JERA

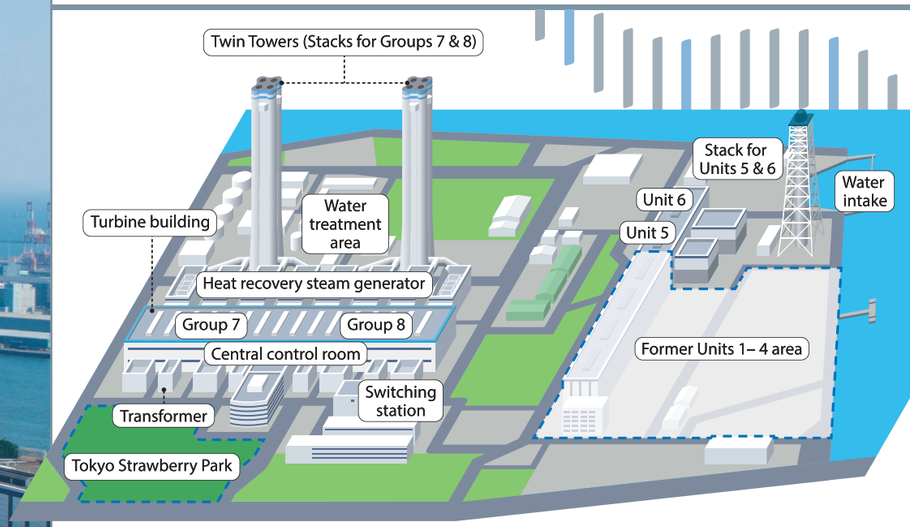
# YOKOHAMA THERMAL POWER STATION

WELCOME TO YOKOHAMA THERMAL POWER STATION!

The 200 meter-high “Twin Towers” are the symbol of the power station

# History of the Yokohama Thermal Power Station

Unit 1 of the Yokohama Thermal Power Station went into operation in 1962. Subsequently, all units up to Unit 6 went into operation by 1968 in response to the growing demand for electricity in the Kanto area. At first, heavy oil and crude oil were used as fuel, but in 1984 the fuel was changed to liquefied natural gas (LNG) which does not discharge particulate matter or sulfur oxides. In 1996, Groups 7 and 8 were expanded on the adjacent site to meet the needs of the times. The use of efficient advanced combined-cycle (ACC) power generation systems has made this urban thermal power station even more eco-friendly. Units 1 to 4 were decommissioned between 2004 and 2007. In 2015, a project to upgrade the gas turbines and steam turbines was implemented in order to increase the power generation efficiency and output. In 2017, the entire equipment was upgraded. As a result, the power generation efficiency improved, and the output increased from 350 MW to 377 MW. The current total output of the power station is 3,540 MW.


## Overall layout of the power station

## Outline of facilities

| Unit No. | | Output (MW) | Fuel | COD | GT combustion temperature (°C) | Power generation type |
|---|---|---|---|---|---|---|
| Unit 5 | | 175 | LNG | March 1964 | | Steam |
| Unit 6 | | 350 | | June 1968 | | |
| Group 7 | 7-1 | 377 | | January 1998 | 1,300 | Combined cycle |
| | 7-2 | 377 | | October 1997 | 1,300 | |
| | 7-3 | 377 | | January 1997 | 1,300 | |
| | 7-4 | 377 | | June 1996 | 1,300 | |
| Group 8 | 8-1 | 377 | | July 1996 | 1,300 | |
| | 8-2 | 377 | | February 1997 | 1,300 | |
| | 8-3 | 377 | | October 1997 | 1,300 | |
| | 8-4 | 377 | | January 1998 | 1,300 | |

Name: Yokohama Thermal Power Station Location: Tsurumi-ku, Yokohama City, Kanagawa Prefecture
Site area: Approx. 450,000m²

CHECK! Features

## The 200 meter-high "Twin Towers" are the symbol of the power station

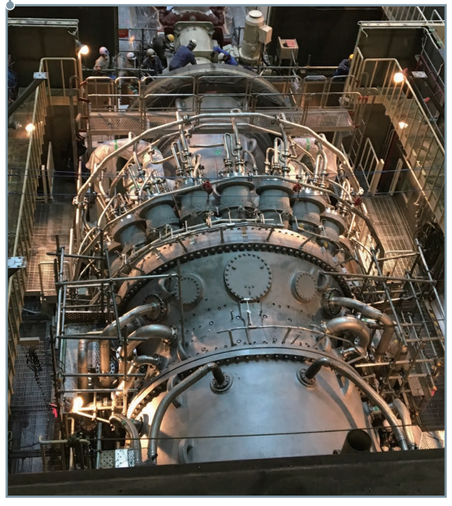
The two stacks, which are popularly known as the "Twin Towers," are the symbol of the power station. In 1998, the environmentally friendly advanced combined-cycle (ACC) power generation system was added. In 2015, a project was carried out to upgrade the equipment to further increase the efficiency.

