

Jera



TAKETOYO THERMAL POWER STATION

WELCOME TO TAKETOYO THERMAL POWER STATION!

Features and key points of the Taketoyo Thermal Power Station

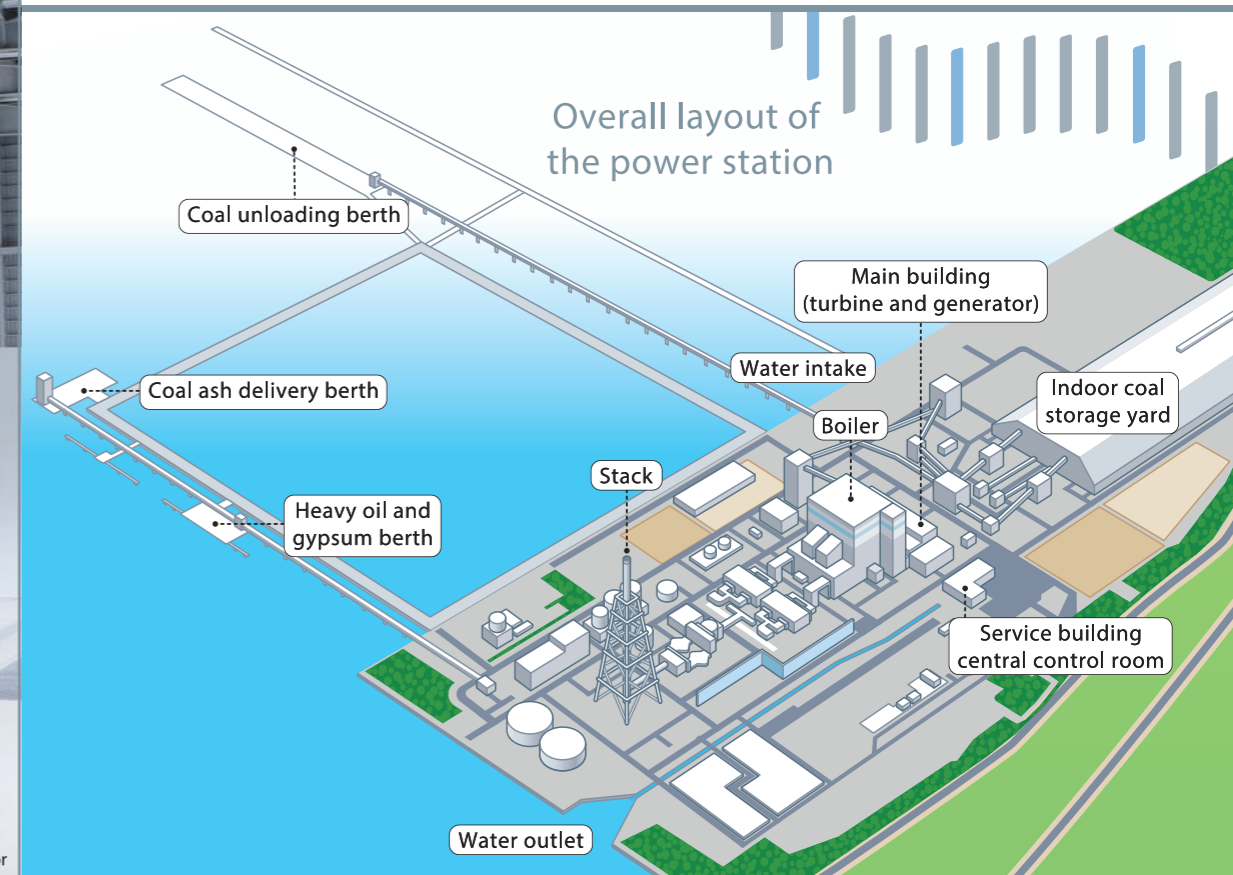
- Achieving both economy and environmental performance by using power generation equipment whose efficiency is among the highest in Japan and co-firing woody biomass fuel
- Ensuring environmental conservation of the area surrounding the power station by implementing environmental measures for respective equipment

Replacement with high-efficiency power generation equipment

The Taketoyo Thermal Power Station is located in the center of the Chita Peninsula in Aichi Prefecture. The area is characterized by a rich natural environment facing Kinuura Bay in the northwestern part of Mikawa Bay and a warm climate. The power station played a key role in providing a stable supply of electricity in the Chubu region, with Unit 1 coming into commercial operation in 1966 followed by Units 2 to 4 in 1972. In 2022, it was converted into a high-efficiency coal-fired thermal power station by introducing co-firing of woody biomass fuel to ensure the long-term stable supply of electricity, reduce the power generation costs, and improve the environmental performance by introducing cutting-edge equipment.



