

CASE STUDY:

IMPROVING STARTUP RELIABILITY PAYS DIVIDENDS FOR MYSTIC GENERATING STATION.



TOMONI.
O&M Optimization
Flexible Operation
GT Digital Flame Detection

PLANT DETAILS

- Mystic Generating Station
- Owned by Exelon Generation
- Charlestown, Massachusetts, U.S.

EQUIPMENT NOTES

- 1600 MW Plant with Two Combined Cycle Power Blocks
- TOMONI Solution Installed: 2016

CHALLENGE

Exelon Generation wanted to improve starting reliability at its Mystic Generating Station. Originally baseloaded when it entered service in 2003, the power station now experiences many more start/stop cycles. When in baseload operation, startup failures had not been a significant issue at the plant, but the transition to more frequent startups, sometimes on a daily basis, had resulted in a decrease in startup reliability.

Reliable startups are critical to smoothly dispatching power plants in today's competitive power generation environment. Startup delays in power plant operation can have a negative financial impact on the owner's bottom line, in some cases more than \$100,000 per incident.

SOLUTION



Mitsubishi Power reviewed the situation with Exelon and determined the best method to improve startup reliability

was to apply the TOMONI GT Digital Flame Detection Solution. A software-based flame detection system which operates in parallel with the physical flame detectors, it allows the faster of either system to indicate successful ignition. The digital solution utilizes a controls package of software and relay logic modifications to detect healthy ignition. This allows successful startups even if there are instrumentation issues with the flame detectors.

Before this solution was used at Mystic, it was proven by verification testing at the Mitsubishi Power T-Point demonstration plant in Japan and validated by fleetwide data from operating units using Mitsubishi Power remote startup monitoring.

RESULT

A Mitsubishi Power team installed and successfully tested the TOMONI digital solution on all four gas turbines at Mystic Generating Station during a planned outage period. The year prior to implementation the site experienced seven failed starts that were attributed to the flame detection instrumentation. The year following implementation, the site had 337 starts with zero startup trips due to the ignition detection system.

“The startup success rate at Mystic improved immediately when we installed the TOMONI solution. Reliable startups are critical to the dispatchability of our plant. You can't compete effectively when your ability to be online, when needed, is questioned. With this digital-based solution, we've experienced a substantial improvement in startup reliability, which improves our profitability.”

Brian Pettenati

Plant Manager at Mystic Generating Station

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.



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