

New Business Ventures

Expansion of comprehensive energy business

We expand our comprehensive energy business by developing new energy sources with lower environmental impact.

▶ Decentralized power source project

A decentralized power source system is an environmentally friendly power generation system by which energy (electricity and heat) is generated onsite at hospitals, factories and other users' premises at lower costs and at the same time exhaust heat (gas and motor heat) from power generation can be effectively utilized to increase energy utilization efficiency and reduce CO₂ emissions. We have operated the "Energy Service Business" including fuel supply management for decentralized power source systems using our existing distribution network, design, construction, maintenance and management of power generation and exhaust heat recovery facilities, and bearing the capital investment. By the end of FY 2003, we had secured contracts for a total of about 20,000kW. We have also continued to market kerosene heat pump air-conditioning products to meet the needs of users.

▶ Natural gas business

We joined LNG Chubu Co., Ltd., a liquid natural gas (LNG) marketing company established by Chubu Electric Power and its partners and began to supply LNG to city gas companies at the end of 2001. In FY 2003, we started supplying LNG to the industrial sector for the first time in Japan. In the same year, we secured 7 contracts and received LNG orders worth 16,000t per year. Having established Sakai LNG Company with the Kansai Electric Power Company and others and Sakaide LNG Company with Shikoku Electric Power Company and others, we are planning to expand the business of LNG receiving, storage, shipment, etc.

▶ Wind power generation

We are in the process of setting up a business operation focused on wind power generation as a clean, renewable energy source. We have conducted studies of wind conditions since 2003 in several locations including unused sites owned by the Company. We commenced construction of a wind power generation facility in Sakata City, Yamagata, in August 2004 and are planning to begin wholesale supply of wind generated power from December 2004.

▶ Fuel cells

We develop a stationary fuel cell system using hydrogen manufactured from petroleum fuel. We have also participated in the JHFC project and have been operating the JHFC Yokohama Daikoku Hydrogen Station to supply hydrogen to fuel cell vehicles since March 2003. Technologies for enhancing hydrogen manufacturing efficiency and hydrogen filling are being studied at this station. We have introduced Nissan Motor's fuel cell vehicle X-TRAIL FCV since March 2004 and are jointly researching hydrogen filling technology.



JHFC Yokohama Daikoku Hydrogen Station

▶ Independent Power Producer (IPP) business

We have built a power station with a capacity of 200,000kW in Kasumi, Yokkaichi City, Mie (Yokkaichi Kasumi Power Station) which commenced commercial operation in July 2003. It will provide Chubu Electric Power Company with a stable supply of electricity for the next 15 years. Yokkaichi Kasumi Power Station is designed to harmonize with nature and equipped with high-performance NO_x removal, desulfurization and electric precipitation devices and other environmental technologies as well as green space and conservation ponds.

Biodiversity Conservation – Biotopes at Yokkaichi Kasumi Power Station

Yokkaichi Kasumi Power Station has created conservation wetlands on the site in order to protect reedy ponds which are the breeding grounds for great reed warblers (*Acrocephalus arundinaceus*), a rare land bird species. Great reed warblers are summer birds that visit reedy areas near water to breed. A survey conducted in July 2003 confirmed two male great reed warblers on the grounds. Two rare plant species, *potamogeton pusillus* and *ruppia maritima*, are also conserved. *Potamogeton pusillus* is a type of rare algae that grows on a beach or in a river and *ruppia maritima* is also a type of algae that grows on a beach or in a mixture of salt and fresh water near a river mouth.



Expansion into new business fields

▶ 5-aminolevulinic acid (ALA) business

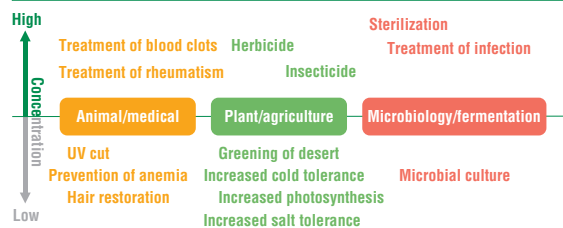
5-aminolevulinic acid is a naturally occurring amino acid which plays important roles in living organisms. Cosmo Oil has established a high quality, low cost method of manufacturing ALA by fermentation. We have also discovered that ALA can enhance CO₂ fixing capacity of plants and developed high-performance fertilizer containing ALA jointly with Seiva Co., Ltd., which has been well received by the greenhouse horticulture and other industries. ALA is also expected to be able to contribute to the resolution of environmental issues through greening of desert and other degraded areas.

▶ Rapid dioxin test kit "Immuno Eco DXN"



We have developed "Immuno Eco DXN", a rapid screening kit to measure the content of dioxin by immuno assay method and start test-marketing in December 2002. Our kit is currently adopted by five analytical service companies. The Ministry of Environment and the Ministry of Land, Infrastructure and Transport are evaluating various rapid measurement technologies including our kit. It is also highly evaluated in the study by the Ministry of Health, Labour and Welfare.

■ ALA application areas



*3 Immuno-assay method: A method to measure the level of a substance in a given sample by using the property of an antibody to specifically bind an antigen.