

# INTERVIEW



**Mr. Amit Sharma**

MD & CEO

Tata Consulting Engineers

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**Q TCE has executed complex infrastructure projects across geographies. What's your approach to planning and managing large-scale, multi-stakeholder projects in today's fast-evolving infrastructure landscape?**

At Tata Consulting Engineers, we believe that planning and managing large-scale infrastructure projects requires a combination of technical expertise, strong stakeholder coordination, and robust project governance. Our approach begins with a clear understanding of the project's objectives and stakeholder expectations. We invest time in defining the scope and aligning all involved parties, including government agencies, private partners, local communities, and regulatory bodies, to build a shared vision.

We utilise structured delivery models, detailed execution planning, and digital tools, including Building Information Modelling (BIM), Common Data Environments (CDEs), and digital twins, to enhance collaboration and transparency throughout the value chain. Our teams operate from six delivery centres and are supported by dedicated project offices, which enable us to manage complex timelines, logistics, and risks effectively.

We also focus on breaking down large assignments into manageable work packages, ensuring technical coordination among disciplines, and anticipating regulatory, environmental, and social challenges. This integrated and forward-looking approach has helped us deliver some of the most complex infrastructure projects across India and abroad with high standards of quality, safety, and client satisfaction.

**Q India is shifting toward decentralised and smart grids. How is TCE reengineering legacy power systems to enhance grid resilience and energy efficiency?**

India's power landscape is evolving rapidly with the integration of renewable energy sources, growing electricity demand, and the need for decentralised energy systems. At TCE, we are actively engaged in helping utilities and industrial customers modernise their power systems to meet these emerging needs.

Our work involves the redesign and upgrade of substations and transmission lines, enabling them to manage bi-directional power flows from distributed energy resources such as rooftop solar, wind farms, and battery storage systems. We are implementing advanced grid management systems, including smart meters, remote monitoring, and

SCADA controls, that help in better load balancing and fault detection.

TCE also uses data analytics, digital twins, and AI-based forecasting tools to improve decision-making and optimise asset performance. By combining these technological solutions with our strong understanding of traditional power infrastructure, we are creating smart, efficient, and reliable grids that support India's goals of decarbonisation and energy access for all.

**Q From green hydrogen and SMRs to nuclear fusion, how is TCE positioning itself in these emerging domains, and how do they align with India's broader clean energy ambitions?**

We recognise that India's clean energy future depends on a diverse mix of technologies, and at TCE, we are preparing ourselves to contribute meaningfully across several of these emerging domains. In green hydrogen, we are working on projects that encompass the entire value chain; from production using electrolyzers powered by renewable energy, to safe storage, transportation, and end-use in industry and mobility. Our team is engaged in the engineering design of green hydrogen plants and infrastructure that will support the country's ambition to become a global hub for hydrogen production and export.

In the area of nuclear energy, TCE has a longstanding history of supporting India's indigenous nuclear programme. We are now also exploring new technologies such as Small Modular Reactors (SMRs), which offer safer and more flexible deployment in remote or industrial regions. These are particularly relevant for India's energy transition, where reliability and baseload power are essential.

While nuclear fusion is still in the research and development phase globally, we are closely monitoring its progress and building internal knowledge to support future projects as the technology matures. These efforts align with India's goal of achieving net-zero emissions by 2070 and reducing its reliance on fossil fuels.

**Q How is TCE integrating EV-ready infrastructure, intelligent transport systems, and new-age mobility solutions into its urban design frameworks?**

TCE believes that the future of urban mobility lies in integrated and intelligent systems that are clean, accessible, and efficient. Our urban planning teams

are developing frameworks that incorporate EV-ready infrastructure as a core component of city design. This includes planning for electric vehicle charging stations, grid integration for e-mobility, and battery management solutions.

We also design and implement intelligent transport systems (ITS) that help reduce congestion and improve road safety. These systems include adaptive traffic signals, AI-based traffic pattern analysis, smart parking, and public transport scheduling tools. We use data from sensors, cameras, and GPS to improve decision-making for city authorities and provide real-time information to commuters.

Additionally, we are supporting the development of multimodal transport hubs that bring together buses, metros, bicycles, and pedestrians in a seamless manner. By combining these transport solutions with urban development, we are helping create cities that are not only smarter but also more inclusive and sustainable.

**Q ■ How does TCE integrate power and water infrastructure expertise to build smart, resource-conscious systems for water-stressed regions?**

Water and power infrastructure are closely linked, especially in regions facing water scarcity and climate-related challenges. At TCE, we take a holistic view of both systems, designing solutions that minimise resource consumption and maximise operational efficiency.

For example, we design water treatment and supply systems powered by renewable energy, especially solar and small hydro. We also optimise pumping and distribution networks to reduce energy usage. On the power side, we ensure that large energy projects consider water availability and reuse in cooling and processing operations.

We utilise smart metering, sensor-based leak detection, and AI-driven demand forecasting to minimise water losses and enhance supply reliability. In both rural and urban settings, our integrated planning helps ensure that power and water infrastructure support one another, creating long-term benefits for communities and ecosystems.

**Q ■ TCE has engineered wastewater treatment capacity of 33,000+ MLD. What are the innovations you're implementing to enhance water security and reuse across urban and industrial projects?**

TCE's experience in wastewater treatment is built on strong process engineering and a commitment to sustainability. In recent years, we have been focusing on innovations that promote water reuse and resource recovery. Our designs now often include tertiary treatment units that make treated water suitable for reuse in landscaping, construction, cooling towers, and even agriculture.

We are implementing technologies such as membrane bioreactors, ultrafiltration, and advanced oxidation processes that improve the quality of treated water while reducing energy consumption and operational costs. In industrial projects, we design zero-liquid discharge systems that recover salts and nutrients, preventing pollution of natural water bodies.

We are also developing digital tools for plant performance monitoring, fault prediction, and energy optimisation. These tools help operators achieve better control and efficiency. With growing urban populations and increasing pressure on water resources, such innovations are crucial to ensuring water security and building resilient cities.

**Q ■ Looking ahead, what is your vision for Tata Consulting Engineers' role in shaping India's infrastructure and clean energy future over the next decade?**

India stands at a pivotal moment of growth and transformation. Over the next decade, the country will continue to invest heavily in infrastructure, clean energy, manufacturing, and digital public goods. At TCE, we see ourselves playing a key role in enabling this progress by providing world-class engineering solutions that are sustainable, scalable, and future-ready.

We aim to deepen our presence across various sectors, including renewable energy, water management, urban development, digital infrastructure, and advanced manufacturing. Our goal is not only to be an engineering service provider, but also a strategic partner to our clients and governments as they navigate complex challenges and opportunities.

We are investing in innovation, digital tools, and talent development to stay ahead of the curve. As we move forward, our focus remains on delivering engineering excellence, creating a positive impact through technology, and contributing to nation-building in a manner that is inclusive, responsible, and aligned with global sustainability goals. 