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CHIBA
THERMAL POWER STATION

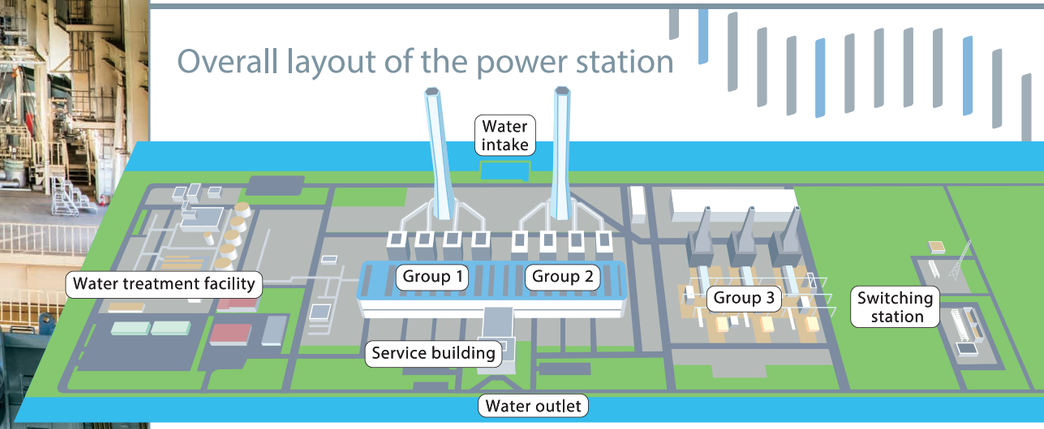
WELCOME TO CHIBA THERMAL POWER STATION!

Utilizes high efficiency, excellent flexibility,
and environmentally friendly
MACC and ACC equipment

A thermal power station that meets the needs of the changing times

The Chiba Thermal Power Station started operation as a coal-fueled power station with the total output of 600 MW in the late 1950s and was considered the largest thermal power station in the Orient at the time. Subsequently, it switched fuel to oil. To cope with deterioration of the system and meet the growing demand for electricity, the power station was renovated in 2000 as an Advanced Combined-Cycle (ACC) system with the total output of 2,880 MW: Group 1 (4 generators × 360 MW) and Group 2 (4 generators × 360 MW). In 2011, an emergency project to construct three gas turbine systems with a total output of 1,000MW was started in order to secure supply capacity after the Great East Japan Earthquake. A More Advanced Combined-Cycle (MACC) system with the total output of 1,500 MW (3 systems × 500 MW) was added as Group 3 through a combined-cycle project from 2012 to 2014.

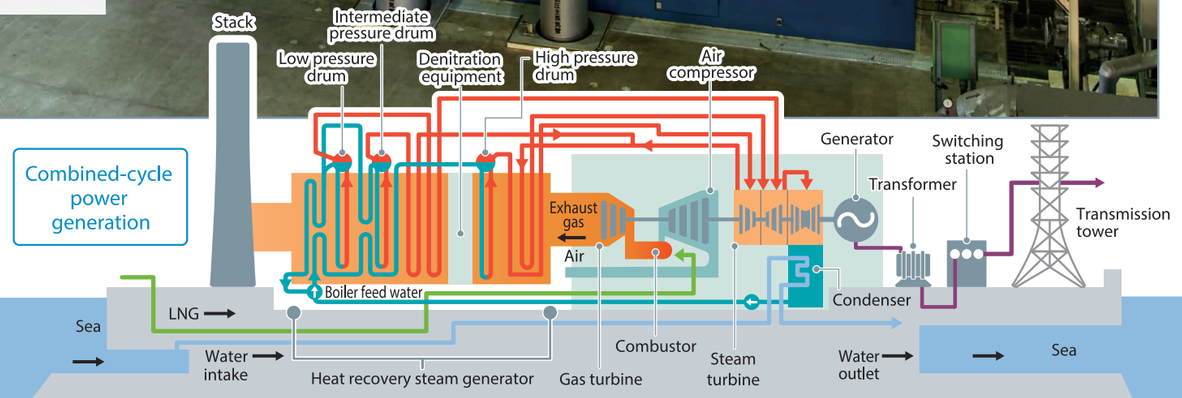
Overall layout of the power station



Outline of facilities

Unit No.		Output (MW)	Fuel	COD	GT combustion temperature (°C)	Power generation type
Group 1	1-1	360	LNG	April 2000	1,300	Combined cycle
	1-2	360		October 1999	1,300	
	1-3	360		April 1999	1,300	
	1-4	360		December 1998	1,300	
Group 2	2-1	360		February 1999	1,300	
	2-2	360		July 1999	1,300	
	2-3	360		January 2000	1,300	
	2-4	360		June 2000	1,300	
Group 3	3-1	500		April 2014	1,500	
	3-2	500		June 2014	1,500	
	3-3	500		July 2014	1,500	

