MITSUBISHI POWER

CASE STUDY:

AI-DRIVEN ANOMALY DETECTION MAKES BEIJING PLANT MORE RELIABLE.

TOMONI®
O&M Optimization
Pre-ACT | Post-ACT | KPI Analyst

PLANT DETAILS

- Shenhua Guohua (Beijing) Gas-Fired Cogeneration Co., Ltd.
- Owned by China Shenhua Guohua Power Co., Ltd.
- TOMONI Solutions Installed: 2016 (Gas Turbine), 2019 (Total Plant)

TOMONI®

MOVE THE WORLD FORWARD MITSUBISHI HEAVY INDUSTRIES GROUP

"We pride ourselves on staying at the forefront of technology and innovation. Partnering with Mitsubishi Power gives us the benefit of technology that allows us to be more innovative and profitable. The Pre-ACT solution gives us advance warning of impending issues and allows us to take corrective action during a planned outage. This potentially saves us the equivalent of millions in USD by avoiding unplanned downtime."

Jia Jianbo
General Manager, Shenhua Guohua (Beijing)
Gas-Fired Cogeneration Co., Ltd.

CHALLENGE

The Shenhua Guohua (Beijing) Gas-Fired Cogeneration Co., Ltd. is known for its early adoption of technology and well-furnished IT infrastructure. The plant was awarded the gold honor for the 2017 Gas Power Project of the Year by the Asian Power Awards, which recognizes innovative and trailblazing initiatives in the power sector. Also, structural and market reforms in China's power sector are increasing competition among generators, and the plant wanted to use the latest advanced technology to maximize its dispatch rates and profitability. Partnering with Mitsubishi Power, the team saw an opportunity for the plant to become the first GTCC power plant in China to implement a digital solution that provides plant operators with real-time actionable knowledge on operational issues that may be in the early stages of development.

SOLUTION

Mitsubishi Power incorporated Pre-ACT, an anomaly detection solution from TOMONI, which uses AI to predict the possibility of abnormalities to improve the plant's O&M. Pre-ACT uses advanced monitoring data from the plant, Mitsubishi Power fleetwide knowledge and AI to detect if an anomaly is imminent and identify the possible root cause to avoid an alarm occurrence and unplanned downtime. This allows the plant to take preventive actions during planned downtime to maintain better reliability during periods of peak power demand and, in turn, better profitability. Similar analytics have proven to help other plant operators increase plant reliability by at least 1%, which has saved them the equivalent of $2M to $4M USD per year.

RESULT

In the first two years of operation, Pre-ACT detected more than 15 anomalies at Shenhua Guohua (Beijing) prior to an alarm occurrence. This advance awareness of developing issues, some with major implications, allowed the plant to take preventive action. If these weren't detected at early stages, they may have forced the plant into unplanned downtime to fix the problems.

The initial program was specific to the gas turbine. The gain in insights and profitability made a compelling case to cover the total plant beginning in 2019.

TOMONI Pre-ACT is one of many analytics and visualization solutions available from Mitsubishi Power to optimize the O&M of the entire plant. This solution is typically bundled with TOMONI KPI Analyst and Post-ACT alarm guidance solutions, which are also deployed at Shenhua Guohua.

TOMONI® is a suite of intelligent solutions that accelerates decarbonization with power plant design, O&M and system knowledge, together with strong customer and partner collaborations. TOMONI leverages advanced controls, artificial intelligence and machine learning with multi-layered cybersecurity to make energy systems smarter, more profitable and ultimately more autonomous on the road to a sustainable future.

TOMONI®

- Data Foundation & Enablers
- O&M Optimization
- Performance Improvement
- Flexible Operations

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