

Jera



# SHINAGAWA THERMAL POWER STATION

WELCOME TO SHINAGAWA THERMAL POWER STATION!

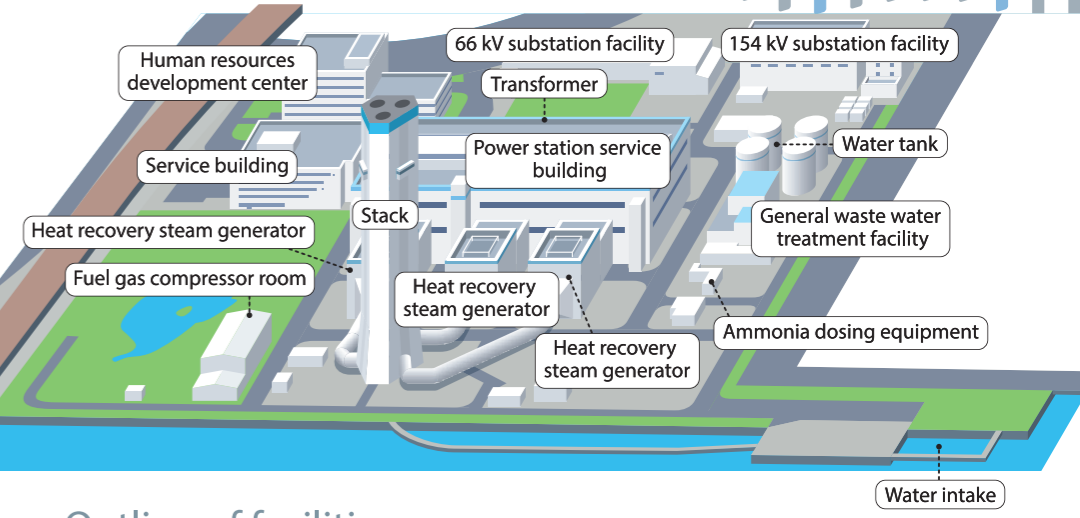
Responding flexibly to the  
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# Responding flexibly to the load variation in central Tokyo

The Shinagawa Thermal Power Station began operations in 2001 with one generator in Group 1. Between 2002 and 2003 two more generators came online to bring the total to three. The advanced combined-cycle generation which offer high thermal efficiency and achieve timely operation, make it possible to adapt easily to changes in demand in central Tokyo. Clean city gas is used as the fuel, so the station is also environmentally friendly. The buildings on the site have been designed and colored to fit in with the surrounding locale, the Tokyo Waterfront City area with Tennozu Isle Station and the Rainbow Bridge at its heart. The Shinagawa Thermal Power Station is also rich in greenery. As a power station located in central Tokyo, the plant helps meet the metropolitan area's electricity needs while also aiming for harmony with the environment and the local area.



## Overall layout of the power station



## Outline of facilities

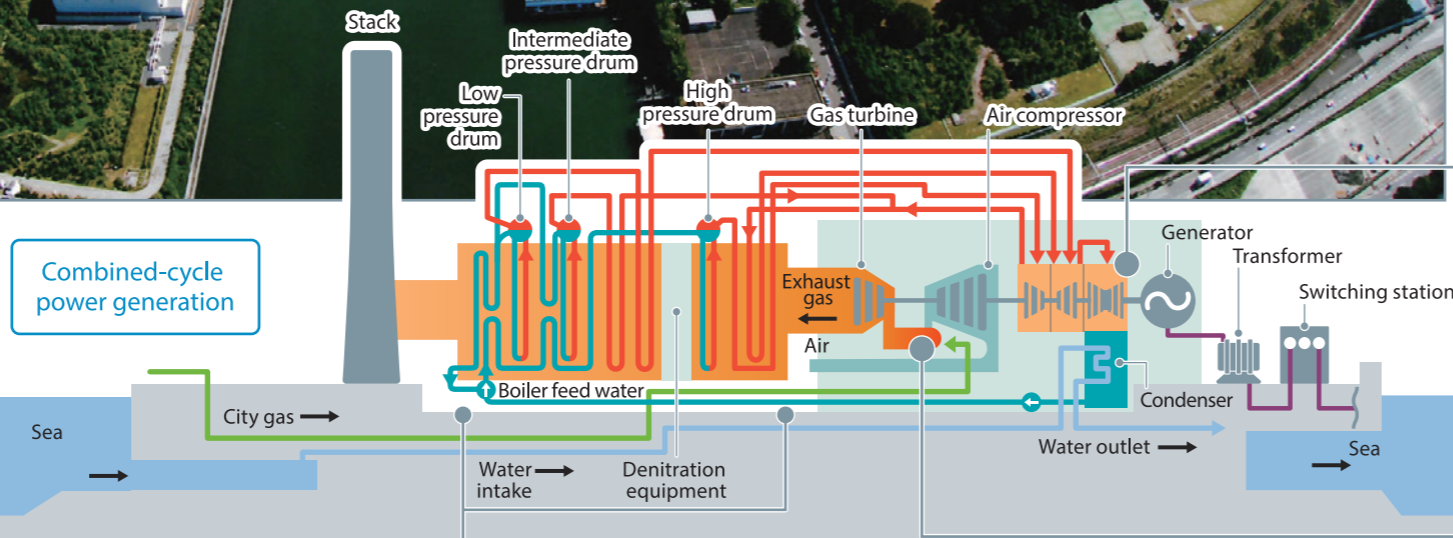
Unit No.	Output (MW)	Fuel	Start of Operation	GT combustion temperature (°C)	Power generation type
Group 1	1-1	City gas	July 2001	1,300	Combined cycle
	1-2		March 2002		
	1-3		August 2003		

