Drawing on a variety of technologies to reduce CO_2 emissions with ecological thermal power generation.

Our ace in the hole: Thermal power lets us respond to fluctuating demand.

●Combined cycle electric power facility (Sakaiko Power Plant)

Thermal power is a key to our ability to respond flexibly to the continually fluctuating demand for power. During peak demand periods, thermal power accounts for 25% to 33% of our total output. When demand is low, generation is halted. While fossil fuels such as oil and coal account for some of the fuel used in thermal power generation, more than 60% of the fuel used is LNG, with its very low CO_2 and nitrogen oxide emissions.

Combined cycle system at Sakaiko Power Plant: Higher efficiency, lower CO_2 emissions.

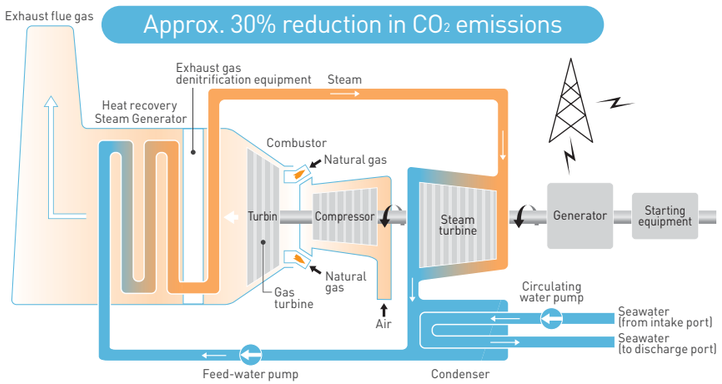
In spring 2009 Kansai EP will install a state-of-the-art combined cycle power generating system at the Sakaiko Power Plant. Employing both a gas turbine and a steam turbine to drive generators, this advanced new system will significantly boost the plant's power generating efficiency.
The combined cycle system burns LNG to produce a high-temperature combustion gas that's used to drive a gas turbine, generating electricity. The high-temperature gas is also used to heat water, producing steam that drives a steam turbine, also generating electricity. Because the combustion gas is used twice, thermal efficiency is extremely high and CO_2 emissions are reduced by around 30% per unit of electricity produced.
Kansai EP plans to upgrade all thermal power generating facilities at the Sakaiko Power Plant to the new type of system by autumn 2010.

Mixed combustion of biomass fuel and coal: Reducing CO_2 emissions even further.

In June 2008 Kansai EP began using a biomass fuel called wood pellets at Maizuru Power Plant Unit 1, a coal-fired thermal plant. Using biomass fuel along with the coal means that coal consumption can be decreased. At Maizuru, we expect this mix to reduce CO_2 emissions by some 90,000 tons every year.

●Wood pellets

●Combined cycle power generating system



Hydroelectric power generation has harnessed nature's power for more than a half century.

Putting Japan's own resources to use for natural energy generation.

Japan has abundant water, especially when compared to its other natural resources. Kansai EP puts this vital resource to good use, operating hydroelectric power plants in 148 locations that together account for nearly 10% of all the electricity we generate. Among them is the Kurobegawa No. 4 Power Plant, which can produce up to 335 MW of power.
This plant, completed in 1963, was a massive construction project completed after hollowing out bedrock at the foot of the gracefully curved, 186-m-high dam at the Kurobe Gorge. Kansai EP's successful construction of the Kurobe Dam was celebrated as the engineering feat of the century in Japan. An accumulated total of 10,000,000 workers toiled for seven years on the project, and a host of advanced technologies were employed. One of the challenges was that, during construction of the Kanden Tunnel (or Omachi Tunnel), a key part of the project, a fracture zone discharging large volumes of high-pressure ground water was discovered. These struggles, and the project's hard-won success, were later depicted in a movie.
Tackling this immense project was essential for solving the serious power shortage that gripped post-war Japan. Almost half a century later, hydroelectric power from the Kurobegawa plant is still helping Kansai EP meet the nation's energy needs.

●Kanden Tunnel, which runs through a fracture zone

Eighteen years of rehabilitation: Upgrading hydroelectric power plants across Japan.

Upgrading equipment makes it possible to generate more hydroelectric power from the same plant discharge and the same head. In 1988 Kansai EP launched an 18-year rehabilitation project that involved upgrading every hydroelectric power plant we operate in Japan. The project finally came to completion in 2006, with the rehabilitation of the Komaki Power Plant in Toyama Prefecture.
Upgrading the facilities not only increased total output by more than 40 MW, it also reduced CO_2 emissions by around 100,000 tons per year. This led to the project's receiving the Minister of Environment's Award for Global Warming Mitigation in FY 2006.

■ The elegantly curved Kurobe Dam stands against the stunning backdrop of Japan's Northern Alps.

From early summer to autumn, the dam discharges a huge volume of water – more than 10 cubic meters per second –and sends up a large plume of spray. Kurobegawa No. 4 Power Plant is located about 10 km downstream, at a level of 200 meters below the dam.