

Emerson's Ovation® Contributes to Commercial Operation of Yuhuan, China's First 1000-MW Ultra-Supercritical Plant

RESULTS

- Contributed to commercial operation 8 months ahead of schedule
- First 1000-MW ultra-supercritical unit in China to successfully complete 168-hour test
- Honored Emerson with Supplier Award of Excellence

APPLICATION

Installation of a digital automation solution at the 4x1000-megawatt, coal-fired Yuhuan Power Plant. Each unit is equipped with an ultra-supercritical boiler from the Harbin Boiler Company (licensed by MHI) and steam turbines from the Shanghai Turbine Company (licensed by Siemens)

CUSTOMER

Huaneng Power International, Inc.

CHALLENGE

China's power generation market is growing by an estimated annual rate of \$120 billion. Huaneng Power International, one of China's largest independent power producers, built the first 1000-MW ultra-supercritical plant to help address power generation demand. The four-unit Yuhuan plant will have two units operational in 2007 and the remaining two units operational in 2008.

As the first company to use ultra-supercritical boilers in China, Huaneng required superior technologies from reputable vendors to ensure successful plant startup. An advanced control strategy that could maintain ideal boiler parameters over a wide range of operating conditions was a key requirement in order for the Yuhuan plant to realize the generation efficiency and environmental benefits of the ultra-supercritical technology.



“When selecting a control system for this ground-breaking facility, we wanted a proven solution that offered superior technology, engineering, and support. As we anticipated, we found the Ovation system to be reliable, user-friendly, and efficient – factors that contributed to our ability to put the plant into commercial operation eight months ahead of schedule.”

Mr. Wu Hechun

Supervisor, Instrumentation & Control
Huaneng Power International



SOLUTION

Emerson Process Management successfully provided Huaneng Power International with a proven automation strategy for Yuhuan, China's first plant to use ultra-supercritical technology.

Emerson's solution consisted of an Ovation® expert system for control and monitoring of all major plant equipment, including boiler, flue gas desulphurization, generator, and balance of plant processes. Specifically, the following applications were implemented for the Yuhuan units:

- Data Acquisition and Monitoring
- Sequential and Modulating Control
- Automatic Startup and Shutdown Sequencing
- Furnace Safeguard Supervisory System
- Electrical Control

The Yuhuan Ovation system encompasses over 9,000 I/O points per unit with an additional 4,000 common I/O for a total of 42,000 I/O points for the entire plant. The system uses a Fast Ethernet Ovation Network that connects to over 120 Ovation Controllers and 50 workstations for plant operation, engineering, and historical functions. Advanced Ovation algorithms were implemented to help maintain constant steam temperatures within a narrow set point bandwidth during routine dynamic load changes.

Unit 1 of the Huaneng Yuhuan facility successfully completed the 168-hour performance test – a significant milestone for new plants coming online – on November 28, 2006 – making it China's first 1000-MW ultra-supercritical unit in commercial operation. Unit 2 synchronized to the power grid just weeks later, on December 15, 2006, and completed the 168-hour performance test on December 30, 2006. Use of Emerson's automation solution significantly contributed to achieving both these milestones.

“In recognition of Emerson's exceptional products and dedicated field engineers, Yuhuan Power International has honored the company with a supplier award of excellence.”

Mr. Zhou Liren

Supervisor, Instrumentation & Control
Huaneng Power International
Yuhuan Power Plant



The state-of-the-art Yuhuan control room consists of over 50 workstations for plant operation, engineering, and historical functions.

Emerson Process Management

Power & Water Solutions, Inc.
200 Beta Drive
Pittsburgh, PA 15238
1(412) 963-4000
1(800) 445-9723
www.EmersonProcess-PowerWater.com