Steam turbine/generator



Overall layout of the power station

CHECK! Features

Power generation equipment whose efficiency is among the highest in Japan

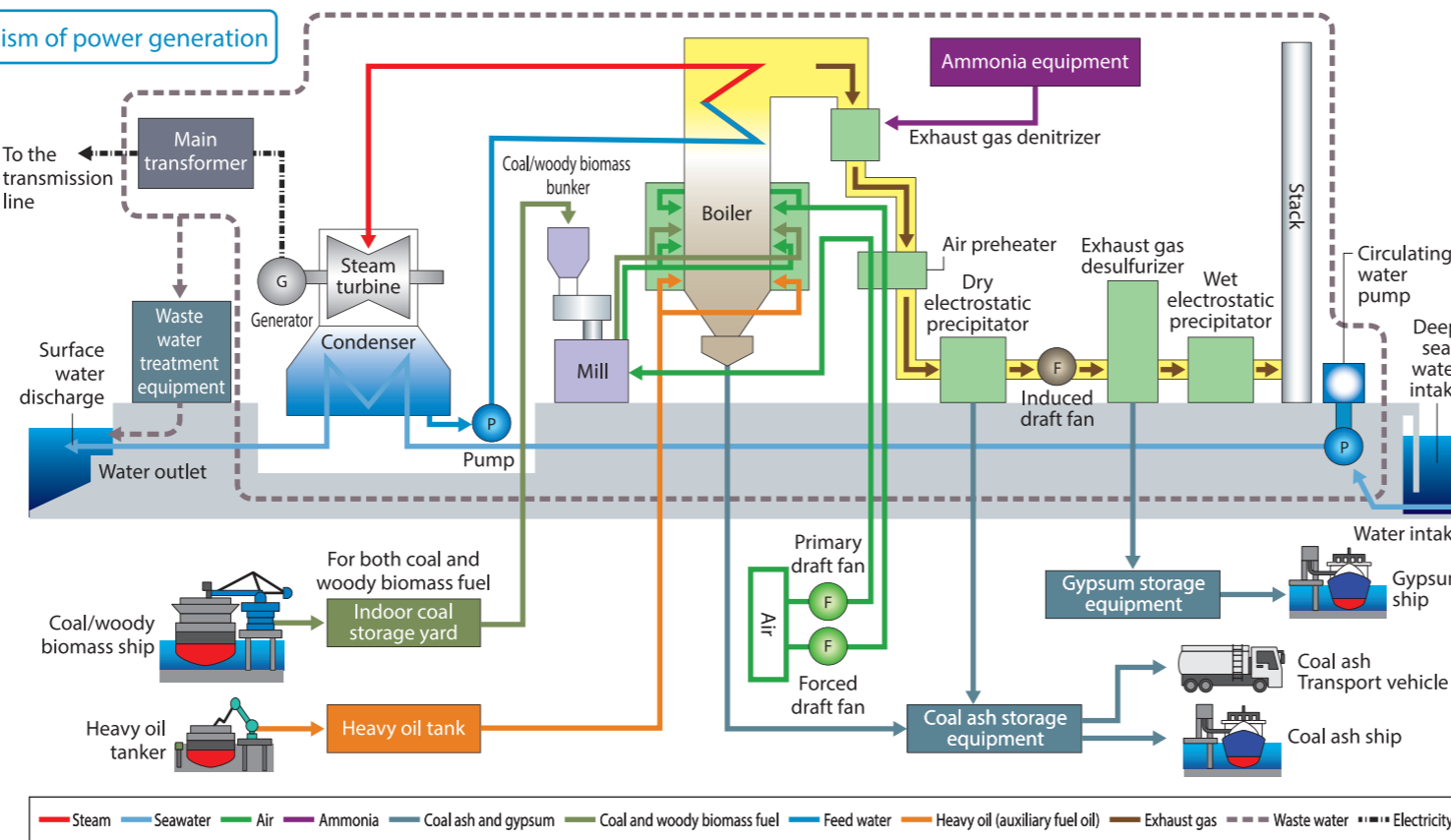
The power station uses ultra-supercritical (USC) high-efficiency power generation equipment, which is the best power generation technology available for coal-fired power generation equipment. Its power generation capacity is 1,070 MW, which is among the largest in Japan in terms of single unit output.



Central control room

The central control room is used for centralized management of monitoring and operation of all equipment, including power generation equipment, coal unloading, storage, and transport equipment, ash handling equipment, and waste water treatment equipment. The system, which uses the latest digital technology, achieves advanced automation and can be operated by a small number of operators.