Name: Chiba Thermal Power Station Location: Chuo-ku, Chiba City, Chiba Prefecture Site area: Approx. 760,000 m²



Combined-cycle power generation

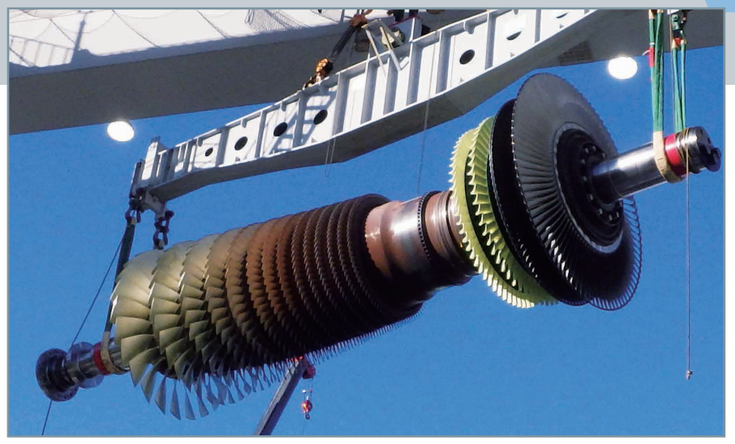
CHECK!
Features

Groups 1, 2 and Group 3
Combined-cycle power generation with different system configurations

Groups 1, 2 and 3 are combined-cycle systems that consist of gas turbines and steam turbines. In Groups 1 and 2, a gas turbine is directly connected with a steam turbine to drive a generator. In Group 3, a gas turbine is separated from a steam turbine to drive different generators.

Heat recovery steam generator

The heat recovery steam generator plays a key role in utilizing exhaust gas from the gas turbine to generate steam for driving the steam turbine. In Group 3, a stack is provided immediately above the heat recovery steam generator.



Gas turbines

The gas turbines of Group 3 receive an extremely hot inflow of combustion gas at approximately 1,500°C. For this reason, the rotor blades are made from a heat-resistant material with a special cooling structure and heat-resistant coating.

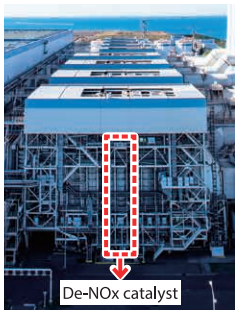
Group 3 gas turbine system

The gas turbine was constructed as an emergency power source after the Great East Japan Earthquake in a short period of time (in approximately four months). For this reason, the gas turbines are installed outdoors, whereas the gas turbines of Groups 1 and 2 are housed in buildings.

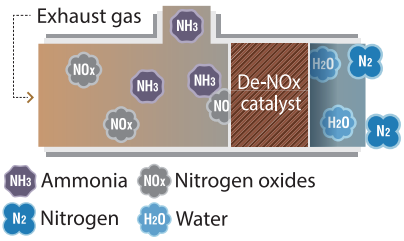
Environmental Initiatives

Preventing air pollution

The power station is fueled with LNG and therefore does not discharge SOx which are the cause of particulate matter and acid rain. The use of low-NOx burners and exhaust gas denitration equipment has also reduced the discharge of nitrogen oxides. The white smoke rising from the plant stacks on cool days is steam.



Exhaust gas denitration equipment (removal of NOx)



Ammonia is injected into the exhaust gas. The de-NOx catalyst stimulates a chemical reaction that turns the nitrogen oxides into harmless nitrogen and water.

Keeping the oceans clean

The equipment cleaning water and general waste water generated at the power station undergoes pre-processing such as oil separation and neutralization. It is then purified by means of condensation, sedimentation, filtration and neutralization, and the water quality is checked before it is discharged.

Protecting the global environment

Since power stations make use of the earth's enriched resources, it is important to achieve high level of thermal efficiency when generating electricity due to preservation of the global environment. In addition, greater generating efficiency means that less carbon dioxide, which causes global warming, is produced. We are committed to conserve the earth's finite resources and curb global warming by leveraging the technical capabilities we have accumulated over the years and by introducing highly efficient power generating equipment.

11 highly efficient combined-cycle systems

The Chiba Thermal Power Station has three 1,500°C-class combined-cycle (MACC) systems and eight 1,300°C-class combined-cycle (ACC) systems. It meets the electricity demand of the Tokyo metropolitan area (for approx.1.25 million households) by taking full advantage of the highly efficient and large-capacity power generation systems that ensure timely operation. It also plays a key role in compensating the rapid power generation fluctuations attributed to photovoltaic power generation. The power station is fueled with LNG that does not generate particulate matter and SOx, thus providing environmentally friendly power generation.

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