

SECTOR

Power

Reliable and affordable electricity is fundamental to economic growth, industrial competitiveness and quality of life. As economies expand and societies become increasingly connected, demand for power continues to rise. At the same time, countries are seeking to reduce emissions, strengthen energy security and improve the resilience of their power systems.

India is at the centre of this transformation. The country is simultaneously expanding generation capacity, accelerating renewable energy deployment, investing in energy storage and strengthening transmission infrastructure to support future demand. These developments are creating opportunities across the power value chain while reshaping how electricity is generated, transmitted, stored and consumed.

For more than six decades, Tata Consulting Engineers' Power Business has played an important role in this journey. With expertise spanning thermal, hydro, renewable and nuclear generation, as well as transmission, distribution and energy storage systems, the business supports the development of infrastructure that powers economic growth and national progress. Having engineered over 300 GW of generation capacity, more than 85 per cent of India's nuclear infrastructure, over 12,500 circuit kilometres of transmission and distribution lines and more than 250 substations, the business brings deep engineering expertise across the entire electricity value chain.

Today, the Power Business continues to help clients create reliable, sustainable and intelligent power systems that strengthen energy security while supporting the transition to a lower carbon future.



“Reliable and affordable electricity is fundamental to economic progress, energy security and quality of life. As power systems evolve, our focus remains on helping clients create balanced generation, storage and grid infrastructure that can meet rising demand while supporting a more sustainable and resilient energy future. Through engineering excellence, innovation and deep domain expertise, we remain committed to enabling the next generation of power systems.”

Ramadurai Raghavan
Business Head, PBU

Industry Trends and Market Outlook

The global power sector is undergoing one of the most significant transitions in its history. Demand for electricity continues to increase, driven by industrial growth, urbanisation, digital infrastructure, electric mobility and the growing electrification of economic activity. At the same time, nations are pursuing ambitious decarbonisation goals while seeking greater energy security and energy independence. These priorities are reshaping investment decisions and creating demand for a more diversified and resilient energy mix.

While renewable energy continues to expand rapidly, reliable and dispatchable generation remains essential to maintaining grid stability. This is driving investments in higher efficiency thermal technologies, flexible plant operations and alternative fuel pathways including biomass, green hydrogen and ammonia. Hydropower and pumped storage are also gaining importance as countries seek long duration storage solutions that can support increasing levels of renewable integration.

Nuclear energy is entering a new phase of growth. India's ambition to achieve 100 GW of nuclear capacity by 2047, together with the development of Bharat Small Reactors and the opportunities emerging through the SHANTI Act, is creating a stronger ecosystem for innovation, investment and wider participation. As countries seek reliable low carbon baseload power, nuclear energy is expected to play an increasingly important role in strengthening long term energy security.

Transmission and distribution networks are becoming increasingly intelligent.

Investments in HVDC systems, Battery Energy Storage Systems, advanced grid monitoring and digital technologies are enabling better renewable integration while improving reliability and operational performance. Future power systems will depend as much on storage, transmission and management as on generation.

Against this backdrop, the Power Business is uniquely positioned through its presence across generation, storage, transmission and emerging technologies, enabling it to support the evolving needs of the sector while contributing to reliable, sustainable and intelligent power infrastructure.

Engineering Excellence Across the Power Value Chain

Future power systems will require a balanced mix of generation, storage and grid infrastructure working together seamlessly. The Power Business has developed its capabilities around this reality, bringing together expertise across conventional generation, renewable energy, nuclear power, energy storage and transmission systems.

The business supports power infrastructure across the entire lifecycle, from feasibility studies and basic engineering to detailed design, procurement support, construction supervision, commissioning assistance and long term asset sustenance services. This integrated approach helps clients improve reliability, optimise performance and extend asset life while adapting to changing regulatory and environmental requirements.

Engineering the power systems that drive growth, strengthen energy security and enable the energy transition.

Across thermal generation, the focus is increasingly on higher efficiency technologies, operational flexibility and lower carbon pathways. In hydropower, capabilities span hydrological studies, dam engineering, underground structures, electromechanical systems and pumped storage projects that support grid stability and renewable integration. Renewable energy expertise spans solar, floating solar, wind and hybrid systems integrated with storage and advanced grid technologies.

TCE is deeply embedded in India's nuclear journey. The Power Business brings extensive experience across reactor facilities, conventional island systems, balance of plant infrastructure and associated engineering disciplines. This capability positions the business strongly to support the next generation of nuclear programmes, including emerging small reactor technologies that are expected to play a growing role in future energy systems.

These generation capabilities are complemented by expertise in transmission, distribution and energy storage. From substations and transmission networks to power system studies, HVDC systems, grid compliance and Battery Energy Storage Systems, the business helps create the infrastructure needed to deliver electricity reliably, efficiently and safely.

Delivering Reliable, Sustainable and Intelligent Power Systems

FY26 demonstrated the breadth of the Power Business as it expanded its presence across generation, storage, transmission and emerging energy technologies to support rising electricity demand, energy security and decarbonisation goals. In thermal generation, the business strengthened its position through engineering of more than 40 GW of generation capacity across domestic and international markets. Growing demand for efficient generation, cleaner technologies and flexible operations created opportunities to support both new projects and the modernisation of existing assets.

