Overview of Chiba Thermal Power Station

1. Summary of power station

   (1) Location: 2-1377, Soga-cho, Chuo-ku, Chiba City, Chiba Prefecture, Japan

   (2) Station Chief: Akio Matsuzaki

   (3) Site area: About 760,000 m²

(4) Output and fuel

<table>
<thead>
<tr>
<th>Group</th>
<th>Output</th>
<th>Fuel</th>
<th>Operation started in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>360MW x 4 Units</td>
<td>LNG</td>
<td>April 2000</td>
</tr>
<tr>
<td>Group 2</td>
<td>360MW x 4 Units</td>
<td>LNG</td>
<td>June 2000</td>
</tr>
<tr>
<td>Group 3</td>
<td>500MW x 3 Units</td>
<td>LNG</td>
<td>July 2014 (planned)*</td>
</tr>
</tbody>
</table>

* Commercial operation of Unit 1 of Group 3 started on April 24, 2014. Trial operation of Unit 3 of Group 3 started on March 5, 2014, and its commercial operation will start in July 2014.

5. Overview of Group 3 facilities

   - Power generation system: 1,500°C grade combined cycle type (MACC)
   - Thermal efficiency: About 58% (based on lower heating value)
   - Gas turbine: Simple open cycle single shaft type
   - Air compressor: Axial flow compressor
   - Heat recovery steam generator: Triple pressure reheat natural circulation type heat recovery steam generator
   - Steam turbine: Single cylinder, single exhaust, condensing and reheat type
   - Starting system: Thyristor starting system
   - Generator: Horizontal shaft tubular type revolving field three-phase AC synchronous generator
   - Smoke treatment facility: Exhaust gas denitrification equipment:
     Dry ammonium catalytic reduction system
     Stack: 93 m, Single stack type

(6) Fuel: LNG (Liquefied Natural Gas)

2. Construction history of Group 3, Unit 2

   April 22, 2011: Gas turbine construction plan document was submitted (according to Article 48, Electricity Business Act).
   September 9, 2011: Gas turbine operation started.
January 10, 2012 Combined cycle construction plan document was submitted.
January 15, 2014 Trial operation started.
June 16, 2014 Commercial operation started.
3. Location of the power station

4. Layout of power plant (current)
5. View of the power station

<Before combined cycle construction>

<After combined cycle construction>

*Units 1, 2, and 3 of Group 3 from bottom to top*
<Data 1> Thermal efficiency improvement history

Thermal efficiency of power generation
(based on lower heating value)

<table>
<thead>
<tr>
<th>Power station name</th>
<th>Operation started in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1, Units 1 to 3, Kawasaki Thermal Power Station</td>
<td>February 2009</td>
</tr>
<tr>
<td>Group 2, Unit 1, Kawasaki Thermal Power Station</td>
<td>February 2013</td>
</tr>
<tr>
<td>Group 4, Units 1 to 3, Futtsu Thermal Power Station</td>
<td>October 2010</td>
</tr>
<tr>
<td>Group 3, Unit 1 and 2, Chiba Thermal Power Station</td>
<td>April 2014 to June 2014</td>
</tr>
</tbody>
</table>

Planned power stations (MACC)

<table>
<thead>
<tr>
<th>Power station name</th>
<th>Operation will start in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 3, Unit 3, Chiba Thermal Power Station</td>
<td>July 2014</td>
</tr>
</tbody>
</table>

*MACCII is under construction for Group 2, Units 2 and 3, Kawasaki Thermal Power Station.
Change of gas turbine power generation facilities to combined cycle power generation facilities

Reconstruction to combined cycle power generation facilities is performed by adding a heat recovery steam generator, steam turbine and power generator to the gas turbine power generation facilities. This type of facility effectively utilizes the exhaust heat from the gas turbine to increase the output by about 500MW (Group 3 in total), without consuming additional fuel, and improve the thermal efficiency. In addition, by installing exhaust gas denitration equipment in the heat recovery steam generator, the emission of nitrogen oxide during operations can be suppressed to reduce the impact on the environment.

[Construction areas for changing to combined cycle power generation facilities]

The facilities enclosed by the red line are the equipment newly installed for the change to combined cycle type facilities.