



Hatchobaru Geothermal Power Plant of Kyushu Electric Power Co., Inc. produces more electricity than any other geothermal power plant in Japan (Photo by Okubo Keizo).

SPECIAL FEATURE:

Japan: Eco-friendly Country

Japan has overcome the problems with pollution in the 1950s and 1960s as well as the oil shocks of the 1970s to become an environmentally friendly country. Striking a balance between economic growth and environmental conservation, in recent years Japan has been making great strides for the development of green technology that is competitive even by global standards.

Renewable Energy

Among the new energies now gaining attention in Japan, those spreading the fastest are renewable energy, such as solar power, wind power, geothermal power, and biomass energy. In FY2011, approximately 19.45 million kilowatts of renewable energy sources were generated in Japan, of which solar power generators now supply 4.8 million kilowatts of power. Within that, the top class solar plants in the country are the two mega solar power plants started up in 2011 in Kawasaki City, Kanagawa Prefecture.



A gas turbine used in combined cycle power generation (Photo by Kawamoto Seiya).



A mega solar power plant in Kawasaki City (Photo by Okochi Tadashi).

Geothermal energy also shows great promise among renewable energies. As one of the world's prominent volcanic countries, Japan ranks third in terms of the size of its geothermal resources, just behind Indonesia and the United States. Japan first began to harness this energy seriously in 1966 when the Matsukawa Geothermal Power Plant was built in Iwate Prefecture. Right now, the largest geothermal power plant in Japan in terms of output capacity is the Hatchobaru Geothermal Power Plant of Kyushu Electric Power Co., Inc. This plant generates a total of 112,000 kilowatts of power, and this is one of the largest geothermal power plants in the world. The Tsuchiyu Onsen hot springs resort in Fukushima City, which suffered tremendous damage as a result of the Great East Japan Earthquake and nuclear accident, is planning to install a geothermal power facility in order to harness the untapped energy of its hot springs. The possibility of harvesting geothermal power as a means of promoting regional revitalization has become a source of hope for local residents.

Energy Conservation

After experiencing two oil shocks, the Japanese manufacturing sector started to undertake drastic measures to save energy. Japan now realizes the world's top energy efficiency rate. The scale of the Japanese economy is now double the size it was in 1973, yet the energy consumption of the manufacturing sector remains almost unchanged, showing the tremendous progress that has been made in realizing more efficient processes.

Currently, operators of thermal power stations, which generate over 60% of the power used in Japan, have partially introduced combined cycle power generation that uses natural gas. This technology reuses energy that was previously wasted in order to better generate electricity, realizing marvelous energy conservation.

In the transportation sector as well, research continues within Japan on ecocars such as hybrids, plug-in hybrids, and electric vehicles (EVs). It is expected that ecocar development will connect to the creation of smartgrids in the future.

In addition, work is accelerating to develop more energy-efficient home appliances that will require less electricity as a means of fighting global warming in the home. Utilizing leading-edge technology, there are now air conditioners that save power through the use of sensors that automatically maintain a relaxing temperature, and televisions that automatically adjust backlighting depending on room brightness.

Waste Management and Recycling

In the 1960s, Japan began to experience rapid economic growth and the start of a period of massive production, massive consumption, and massive waste disposal along with the growth. Today, many Japanese are fully aware of the importance of reducing waste and disposing of it in an appropriate fashion. Most municipalities have introduced categorized garbage collection systems in which residents separate trash into burnable waste, non-burnable waste, bulk waste, and so forth, putting out each category of trash for collection only on designated days, while waste paper, glass bottles, cans and plastic bottles are collected as recyclable items.

For example, at the Kita Incineration Plant in Tokyo, trash is burned at a temperature of over 800°C in order to prevent the formation of hazardous dioxins. In addition, the thermal energy generated in the plant's incinerator is effectively used for power and heat generation.

Furthermore, in 2001, the Japanese government enacted a law to make the recycling of old electronics mandatory. Washing machines, televisions, air conditioners, refrigerators and computers are disassembled at home appliance recycling plants while any rare earths or other valuable materials are collected. In this manner, the appliances are thoroughly recycled.



A wind power plant in Kamaishi City, Iwate Prefecture, which is a FutureCity.

Building Eco-Cities

Under its "FutureCity" initiative, the Cabinet Secretariat of Japan has selected 11 regions where efforts will be undertaken to address environmental issues, promote disaster prevention and deal with the challenges arising from the aging of society, all in an attempt to make successful examples as countermeasures to each problem.

The regions selected include six places that suffered great damage during the Great East Japan Earthquake in 2011: the area around Kesennuma (Ofunato City, Rikuzentakata City, and Sumita Town in Iwate Prefecture), Kamaishi City in Iwate Prefecture, Iwanuma City in Miyagi Prefecture, Higashimatsushima City in Miyagi Prefecture, Minamisoma City in Fukushima Prefecture, and Shinchi Town in Fukushima Prefecture. All of these regions are aiming for reconstruction centered on environmental measures through the use of renewable energy sources, smart grids, and other initiatives.