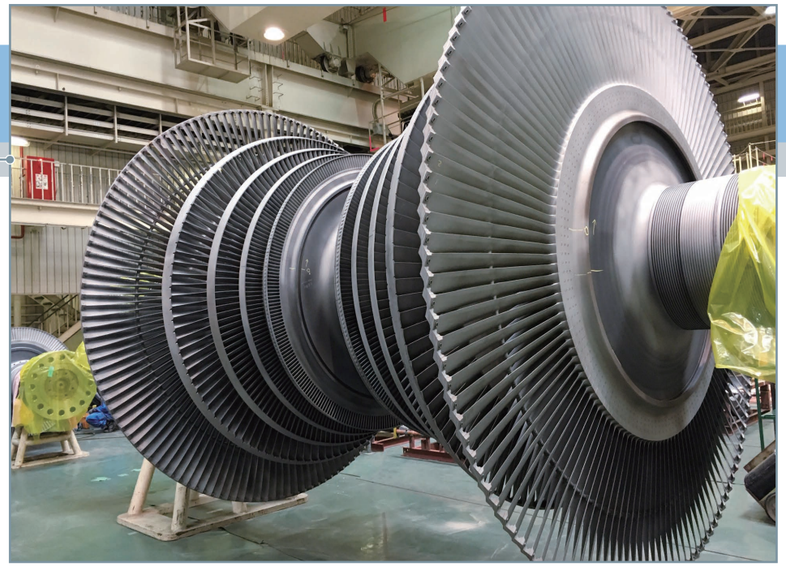
## Heat recovery steam generator

The heat recovery steam generator plays a key role in utilizing the exhaust gas from the gas turbine in the ACC system to generate steam for driving the steam turbine.

## 1,300°C-class highly efficient gas turbine

The 1,300°C-class highly efficient gas turbine improves the thermal efficiency by increasing the temperature of the combustion gas. The gas turbines are easy to start up and shut down (approximately one hour from startup to base load in the Daily Startup and Stop (DSS) operation) and can thus respond quickly and appropriately to fluctuations in electricity demand.





## Steam turbine

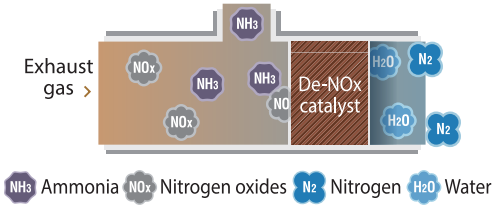
A steam turbine converts the energy of high-temperature, high-pressure steam into mechanical energy. The blades are processed to attain a special curved asymmetric profile design based on fluid mechanics to maximize the performance.

# 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

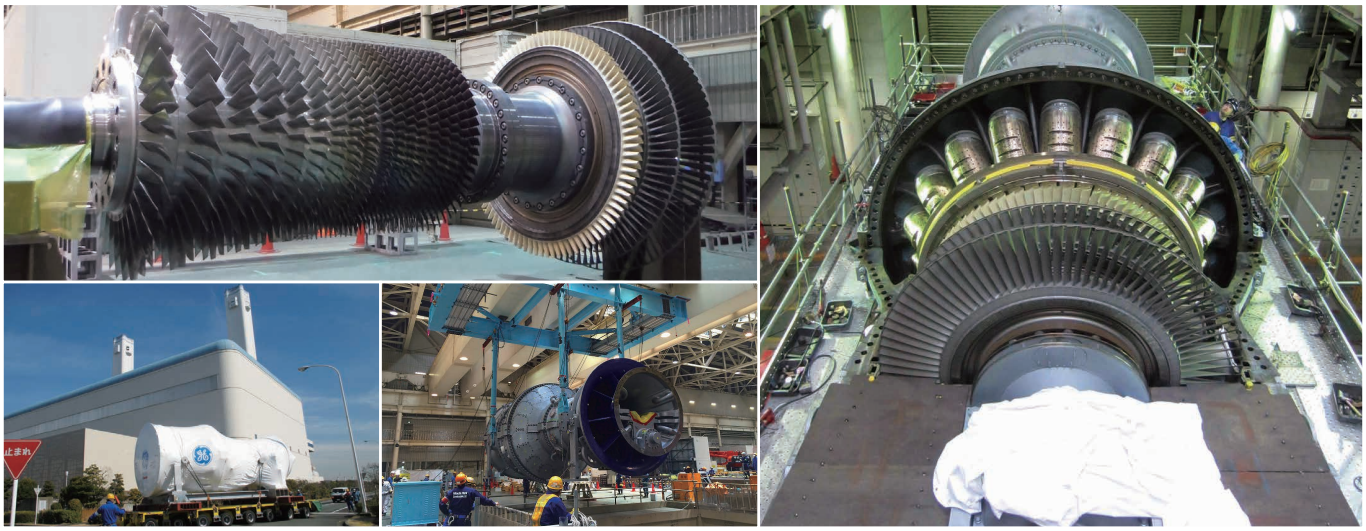
The equipment cleaning water and general waste water generated at the power station undergoes pre-processing such as oil separation and neutralization. It is then purified by means of condensation, sedimentation, filtration and neutralization, and the water quality is checked before it is discharged.

## 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.

## Upgrade of gas turbines and steam turbines

With the aim of making this power station more environmentally friendly and ensuring that it will be able to continue to produce electricity inexpensively, in 2015 work began on upgrading the Group 7 and 8 gas turbines. The upgrades were completed in December 2017. These upgrades not only increased power generation capacity but also boosted generating efficiency, reducing the amount of fuel used and thereby cutting annual $CO_2$ emissions by around 240,000 t.



TOKYO STRAWBERRY PARK

## Tokyo Strawberry Park, an experience-oriented facility where visitors can enjoy strawberry picking throughout the year

The all-electric greenhouse enables the temperature and humidity to be finely controlled. Strawberries can be grown even in summer and autumn in this suburban environment, allowing visitors to enjoy strawberry picking whenever they want throughout the year. At the park, sweets made from carefully grown strawberries are manufactured and sold. There are various facilities where visitors can have fun, namely the cooking studio where visitors can readily enjoy cooking delicious dishes. These facilities are also all-electric. We operate this facility as part of the eco-farm business to enhance our corporate value through new businesses that use both energy and cutting-edge technologies.

JERA Co., Inc. **Yokohama Thermal Power Station**
11-1 Daikoku-cho, Tsurumi-ku, Yokohama City, Kanagawa Prefecture 230-0053, Japan
Tel: +81-45-511-3841
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