

Emerson Helps Critical Exelon Generation Unit Improve Starting Reliability by 50%

RESULTS

- 50% improvement in starting reliability
- 80-90% improvement in ability to quickly and consistently reach full load
- Tighter exhaust temperature control helps prolong equipment life and contributes to safer unit operation
- Completed project within a 6-month compressed schedule - half the time of projects with similar scope



APPLICATION

116-MW simple-cycle peaking unit equipped with a Pratt & Whitney-Worthington Hi-Cap turbine consisting of eight Pratt & Whitney high-capacity aircraft GG4-7 gas generators coupled with four Worthington Model ER-224 double-flow expander turbines

CUSTOMER

Exelon Generation, Westport 5 Generating Station, located in Baltimore, Maryland

CHALLENGE

In addition to peak load service, the regional transmission organization relies on Westport 5 to provide emergency blackstart capability to the Baltimore area. Blackstart units are able to self-start and synchronize to the grid without an outside AC power source, making them critical to system restoration. Exelon Generation implemented a multi-million dollar project to update the plant, including the aging control system. One challenge associated with the unique configuration of the unit is when any pair of turbines is taken offline, blending operation of the remaining turbines to continue power generation and maintain load on the generator.

“Emerson met every critical deliverable of our aggressive project schedule. Since the Ovation system has been up and running we’ve experienced 100% starting reliability, haven’t had a single forced outage, and have been able to consistently reach full load as required by the regional transmission organization.”

Carl Johnson
Shift Foreman
Exelon Generation
Westport 5 Generating Station



For more information:
www.EmersonProcess-PowerWater.com



SOLUTION

As part of a \$30 million project to update the plant, Exelon Generation selected Emerson's Ovation technology to replace the outdated turbine and balance-of-plant controls. Emerson completed the project within a compressed schedule of roughly six months. This timeframe – half the time a project of this scope would typically take to complete – was necessary in order for the unit to be available by June 1, 2012, to meet peak summer demand.

As part of this turnkey project, Emerson also installed eight gas-fuel modulation valves, 16 gas-fuel stop valves, and eight gas-fuel vent valves. Replacing these valve trains was a key component of the upgrade, as performance of the gas valve trains is critical for maintaining frequency and optimal operation of the unit.

Emerson engineered and designed unique logic for load sharing eight engines on one combustion turbine generator. Now, when a Pratt & Whitney engine pair is taken offline, Ovation smoothly redirects the transition of operation to the remaining online turbines. The blending of each turbine's controls quickly stabilizes plant operation to maintain 60 Hz frequency.

In addition to improved availability achieved by being able to quickly and consistently reach full load, the Ovation system also contributes to tighter exhaust temperature control, which helps prolong equipment life and contributes to safer operation of the unit.



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