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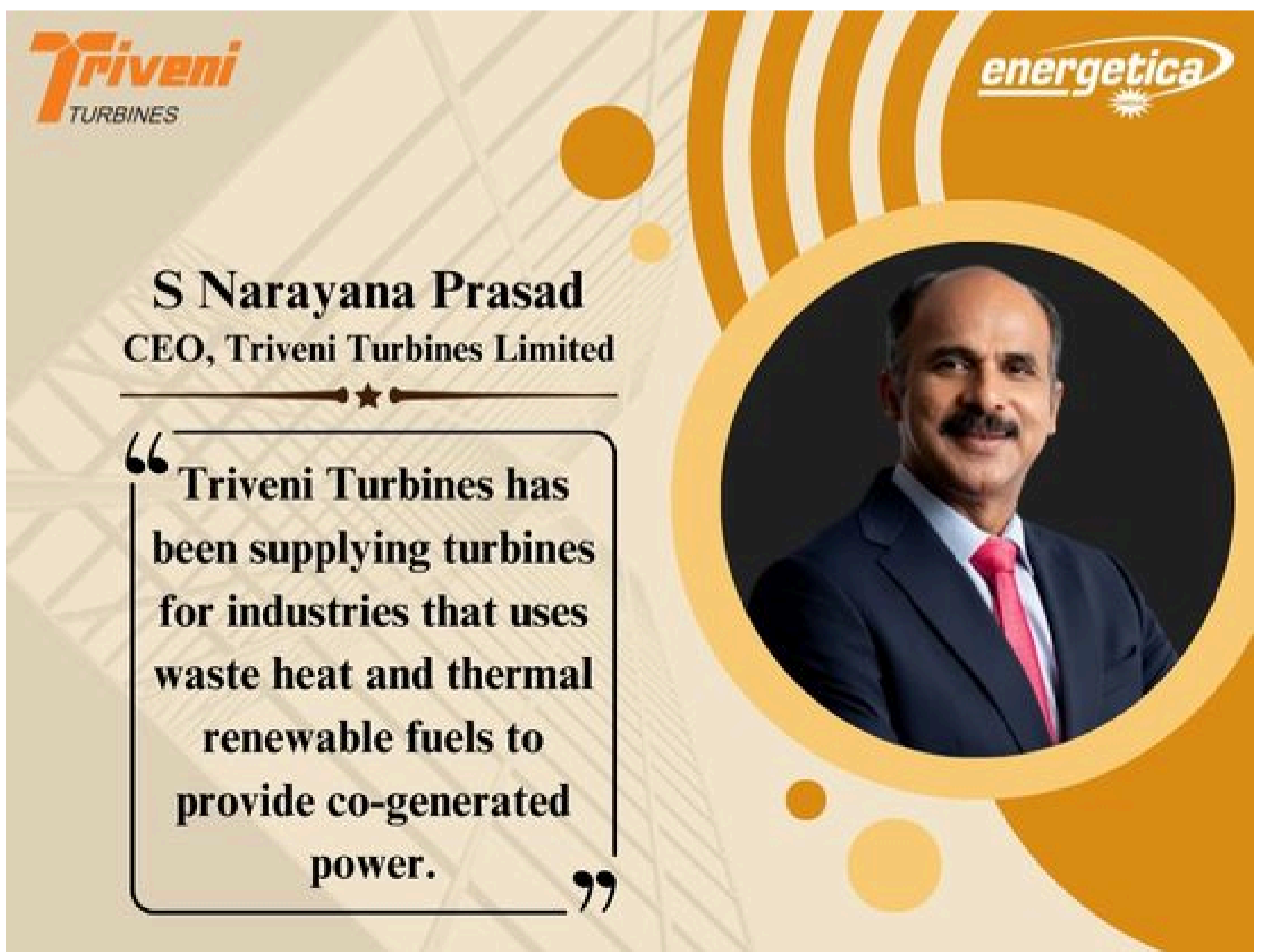
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Interview: S Narayana Prasad  
CEO at Triveni Turbines Limited

## India's Energy Transition: Triveni Turbines on Storage, Decarbonisation, and 'Make in India'

March 05, 2025. By Abha Rustagi



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**S Narayana Prasad**  
CEO, Triveni Turbines Limited

“ Triveni Turbines has been supplying turbines for industries that uses waste heat and thermal renewable fuels to provide co-generated power. ”

Tags: interviews Triveni Turbines S Narayana Prasad Decarbonisation Energy Storage Systems Renewable energy



*Over the years, Triveni Turbines has built expertise in providing robust, reliable, and efficient end-to-end steam turbine solutions of up to 100 MW, said S. Narayana Prasad, CEO, Triveni Turbines Limited in an interview with Abha Rustagi, Associate Editor, Energetica India.*

**Que:** With over five decades of experience, how has Triveni Turbines evolved in the industrial steam turbine sector?

**Ans:** Over the years, Triveni Turbines has built expertise in providing robust, reliable, and efficient end-to-end steam turbine solutions of up to 100 MW. Serving more than 20 industries, the Company provides high-tech, precision-engineered, customised solutions designed to meet specific customer needs.

In the past decade, Triveni Turbines has outperformed broader market trends owing to the increasing demand for steam turbines in its addressable markets, and the Company's expanding market share. This growth is built on a strong foundation of continually evolving Research & Development (R&D) and engineering expertise. Its customer-centric approach to R&D, along with a focus on product performance and lifecycle cost, has allowed Triveni Turbines to set industry benchmarks in efficiency, robustness, and uptime, positioning it among the top two global players.

