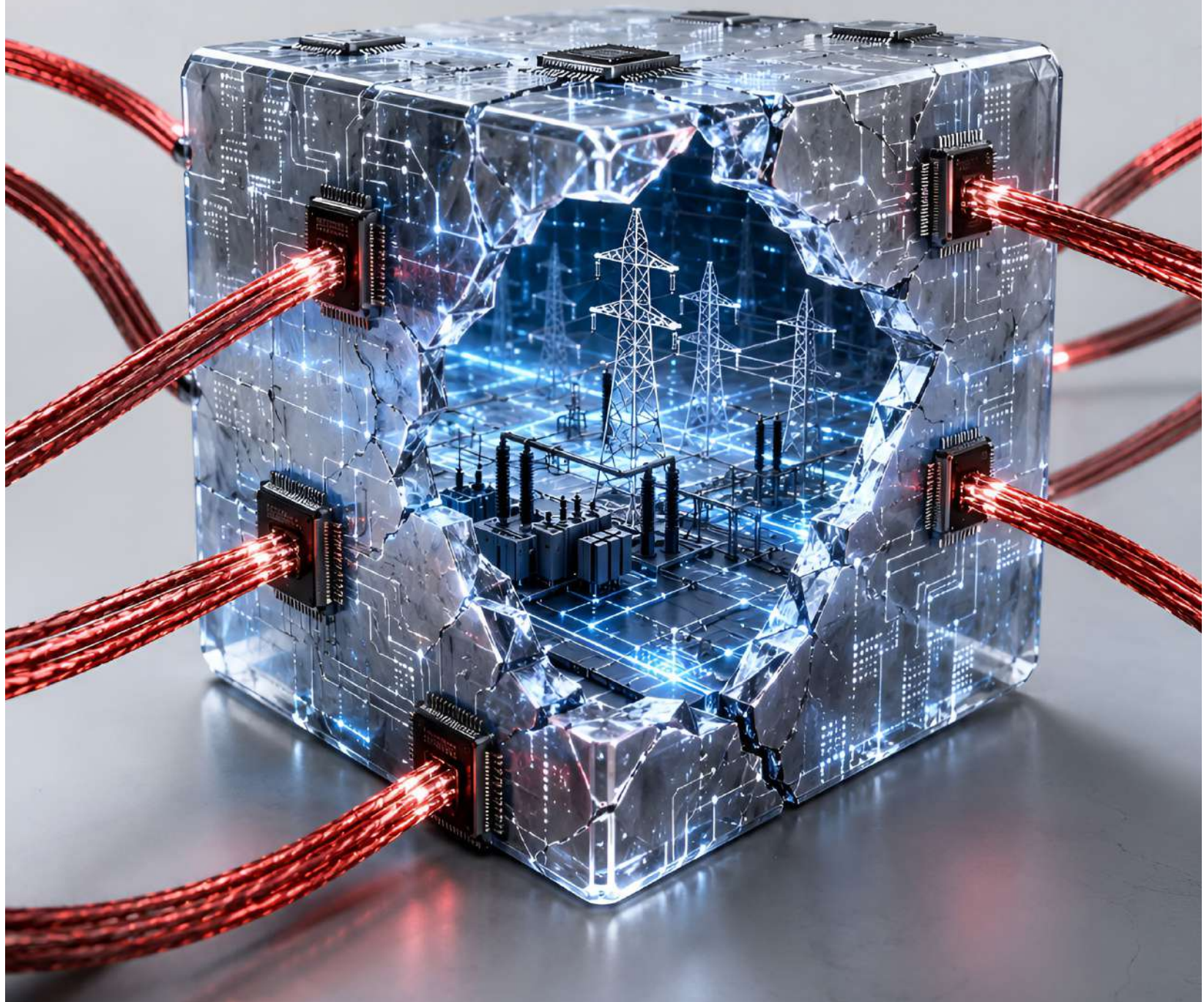
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CLEAN ENERGY GOAL NEEDS A SMARTER GRID

Building a future-ready power system needs far more than just laying down thousands of miles of physical cables. It demands digital transformation—converting traditional systems into a responsive, intelligent grid.

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APAR enabling faster renewable energy integration through brownfield reconductoring and advanced conductor technologies



Through proactive coordination with utilities, we jointly plan outages, prioritise transmission lines and address field constraints in advance, which helps in seamless execution during scheduled shutdown windows.

Manish Agrawal
CEO, Conductors and
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APAR Industries Limited; Managing
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A PAR's ability to execute brownfield/uprate reconductoring projects at speed is built on meticulous planning,

technology adoption and close collaboration with utilities. Let us know more from Manish Agrawal.

With utilities expected to complete projects within tighter timelines, how is your company ensuring faster execution/production and reliable supply of conductors?

As utilities work to deliver transmission projects within increasingly compressed timelines, they need partners who can not only ensure reliable supply but also execute projects faster and more efficiently.

A key enabler of faster project delivery is our leadership in brownfield/uprate reconductoring, by leveraging existing transmission corridors utilities can increase transmission capacity often by up to two times without acquiring additional right-of-way. This enables faster execution while optimising project costs and reducing environmental impact. Our ability to execute uprate reconductoring projects at speed is built on meticulous planning, technology adoption and close collaboration with utilities. The process begins with detailed route surveys, including LiDAR drone-based surveys where appropriate along with risk assessments engineering and procurement planning to ensure execution readiness well before work begins.

Through proactive coordination with utilities, we jointly plan outages prioritise transmission lines and address field constraints in advance which enable seamless execution during scheduled shutdown windows. This is complemented by micro-level planning including route validation optimised drum length finalisation and line charging plans which enhance installation efficiency and minimise wastage. In addition, our strong Right-of-Way (ROW) management capability

helps proactively resolve access challenges and maintain execution momentum on the ground. Together, these capabilities enable APAR to consistently deliver reconductoring projects with speed, precision and minimal disruption to the grid.

