

PROJECT NARRATIVE



System Description

Owner: Ratchaburi Power Company Limited

Plant Name: Ratchaburi Combined Cycle Power Plant

A/E Firm: Mitsubishi Heavy Industries (MHI)

Units: Block 1 & Block 2

Unit size (MW): 700 MW per block

Location: Ratchaburi, Thailand

Plant Type: Two 700-MW, 2x1 combined-cycle blocks with MHI F701 gas turbines and a MHI Negasaki HRSG

Application: CCB, BOP, HRSG

Contract Initiation: August 2006

Ship Date: Block 1 – Dec. 2006
Block 2 – Dec. 2007

Operational Date: Block 1 – Mar. 2008
Block 2 – Jun. 2008

Major System Components:

- Redundant Ethernet network
- 13 redundant controllers
- 8 Ovation operator workstations
- 3 engineer/database server workstations
- 4 engineering workstations
- 6 eDB Historians
- 4 Windows-based PCs for SmartProcess GPA
- 3 AMS Suite: Intelligent Device Manager workstations
- 40 Rosemount 848T intelligent temperature devices
- Foundation fieldbus I/O interfaces
- Redundant TCP/IP interface to the MHI turbine control system

Ovation Software Level:
Ovation 3.0

DCS I/O Point Count: 8,878 hard I/O



RATCHABURI POWER COMPANY LIMITED
Ratchaburi Combined Cycle Power Plant
Located in Ratchaburi, Thailand

Emerson Process Management will install its PlantWeb® digital plant architecture with the Ovation® expert control system and Foundation™ fieldbus technology at the new Ratchaburi power plant in Thailand. When completed, the two-unit, combined-cycle plant will have a production capacity of 1,400 MW. The first 700-MW unit is scheduled to begin commercial operation in March 2008, with Unit 2 to follow in June 2008. The plant is owned by Ratchaburi Power Company Limited, a subsidiary of Ratchaburi Electricity Generating Holding Public Company Limited. Electricity generated by the plant will be sold to the Electricity Generating Authority of Thailand under a 25-year Power Purchase Agreement.

Mitsubishi Heavy Industries (MHI), the engineering, procurement and construction contractor, selected Emerson's PlantWeb architecture with the Ovation system to monitor and control the heat recovery steam generators as well as balance of plant processes. The Ovation system will also interface via TCP/IP to the MHI governor system, which controls the gas and steam turbines.

Emerson's complete control and asset management solution for the Ratchaburi power plant includes a total of 13 redundant controllers, eight Ovation operator workstations, four Ovation engineer workstations, three combined engineer and database workstations, three AMS™ Suite: Intelligent Device Manager workstations, and 40 Rosemount® 848T intelligent temperature devices.



OVATION®

AMS

Digital Plant Solutions

For new plant construction, AMS Device Manager streamlines device configuration and commissioning, thereby contributing to more efficient plant startup. AMS Device Manager also provides online access to instrument and valve diagnostics and automatic documentation of all field device maintenance information – all contributing to ongoing efficiency of plant operations and maintenance activities. The scope of the project also calls for Emerson's Power & Water Solutions industry center to provide system engineering and commissioning services.

Unlike proprietary control systems that are quickly outdated, the PlantWeb architecture is based on an open-systems approach that keeps pace with new technologies, enabling customers to preserve the capital investment in their control system.

The PlantWeb architecture also makes it possible to lower startup and commissioning costs by reducing wiring costs and streamlining device installation, communications verification and troubleshooting. These cost and efficiency improvements were other important factors in the decision to award the project to Emerson.

SmartProcess® Plant Optimization Software

In addition to the Ovation expert control system with PlantWeb, MHI also opted to install Emerson's SmartProcess Global Performance Advisor (GPA). The GPA provides performance calculations in a functional block structure that is easily configured using standard drag and drop functions. This feature not only makes programming easy, it simplifies software maintenance and future expansion. Features of the GPA include:

- Identifies unit heat rate penalty costs and deviations from plant equipment design specifications.
- Provides a central location to consolidate plant performance information for multiple units.
- Includes a fully configured dynamic link library containing plant specific performance calculations.
- Delivers a unified software solution and a consistent mathematical approach for calculating performance across multiple units.