

**CASE STUDY:**

# TAKING DOWN FUEL COSTS £400,000 A YEAR POWERS UP SALTEND'S COMPETITIVENESS.

**TOMONI.**

Performance Improvement

Flexible Operation

IGV Optimization

Turbine Cooling Air Optimization

**PLANT DETAILS**

- Saltend Power Station
- IPP owned by Triton Power
- Hull, England, UK

**EQUIPMENT NOTES**

- 1200 MW Cogeneration Gas Turbine Combined Cycle Plant
- TOMONI Solution Installed: 2015

# CHALLENGE

Renewable penetration and challenging market demands in the United Kingdom changed the landscape for Saltend Power Station (Saltend), which saw a decrease in annual operating hours of approximately 34% from 2011 to 2015. This forced them to look for solutions that improved competitiveness in this challenging market. Saltend collaborated with Mitsubishi Power to determine a solution that minimized capital cost, improved average plant efficiency and could be implemented during an existing planned outage.

# SOLUTION



The TOMONI solutions IGV Optimization and Turbine Cooling Air Optimization were determined to be a good fit. The two solutions arm Saltend with the improved ability to pair with renewables by improving efficiency when operating at part loads and supporting the grid as renewables output fluctuates. Both also included hardware upgrades that will improve reliability and reduce maintenance costs. This will aid Saltend in meeting market needs while maintaining business and environmental goals.

IGV Optimization, a Flexible Operation and Performance Improvement solution, combines hardware modifications with new digital control strategies to more precisely control inlet guide vane (IGV) closing to maximize exhaust temperature at part loads while maintaining combustion stability. This allows Saltend to run more efficiently during partial-load operation.

Turbine Cooling Air Optimization, a Performance Improvement solution, provides more precise control of the turbine cooling air (TCA) fans to optimize rotor cooling air (RCA) temperature through digital control logic modifications and digital power electronic inverters. This improves efficiency at part loads by maintaining optimum RCA temperature.

These solutions were implemented during a planned outage in 2015.

# RESULT

IGV Optimization and Turbine Cooling Air Optimization improved the plant's average efficiency to help increase Saltend's competitiveness in the highly challenging trading environment in the United Kingdom power market. These solutions combined to improve efficiency by about 0.5%. This led to a fuel savings of as much as £400,000 per year, which is helping Saltend meet challenging financial targets, and positions it well for future increases in partial-load operation.

*“We feel the most important quality of a strategic supplier is the ability to listen to the customer and respond accordingly to market conditions. As we've worked together with Mitsubishi Power, I've found individuals who are not only willing to listen but also willing to learn and improve. In working together, they provided a solution with clear economic benefits for us, allowing us to be more competitive by improving reliability and reducing nonproductive costs. These solutions helped Saltend Power Station exceed its 2016 financial targets.”*

**Mick Farr**  
President and COO at Triton Power

TOMONI<sup>®</sup> 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.



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