

Emerson Helps Longview Power Plant Become One of the Cleanest, Most Efficient Coal-fired Units in the United States

RESULTS

- Increased online availability from 73-78% to more than 98%
- Improved capacity factor from 68% to over 98%
- Increased net generation by more than one-third while using less fuel
- Reduced emissions such that the unit now produces 15% lower CO₂ than average U.S. coal-fired power plant
- Expects to gain 55,000 MW hours and save \$3M per year by avoiding forced outages



APPLICATION

700 megawatt coal-fired thermal power plant equipped with a Foster-Wheeler advanced supercritical Benson-designed boiler, Foster-Wheeler air quality control system and Siemens steam turbine

CUSTOMER

Longview Power located in Madsville, West Virginia

CHALLENGE

Since commissioned in 2011, the Longview power plant was beset by a number of operational challenges that compromised its ability to reliably supply power to the grid. After only a few years in operation, a two-year, \$140 million plant rehabilitation project was implemented to:

- Increase availability and reliability
- Improve capacity factor
- Reduce forced outages
- Enhance operational efficiency

“Emerson’s ability to manage this comprehensive automation project within a very aggressive timeframe was instrumental in helping us bring the plant back online and generate electricity as quickly as possible.

Since we began using the new Ovation™ controls we’ve experienced drastically improved plant stability, enabling us to provide more reliable power to the grid – and generate more revenue.”

Steve Nelson
Chief Operating Officer
Longview Power



SOLUTION

Emerson experts completed a comprehensive, fast-track controls replacement project that enabled Longview to increase plant reliability and meet grid capacity commitments. As the main automation contractor, Emerson contributed to the unit's dramatic turnaround by providing an integrated automation architecture and streamlined control strategies that led to more efficient and reliable plant operation.

Prior to the controls replacement, the plant suffered frequent, costly unplanned outages. In fact, the unit's online availability typically ranged from 73-76 percent, contributing to its low capacity factor of 68 percent.

As part of the larger plant rehabilitation project, Emerson replaced Siemens T3000 systems that had been controlling the Foster-Wheeler boiler, Foster-Wheeler air quality control systems (including selective catalytic reduction, fabric filter and wet flue gas desulphurization) and the Siemens steam turbine with a plant-wide Ovation™ system. Control of the plant's auxiliary boilers, cooling tower, condensate polisher, water treatment, excitation and burner management systems were also incorporated.

A global team of Emerson automation experts worked around the clock to complete the DCS retrofit engineering, which included replacing all hardware and field connections associated with 12,000 I/O, simplifying control logic and graphics, and improving coordination between the boiler and turbine. The project from start to commissioning was completed in only 13 months, nearly twice as fast as a typical project of this scope – a feat Emerson and Longview believe has never been done before.

Since final tuning of the new controls in November 2015, Longview's online availability has risen to over 98 percent and its capacity factor to more than 98 percent. In addition, net generation has increased by one-third, while using less coal than it had previously and producing 15 percent less CO₂ emissions than the average U.S. coal-fired power plant. In avoiding unplanned outages, Longview expects to gain 55,000 megawatt hours and save \$3 million in forced outage costs per year.

Emerson's more integrated control strategy and simplified automation architecture have contributed to improved unit stability, heat rate and environmental impact. Additional improvements include reduced startup time and more precise shutdown. Operators are now able to more tightly control operating parameters as well as more easily diagnose and address operational issues before they escalate and cause load loss or forced outages.

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