Engineering Service: Thermal Power Plant Operation and Maintenance

Features
Providing engineering services on the operation and maintenance of thermal power plant, with following features
◆ Viewpoints from the utility, as an operator of the facilities
◆ A long history of remarkable achievements in energy saving
◆ Experiences of procurement from various manufacturers

Basic Concept or Summary
TEPCO provides engineering services and technical assistance for operation and maintenance planning on overall thermal power station facilities, including advanced combined cycle plants, ultra supercritical power plants and coal-fired power plants.

A. Planning of O&M
1. O&M Management
   Preparation and Review of Management Manual / System
     - Operation
     - Maintenance
     - Quality Control
     - Security and Safety
     - Environment

2. O&M Contract
   Request for Proposals for O&M
     - Scope of Works
     - Guarantee items
   Pre-qualification for Possible O&M Contractors
     - Evaluation of Contractors
   Review of O&M Proposal
     - Overall Schedule
     - Suppliers
     - Management Manual / System
     - Quality, Environment and Safety Control
   Drawing O&M Contract
     - Scope of O&M
     - O&M Cost

B. During Commercial Operation
1. Plant Operation Management
   Operation, Security, Safety and Environment Manual / System
     - Operation and Performance Management
     - Operation Record Management
   Operation, Security, Safety and Environment Plan
   Operation Staff Training
   Budget Management

2. Plant Maintenance Management
   Maintenance, Security, Safety, Environment Manual / System
     - Maintenance Procedure
     - Consumables and Spare Parts Control
     - Maintenance Record Management
   Daily / Long Term Maintenance Plan
   Maintenance Staff Training
   Diagnostic Analysis
   Budget Management
3. Measures for plant abnormality
   Verification and Advice
   Plant Abnormality Report
   Schedule Management for Inspection and Repair Work
   Root Cause Analysis and Measures
   Repair Work Proposal
   Repair Work Management

**Effects or Remarks**

- Energy saving by improving the thermal efficiency
- Improving availability by quality management

One of the indices demonstrating TEPCO’s power supply efficiency is their 47.1% thermal efficiency at overall thermal power plants (2010).

**Installation in Practice or Schedule**

<table>
<thead>
<tr>
<th>Domestic</th>
<th>Operation and maintenance of thermal power stations within TEPCO service area (approx. 38,700MW at 25 locations; as of March 2011)</th>
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<tr>
<td>Overseas</td>
<td>Technical Assistance on Ultra Super Critical Thermal Power Facilities, P. R. China (2005)</td>
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<td>HRSG Installation Study for Existing Gas Turbine Power Plants, Indonesia (2005)</td>
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<td>“TeaM Energy Project,” Pagbilao Coal-fired (735MW) and Sual Coal-fired (1,218MW) power plants in Philippines</td>
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<td>“Chang Bin/Fond Der Project” in Taiwan</td>
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<td>“Loy Yang A Project,” Coal-fired power plant in Australia</td>
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