The business also continued to expand capabilities aligned with green hydrogen and ammonia integration, supporting the industry's transition towards lower carbon energy systems.

Hydropower and pumped storage emerged as significant growth areas during the year. The business advanced several pumped storage projects with a cumulative hydro and PSP capacity exceeding 10 GW, reinforcing its position in a segment that is becoming increasingly important for balancing renewable generation and maintaining grid reliability.

The renewable energy portfolio continued to expand with engineering support for more than 10 GW of solar, floating solar, wind and hybrid energy systems. These projects are increasingly being integrated with storage and transmission infrastructure to create more resilient and flexible power systems. The business also expanded its international presence through renewable and conventional generation projects in new geographies.

Transmission and distribution remained another area of focus. The business supported grid modernisation programmes covering more than 500 circuit kilometres of transmission lines and over 20 substations, while strengthening capabilities in grid compliance, advanced power system studies and intelligent network planning. Growing investments in HVDC and Battery Energy Storage Systems are creating opportunities as utilities seek to improve reliability and optimise network performance.

Nuclear energy continued to gain strategic importance during FY26. The momentum around Bharat Small Reactors, combined with policy developments associated with the SHANTI Act and India's long term nuclear ambitions, reinforced the sector's potential. Drawing on decades of nuclear experience, the business continued to strengthen capabilities aligned with future nuclear opportunities and emerging technologies.

Digital engineering, advanced modelling and simulation tools played an increasingly important role in project delivery. These technologies are helping improve design quality, optimise performance, strengthen risk management and accelerate decision-making, enabling the development of more intelligent power systems.

Future Outlook and Priorities

The future of the power sector will be shaped by the need to simultaneously support economic growth, strengthen energy security and accelerate the energy transition. This will require continued investment across generation, storage, transmission and digital infrastructure, supported by engineering solutions that enhance reliability, sustainability and intelligence across the power system.

The Power Business will continue to focus on higher efficiency generation, flexible plant operations, green hydrogen integration, pumped storage, renewable energy, Battery Energy Storage Systems and advanced transmission technologies. The growing importance of intelligent grids and digital engineering will further strengthen the role of data driven decision-making across the asset lifecycle.

Nuclear energy is expected to become an increasingly important pillar of India's future power system. The development of Bharat Small Reactors, the opportunities emerging through the SHANTI Act and the national ambition to achieve 100 GW of nuclear capacity by 2047 are expected to create substantial opportunities across the sector. The business is well positioned to support this next phase of growth through its long standing expertise and deep understanding of the nuclear value chain.

16%

Share in total revenue

20%

Share in total acquisition

1,266

Workforce on 31st March 2026

₹ 361 cr

Worth value engineering for customer

CASE STUDY

Engineering India's Next Generation of Nuclear Power

2 x 700 MWe Pressurised Heavy Water Reactor Project, Karnataka

This project adds two indigenous 700 MWe Pressurised Heavy Water Reactors to an existing nuclear site in Karnataka, taking total installed capacity at the site from 880 MW to 2,280 MW on completion. The reactors form part of a planned fleet of ten such units being built across India in fleet mode, a strategy designed to bring economies of scale and improve construction efficiency as the country works towards its target of 100 GW of nuclear capacity by 2047. As one of India's most technically demanding nuclear builds, the project required rigorous engineering coordination, exacting documentation control, and close interface management between design organisations, manufacturers, and the construction site, all governed by the stringent regulatory and quality requirements that nuclear infrastructure demands.

TCE's Role

TCE provided comprehensive technical support spanning 3D integrated engineering design coordination, engineering documentation, and construction interface management. This included review, verification, and issuance of engineering drawings, specifications, and technical documents, alongside timely resolution of engineering issues during execution. TCE worked closely with design organisations on design methodologies, 3D models, manufacturing and site constructional drawings, disposition of non-conformance reports, and processing of design modifications in line with approved procedures and regulatory provisions. TCE's nuclear delivery team also contributed to quality assurance initiatives, constructability assessments, and technical evaluations to ensure compliance with applicable codes and standards.



Impact

Sustainable: The project strengthens India's low carbon baseload power, supporting the national target of 100 GW nuclear capacity by 2047 and contributing to a cleaner, diversified energy mix as the country balances renewables, hydro, and nuclear.

Reliable: Robust engineering documentation control, design verification, and non conformance management ensured compliance with stringent safety and regulatory standards, supporting safe and timely project execution.

Intelligent: TCE's 3D integrated engineering design coordination and close interface management across design organisations, manufacturers, and the construction site enabled proactive resolution of technical issues and supported the fleet mode construction strategy underpinning this and future reactors of its kind.

1 of 10

Indigenous 700 MWe reactors planned in fleet mode across India

2,280

MW Total site capacity on completion, up from 880 MW today

100

GW India's national nuclear capacity target by 2047

Generation III+

Indigenous reactor design