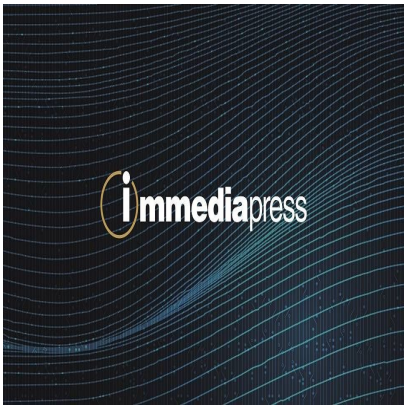


Shanghai Electric Integrates Industrial AI into Heavy-Duty Gas Turbine Manufacturing and Lifecycle Services

Descrizione

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AI supports key processes in the manufacture, operation and maintenance of high-end power equipment

SHANGHAI, Nov. 10, 2026 /PRNewswire/ â?? As industrial artificial intelligence (AI) moves from pilot projects into core operations, manufacturers are increasingly focused on how it can deliver sustained value in production and long-term equipment performance. For heavy-duty gas turbines, described as a â??crown jewelâ?• of high-end equipment manufacturing, this involves both precision machining of complex components and reliable operation throughout their service lives.

In its heavy-duty gas turbine business, Shanghai Electric (SEHK: 02727, SSE: 601727) is combining equipment engineering expertise with production and operating data. Applications span flexible blade manufacturing, inspection and servicing, as well as intelligent operations and maintenance (O&M), reflecting the companyâ??s broader efforts to advance AI-enabled manufacturing.

Flexible Blade Manufacturing

Manufacturing critical components is an essential capability for gas turbine suppliers. Blade production involves different sizes, shapes and machining routes, requiring automated equipment to accommodate multiple blade types and process requirements. Shanghai Electricâ??s flexible manufacturing line combines AI vision, digital twins, intelligent scheduling and robotics to support mixed-model blade production and automatic changeovers.

Using 3D vision and AI, the system identifies blade blanks in randomly stacked piles, then picks and positions them. Picking accuracy exceeds 99.99%. The line integrates production scheduling, manufacturing execution and quality management systems, linking loading, machining, inspection and final packing. It can switch between fully automated production and standalone machine operation,

providing flexibility to support production continuity.

AI-Assisted Quality Inspection

Alongside production flexibility, quality assurance is another focus of Shanghai Electricâ??s AI applications. Rotors are high-value, critical components in major power generation equipment, and weld quality directly affects their safe operation. To address the challenges of inspecting machined features on large components, the company has developed an AI-based visual inspection terminal that combines AI, robotic control and welding expertise. It provides real-time monitoring throughout welding operations to identify quality defects at an early stage.

The systemâ??s embodied AI architecture combines a collaborative robot with a custom end effector. The arm can extend and retract at the touch of a button and automatically adapt to the welding cycle. Using 5G connectivity, the system completes image analysis and returns inspection results within seconds. A data feedback loop links shop-floor observations, process optimization and quality traceability, turning practical manufacturing experience into digital knowledge that can be retained and reused.

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Data-Driven Operations and Maintenance

The applications extend from manufacturing and quality inspection to long-term plant operation. Shanghai Electricâ??s SIMPLE intelligent operation and maintenance platform draws on data from more than 60 turbine units, with over 1 million cumulative operating hours. It combines AI with knowledge of gas turbine operating principles to support real-time performance monitoring, dynamic optimization of operating performance and early warnings of potential faults.

Through cloud-edge coordination, the platform links design and operating data in a decision-support workflow covering monitoring, early warning, diagnosis and corrective action. This supports a shift from reactive repairs to proactive maintenance. Remote collaboration tools complement these capabilities, allowing experts to view live footage from plant sites and provide maintenance guidance through augmented reality annotations, supporting technical assistance across locations.

Shanghai Electric will continue to advance data integration across the gas turbine lifecycle, using feedback from manufacturing and operations to refine design, production and after-sales service. As it looks to international markets, Shanghai Electric will continue to validate and refine these capabilities in real-world projects. The company aims to meet power plantsâ?? needs for reliable operation, timely maintenance support and cost-effective operation over the long term, laying the foundation for the international expansion of its gas turbine business.

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