Demonstrating a strong commitment to a "customer first" approach, Triveni Turbines has strategically aligned its manufacturing, supply chain, and logistics operation to meet increasing demand while ensure high-quality and timely delivery across new segments and geographies. By leveraging its knowledge on customer expectations, its manufacturing teams oversee production and assembly of industrial steam turbines up to 100 MW at its world-class facilities at Bengaluru, India. To better serve its international customers, the Company has also established a manufacturing and servicing facility in South Africa and has operationalised its North American facility in Houston, Texas, USA.

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**Que:** How do your steam turbine solutions cater to the needs of industrial captive and renewable power sectors?

**Ans:** Triveni Turbine Limited (TTL) is a focussed, fast-growing and market-leading corporation with core expertise in industrial heat & power solutions and decentralised steam-based renewable turbines up to 100 MW size.

The Industrial sector constitutes the largest share of captive power generation, driven primarily by the rising electricity demand from energy-intensive industries, such as Cement, Steel, Petroleum Refineries, and Chemicals. By integrating steam turbines with solar, geothermal, or waste-to-energy sources, customers can generate clean and reliable energy, while reducing their dependence on fossil fuels and increasing their energy security and resilience.

Furthermore, there is a growing trend toward the adoption of thermal renewable fuel-based power generation. Triveni Turbines' strategic focus on strengthening R&D and engineering capabilities, along with expanding its geographic presence, has positioned us as a leader in renewable fuel-based segments such as biomass power generation, waste-to-energy, waste heat recovery, and geothermal energy.

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**Que:** The Company recently bagged a 2.9 billion order from NTPC. Can you elaborate on the unique advantages of CO<sub>2</sub>-based battery energy storage compared to conventional storage technologies?

**Ans:** Triveni Turbine recently secured an order to setup a 160 MWh (mega-watthour) CO<sub>2</sub>- based long duration energy storage (LDES) system at NTPC's Kudgi Supercritical Thermal Power Plant (STPP) premises. The Company is executing this as a turnkey project in collaboration with a European technology partner.

This plant is designed for long-duration energy storage, unlike Li-ion battery storage, which typically offers a discharge cycle of less than five hours. It comes with several advantages, including an extended lifespan of over 25 years, no reliance on critical minerals such as lithium and cobalt, and minimal performance degradation. Unlike Battery Energy Storage Systems (BESS), which involve complex electrochemistry, this technology enables a 100% depth of discharge and is not constrained by topography. Its successful demonstration could unlock new possibilities in the field of electrical energy storage.

The plant will be built using industrial-grade electromechanical components, such as turbines, compressors, and pressure vessels, ensuring a longer equipment lifespan and a shorter setup time of 12 to 18 months. With standardised storage sizes, the facility can be scaled efficiently while maintaining competitive capital expenditure and a favourable levelised cost of storage (LCOS). Additionally, with low import dependency and no terrain restrictions, it offers a location-agnostic and self-reliant (Atmanirbhar) energy storage solution.

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**Que:** How do you view the future of hybrid power solutions combining steam turbines, renewables, and energy storage?

**Ans:** Triveni Turbines has been supplying turbines for industries that uses waste heat and thermal renewable fuels to provide co-generated power. This, along with the efforts to continuously improve efficiency of turbines, has helped the Company's customers in their journey of energy efficiency. Over the years, the Company has also invested in CO2 technology to develop supercritical turbines for power generation and energy storage cycles. Its Transcritical CO2 heat pumps can provide highly efficient heating & cooling systems that can be completely run on green power. Thus, numerous opportunities exist to contribute to the energy transition across industries with these new products.

**Que:** How do you view India's policy landscape for energy storage and decarbonisation and how can initiatives like 'Make in India' contribute to domestic manufacturing in this sector?

**Ans:** India is on the path to become energy independent by 2047 and "net zero" by 2070. Renewable energy (RE) is and will play key role in achieving these goals. However, the variable nature of renewable energy presents its own challenges, making energy storage the need of the hour. With prevalence of active energy trading, opportunities for unit rate arbitrage are only going to grow. Energy storage systems can realise this potential by not just managing energy peaks and providing round-the-clock (RTC) power but also improving quality of the RE power. While we develop energy storage options, it is imperative that we invest in sustainable options that do not decarbonise at the expense of environmental and social impact. Li-ion batteries and pumped hydro storage, while struggling with these challenges, are providing economically viable options for supporting build-up of RE power.

However, Triveni Turbines can create sustainable solutions with CO2 and air expansion turbines to build electro-mechanical energy storage. These solutions can be treated on par with Li-ion batteries and pumped hydro storage when it comes to incentives for investment (e.g. PLI, VGF) and taxation (e.g. GST). This can certainly accelerate the adoption of new technologies for energy storage.

**Que:** Does the Company have plans to expand its presence in India and globally, especially in emerging renewable energy sector?

**Ans:** To capitalise on growth opportunities, Triveni Turbines is strategically expanding into high-potential regions, including the lucrative U.S. market, South America, Eastern Europe, and East Asia. This expansion will strengthen the Company's export capabilities in the coming years, bolster enquiry pipelines and increase its overall addressable market.

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