Complementing our execution capabilities is APAR's integrated and ever-ready manufacturing ecosystem designed to ensure reliable supply at speed. As the world's largest manufacturer of aluminium and alloy conductors, we have continuously invested in capacity expansion while modernising our manufacturing infrastructure with advanced technologies. A key differentiator is our interchangeable product line capability, which enables multiple conductor variants to be manufactured on the same production line with minimal changeovers. Combined with automation and digitisation initiatives this provides the flexibility to respond quickly to evolving customer requirements, optimise production schedules and reduce lead times. Backed by strategically located manufacturing facilities and an integrated supply chain, APAR consistently delivers high-quality conductors at scale with the agility, reliability and responsiveness that today's transmission projects demand.

As India's grid expands to integrate large volumes of renewable energy, how is your product/solutions portfolio evolving to meet the changing technical requirements of the power network?

India's energy transition is fundamentally reshaping the transmission landscape. As renewable energy capacity scales rapidly, utilities must transmit significantly more power while improving efficiency, resilience and sustainability. At APAR, our innovation strategy is built around

three priorities—ESG, advanced engineering and grid modernisation.

On the sustainability front, we are developing low-carbon transmission solutions using Green Aluminium produced through renewable energy and Ultra Green Aluminium manufactured with high recycled content, while strengthening carbon accounting and increasing renewable energy usage across our manufacturing operations. This enables customers to reduce the carbon footprint of their infrastructure and aligns our portfolio with evolving global regulations such as the Carbon Border Adjustment Mechanism (CBAM).

Our innovation strategy is focused on enabling faster, more efficient and future-ready power networks. First, our leadership in HTLS reconductoring enables faster renewable energy integration by upgrading existing transmission corridors instead of waiting for greenfield transmission projects. This allows utilities to enhance network capacity quickly and cost-effectively while avoiding right-of-way constraints and lengthy project timelines. Second, APAR has developed a portfolio of advanced conductor technologies, including Low-Loss AL59 (R-TW-R) and AL59 Plus conductors for Tariff Based Competitive Bidding (TBCB) and renewable energy evacuation projects, respectively. Complemented by our POWER-ZAD (Z-shaped), trapezoidal wire, High Emissivity, Low-Loss ACSR, Ultra-High-Strength Aluminium-Clad Steel Wires and advanced conductor coating technologies; these solutions reduce transmission losses improve thermal performance, enhance current carrying capacity and maximise the utilisation of existing transmission assets.

Our Continuously Transposed Conductors (CTC) are the foundational technology that makes transformers more efficient, reliable and capable of supporting the rapid growth of renewable energy. As grids become more electrified and renewable-heavy the demand for high performance CTC

will keep on rising. By continuously braiding individually insulated copper strands, CTC minimises eddy current losses, improves heat dissipation and delivers the mechanical strength required for reliable operation under dynamic grid conditions.

Ultimately, innovation at APAR is driven by a simple philosophy—delivering tomorrow's solutions, today. By integrating ESG principles with advanced engineering, we are enabling utilities to modernise their networks, accelerate the energy transition and build a smarter, more resilient and sustainable power grid.

With the government's ₹9.15 lakh crore transmission investment pipeline expected to drive significant demand, how is your company expanding manufacturing capacity, strengthening supply chains and positioning itself for this opportunity?

At APAR, we have been consistently preparing for this opportunity through sustained investments over across our manufacturing, supply chain and technology capabilities.

First, supply chain resilience has been a key strategic focus area for us. Through long-term sourcing partnerships with leading aluminium and copper producers, continuous vendor development, selective backward integration, strategic supplier collaborations for critical inputs and just-in-time procurement, we have built a more agile and reliable supply chain ecosystem. These initiatives have strengthened supply assurance, reduced dependency on individual suppliers, improved cost competitiveness and enabled us to consistently support large-scale transmission projects with timely deliveries.

Second, we continued to strengthen and expand manufacturing capacity across our conductor, rod and CTC businesses while simultaneously investing in automation, digitalisation, process optimisation and safety. These investments are enabling faster production, higher throughput,

consistent quality and safer manufacturing operations, which ensures we can scale efficiently without compromising reliability.

Third, our product development roadmap is aligned with the evolving needs of the power sector. We continue to introduce advanced conductor technologies—including High Efficiency Conductors (HEC), HTLS and other high-performance solutions that enable higher ampacity, lower transmission losses, improve grid efficiency and faster execution of transmission projects. Combined with our turnkey execution capabilities in HTLS reconductoring, this helps us to support utilities not only with reliable product supply but also with faster project execution.

By strengthening our manufacturing ecosystem, supply chain resilience and technology leadership in parallel, APAR is well positioned to support India's next phase of transmission expansion and the country's long-term energy transition.

How are you incorporating cybersecurity, secure communication protocols and digital intelligence into your offerings?

Power networks are becoming increasingly digital and so, cybersecurity and secure communication are fundamental to building resilient grid infrastructure. At APAR, we combine robust internal cybersecurity practices with technologies that enable smarter, more connected power networks. Our engineering data and intellectual property are protected through secure servers, role-based access controls and stringent governance protocols. On the product side, our high-fibre-count OPGW and OPPC solutions enable secure high-speed communication for SCADA substation automation protection systems and smart grid applications. Additionally, we leverage advanced digital engineering tools such as PLS-CADD, ANSYS and AutoCAD to optimise product design, simulation and lifecycle performance. ⚡