Name: Shinagawa Thermal Power Station Location: Shinagawa-ku, Tokyo Site area: Approx. 100,000 m<sup>2</sup>

### CHECK! Feature

### A compact power station

The Shinagawa Thermal Power Station has three combined-cycle generators on the site of 100,000 m<sup>2</sup>. Measures have been taken to ensure harmony with the landscape and environment because there are residential areas in the vicinity.



Steam turbine and generator



### Heat recovery steam generator

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



### Control room where production innovation is underway

Advances in production innovation has brought about improvement in the working environment so that operators can switch from plant monitoring to more productive work.

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

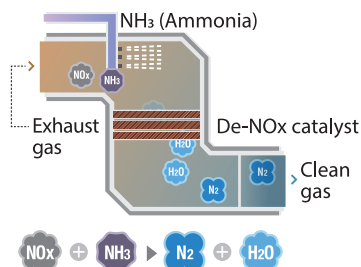
The 1,300°C-class highly efficient gas turbine improves the thermal efficiency by increasing the temperature of the combustion gas. The gas turbines are easy to start up and shut down (approximately one hour from startup to base load in the Daily Start and Stop (DSS) operation), and can thus respond quickly and appropriately to fluctuations in electricity demand. A steam turbine converts the energy of high-temperature, high-pressure steam into mechanical energy. The blades are processed to attain a special asymmetrical curved surface with torsion based on hydromechanics to maximize the performance.

# Environmental Initiatives

## Preventing air pollution

The power station is fueled with city gas and therefore does not discharge the sulfur oxides which are the cause of particulate matter and acid rain. The use of low-NOx burners and high-efficiency exhaust gas denitration equipment has 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. The denitration equipment is built into the heat recovery steam generator.

## Keeping the oceans clean

The water used to clean equipment at the power station is purified by a general waste water treatment facility for coagulation, sedimentation and neutralization, and the water quality is checked before being discharged into sewers.

## Protecting the global environment

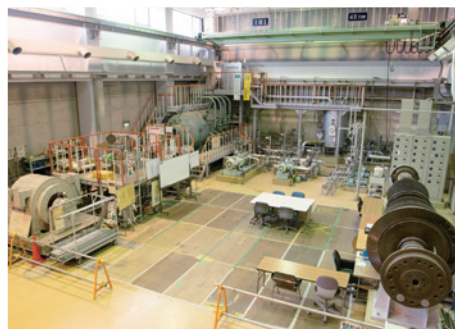
Since power stations make use of the earth's enriched resources, it is important to achieve high level of thermal efficiency when generating electricity due to preservation of the global environment. In addition, greater generating efficiency means that less carbon dioxide, which causes global warming, 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.

## JERA's Training facility established as an annex

Established in 1966 on the premises of the Shinagawa Thermal Power Station, the training facility provides training on the techniques and skills needed to operate and maintain thermal power stations. Globalization has led to fiercer competition, while clean and inexpensive energy has been drawing increasing attention. To survive amid this rapidly changing business environment of the energy industry, it is essential to develop human resources who has the ability to take care of changes and demands beforehand.

The highly-experienced instructors pass on their techniques and skills that have been refined through many years of operation to the next generation and provide essential training to meet future needs.



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