

Control Solutions for Environmental Control Facilities

Tachibanawan Thermal Power Station

Location: Tokushima, Japan
Order date: 1997
Completion: 2000
Industry: Power

Executive Summary

One of Japan's largest coal-fired power plants, with advanced environmental protection measures

- Supplies electricity to a wide area in western Japan (Kansai, Chugoku, Shikoku, and Kyushu)
- Has the largest coal-fired generation units in Japan, each with an output of 1,050 MW
- Protects environment by removing NOx/SOx emissions and ash dust, and recycling fly ash
- Integrated control and monitoring of the environmental facilities, supported by Yokogawa's highly-reliable CENTUM system and state-of-art large displays

Background

The Tachibanawan Thermal Power Station is owned by Electric Power Development Co., Ltd. and is located in Anan City, Tokushima Prefecture. With two 1,050 MW generating units, it is one of the largest coal-fired power plants in Japan. The station entered commercial operation in 2000 and supplies electricity to a wide area in western Japan through four power utilities that serve the Kansai, Chugoku, Shikoku, and Kyushu regions.

The plant is well known not only for its stable electricity supply but also its environmental protection measures. The plant

layout was optimized to keep the site size to a minimum, and colors were selected that matched the scenic surroundings of the Seto Inland Sea area. Part of the fly ash from the combustion process is recycled to make cement. To prevent air pollution, state-of-art environmental control facilities such as Flue Gas Desulfurization (FGD) systems were installed, removing NOx, SOx and ash dust. In 2004 this plant received ISO14001 certification, demonstrating that its environmental protection measures meet international standards.

The Challenges and the Solutions

Integrated operation of large environmental control facilities

The environmental control facilities at this plant consist of FGD, electric precipitator, coal handling, ash handling, and waste water treatment systems. This large application with more than 30,000 data items is monitored and controlled by Yokogawa's CENTUM CS integrated control system. With a remote I/O architecture that minimizes cabling, highly reliable dual-redundant optical fiber cables, and communication links with plant auxiliary sub-systems, the CENTUM system achieves highly-reliable, single-architecture monitoring of all facilities.

Mouse operation and large displays

For safety and efficiency, plant operators can perform input with a mouse and monitor operations on two 100-inch displays. Yokogawa has optimized the operation of these large displays through the development of individual screens, frames, and alarm functions. For example, in an emergency, a guidance message pops up on a screen and easy-to-understand video/audio prompts enable operators to quickly verify associated systems and instruments. This customized operator interface helps to ensure that the plant operates smoothly and safely.



Mouse Operation and Large Displays: 8 Screens

Calculation system for environmental management system

For the effective management of the FGD and waste water treatment facilities, a calculation system was embedded in the CENTUM control system. The system also includes an operation management function that reduces operating costs and extends equipment life, a forecast calculation function, and a reporting function. This supports highly-reliable and efficient management of the environmental control facilities. Since entering commercial operation in 2000, the environmental control facilities at the Tachibanawan Thermal Power Station have been managed effectively by the CENTUM control system, achieving a stable electricity supply with minimal impact on the environment.

Tachibanawan Thermal Power Station

Output: 2 x 1,050 MW

Control system for environmental control facilities: CENTUM CS

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