

## SUCCESS STORY



# Flexible Control Solution for IPP Generation Facility with CFB Boiler

Location: Itoigawa, Niigata, Japan  
Order Date: August 1999  
Completion: August 2000  
Industry: Power

## Executive Summary

### Flexible operation of CFB facility by independent power producer (IPP)

- 149MW coal-fired power plant operated by IPP
- First use of circulating fluidized bed (CFB) boiler by IPP in Japan
- Fly ash recycled at adjacent cement plant
- Daily operation in swing mode and shutdown/startup responding to shifts in electricity demand
- Controlled by Yokogawa's CENTUM system

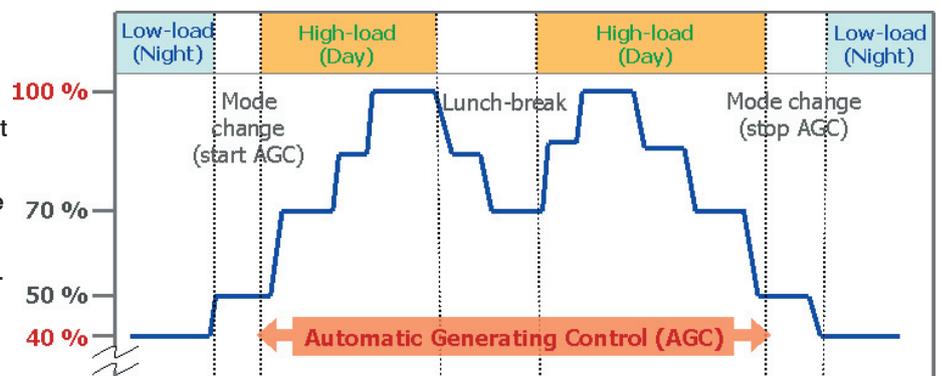
## Background

The Itoigawa Power Plant was constructed adjacent to a cement plant in Itoigawa City, Niigata Prefecture, and is operated by an IPP that supplies electricity to Tohoku Electric Power, one of Japan's major power companies. The use of a 149 MW coal-fired CFB boiler in this power plant is a first for an IPP in Japan, and this effectively reduces NOx emissions. This power plant also recycles at an adjacent cement plant the fly ash that is the byproduct of coal combustion.

## The Challenges and the Results

### Flexible response to shifts in electricity demand

To adjust to shifts in electricity demand, the customer runs the Itoigawa Power Plant in swing mode. During the daytime hours of high electricity demand, the plant is run at up to 100% of its capacity, with output being adjusted flexibly in response to commands from a central load dispatching center. At night the plant is operated at just 40% of its capacity.



Daily operation example in swing mode

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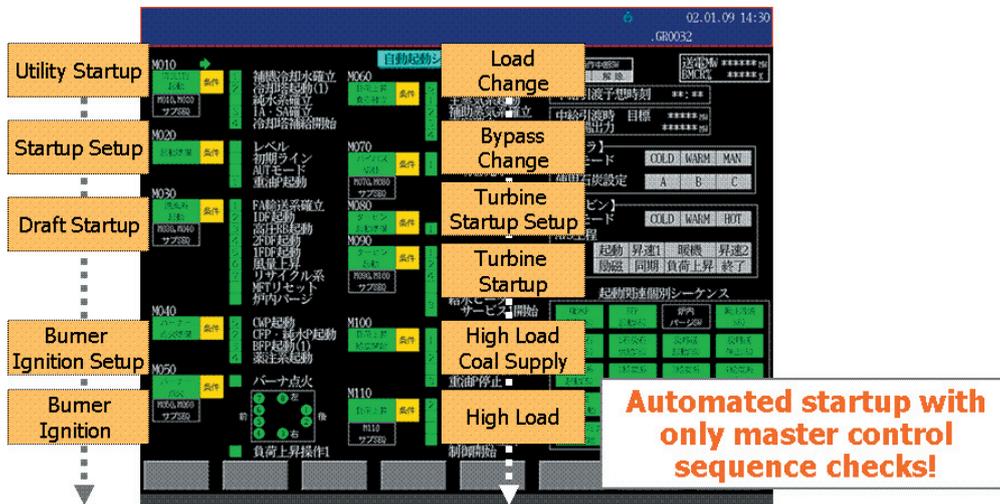
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## Automatic shutdown/startup capability

Yokogawa fully implemented the operation logic for its highly-reliable CENTUM CS control system to match frequent load changes and provide a high degree of flexibility in the system's operation.

The CENTUM control system also supports automatic shutdown/startup to keep to a minimum the manual checks performed by operators. They are only required to check the master control sequence for stopping and starting the plant facilities, which ensures a safe, smooth shutdown and startup.



Plant automatic sequence monitoring display

Since commencing commercial operation in July 2001, the Itoigawa power plant has been operating reliably and efficiently under its Yokogawa CENTUM control system while employing CFB technology to generate environmentally-friendly electricity.

<Itoigawa Power Plant, Japan>

Owner: Itoigawa Power Inc.

Output: 149MW

Annual average usage rate: 40%

Control system: CENTUM CS