Mechanism of power generation

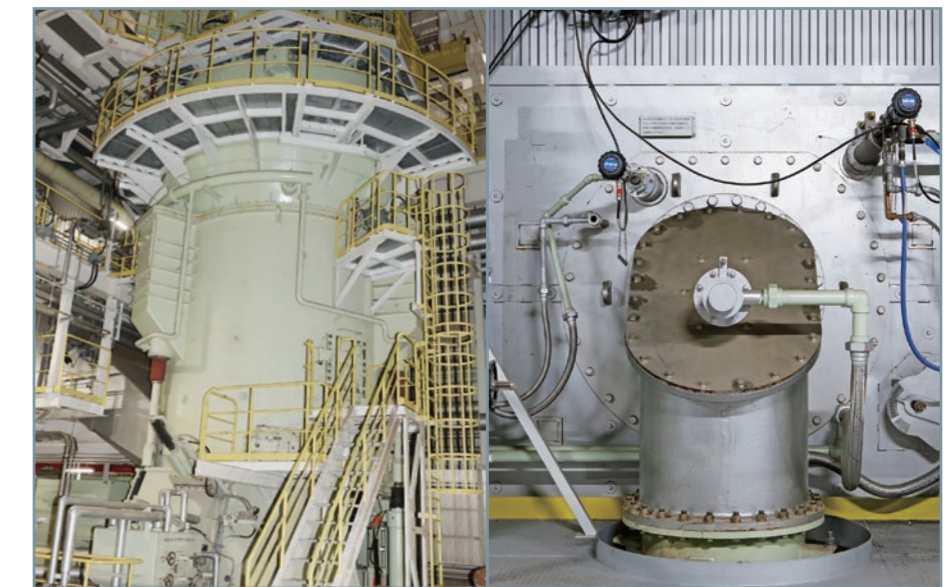


— Steam — Seawater — Air — Ammonia — Coal ash and gypsum — Coal and woody biomass fuel — Feed water — Heavy oil (auxiliary fuel oil) — Exhaust gas — Waste water — Electricity

Outline of the facility

Unit No.	Output (MW)	Fuel	COD	Power generation type
Unit 5	1,070	Coal and woody biomass	August 2022	Steam

Name: Taketoyo Thermal Power Station Location: 1-1 Ryugu, Taketoyo-cho, Chita-gun, Aichi Prefecture Site area: Approx. 630,000 m²



Mill dedicated for woody pellets

Burner dedicated for woody pellets

Woody biomass fuel

Woody biomass fuel is environmentally friendly and carbon-neutral. Waste wood generated during lumber production (wood that cannot be used for construction and furniture) is turned into pellets. The indoor coal storage yard can store about 70,000 tons of woody biomass fuel.



Woody pellets

Storage in the indoor coal storage yard

Equipment dedicated for woody biomass fuel

Reducing CO₂ emissions by about 900,000 tons annually through 17 cal% co-firing

The equipment, which ranges from the mill for pulverizing woody pellets to the burner for combustion, is dedicated for woody biomass. As a result, the co-firing rate is high, thus reducing CO₂ emissions.


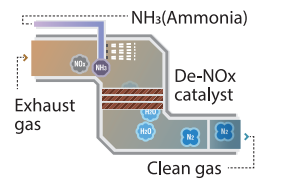


Environmental Initiatives

Preventing air pollution

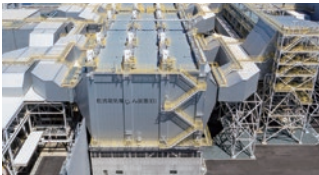
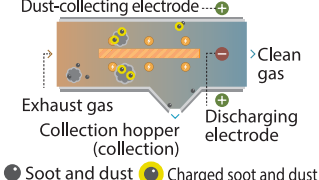
A range of measures have been taken to ensure that the environment in the area surrounding the power station is pleasant. Air pollutants such as NO_x, soot, and SO_x which are produced during the combustion of coal, are removed using exhaust gas denitration equipment, electrostatic precipitators, and exhaust gas desulfurization equipment, and the treated exhaust gas is then released into the air from a stack.

Exhaust gas denitration equipment (removal of NO_x)


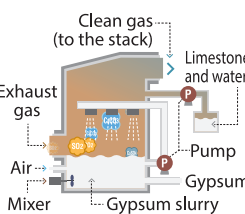
Ammonia is injected into the exhaust gas. The de-NO_x catalyst stimulates a chemical reaction that turns the nitrogen oxides into harmless nitrogen and water.

Electrostatic precipitator (removal of soot and dust)

The high voltage power between the discharge electrodes and dust-collecting electrodes electrifies the soot and dust. The dust-collecting electrodes then capture the particulates to reduce their concentration in the exhaust gas.

Exhaust gas desulfurizer (removal of SO_x)

Sulfur oxides (SO_x) in the exhaust gas react with limestone slurry and are removed in the form of gypsum.

Keeping the oceans clean

The equipment cleaning water and general waste water generated at the power station undergo pre-processing such as oil separation and neutralization. They are then purified by means of condensation, sedimentation, filtration and neutralization, and the water quality is checked before they are 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. The power station uses power generation equipment whose efficiency is among the highest in Japan and co-fires woody biomass fuel. Thus, its CO₂ emissions are low compared to coal-fired power stations.

Protecting the surrounding environment

- Measures against scattering of dust -

Scattering of dust is curbed by using an indoor coal storage yard, minimizing its openings, and employing an enclosed structure for the conveyor to receive and deliver fuel.



(Center) Enclosed belt conveyor (Right) Indoor coal storage yard

Effective utilization of limited resources

- Reuse of coal ash and gypsum -

Coal ash (cinder, soot and dust), which is generated during the combustion of coal, and gypsum, which is generated in the exhaust gas desulfurizers, are recycled as cement raw materials, building boards, and soil improvers.



Coal ash storage equipment

Noise control measures

Noise control measures are implemented for the area surrounding the power station by setting up noise walls around boilers, using low-noise equipment, and installing silencers.



Soundproof walls

