



## Special Features

# The MC Concept of Sust

MC recognizes that responding to global warming, protecting biodiversity, power generation, and access to energy, food and water resources are global issues that all of humanity must work to address. We are committed to enhancing corporate value by doing our part to create sustainable development as we focus on these global environmental issues, as well as on social issues such as respecting human rights and proper labor conditions.

# Sustainability



## Special Feature (1) A Review of Our Major Businesses in Terms of Sustainability

Energy, metals, and living essentials are three sectors that play a particularly important role in building MC's global businesses (see page 15 for further details on these sectors). MC approaches its operations in each of these three sectors in terms of its total value chain, fusing its trading, investment, and finance businesses to form a single chain that spans the entire length of each industry. This integrated approach has laid a solid foundation for MC's profitability.

This feature focuses on aspects of our core businesses in the energy, metals and living essentials sectors – namely, natural gas, coking coal, and food products – as they relate to sustainable development.

## Special Feature (2) The Business of Building a Sustainable Society

As part of its commitment to building sustainable societies, MC is involved in a diverse array of businesses geared toward environmental issues. This feature describes MC's approach to new energy sources and the prevention of global warming.

Handling Half of Japan's Imports of Cleaner Energy

# LNG BUSINESS

## Handling Half of Japan's Imports of Cleaner Energy

Natural Gas Business

Australia



### Supervisor's Opinion

Naoko Matsushima

Australian Business Unit,  
Natural Gas Business Division

In addition to supplying energy to Japan, which is poor in natural resources, I feel that the North West Shelf Project is meaningful in the sense of protecting the global environment. I am delighted when I think that the LNG from our project is part of the electricity and gas that is used when people turn on the lights in their rooms or cook. Nowadays, with global warming having become a serious environmental issue, I expect LNG to become one possible solution.

### Outline of Australian North West Shelf Project

Compared to oil and coal, burning liquefied natural gas (LNG) emits much less carbon dioxide (CO<sub>2</sub>), a greenhouse gas, and fewer nitrogen oxides (NO<sub>x</sub>) and sulfur oxides (SO<sub>x</sub>), which cause acid rain air pollution. These factors have been fueling demand for LNG, which is expected to rise even further now that the Kyoto Protocol has come into effect, legally requiring the reduction of greenhouse gas emissions by participating states.

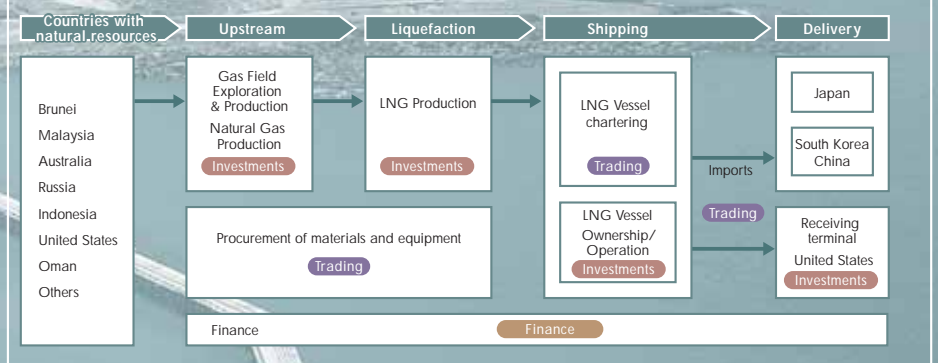
The Western Australian LNG Project (a.k.a. the North West Shelf Project) was launched nearly 20 years ago. The offshore facilities are located 130 km off the coast from Karratha in Western Australia, and the onshore facilities are located on the Burrup Peninsula. This project, in which Shell, BP, BHP Billiton, Chevron, and Woodside Petroleum also participate, is one of the world's largest resource development undertakings. MC participates through its Australian-affiliate company, Japan Australia LNG (MIMI) Pty. Ltd., which is a 50-50 joint venture with Mitsui & Co., Ltd. Woodside Petroleum is an Australian energy company and is acting as the project operator. A distinguishing characteristic of this project is that it sees the operations through from gas field exploration to LNG production, transportation, and marketing.

With the completion of a fourth train in 2004, the project's LNG production capacity has reached 11.7 million tons per year. Most of the produced LNG is exported to Japan, where it is sold to six power companies and four gas companies, and accounts for about 20% of Japan's LNG imports. The project has been highly successful in terms of its steady supply, attributable to the fact that Australia is

Left: An onshore natural gas liquefaction plant  
Right: A panoramic view of onshore facilities



### MC's LNG Value Chain



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economically and politically stable and major companies are participating. In response to that success, construction of a fifth train is proceeding.

### A History of MC's LNG Business

On November 4, 1969, a tanker carrying LNG berthed at the Negishi LNG Receiving Terminal in Kanagawa Prefecture. This shipment, which came from Alaska, was Japan's first – and only the world's second – attempt to transport natural gas by sea. The Alaska LNG Project from which the LNG came was MC's first foray into LNG operations. MC followed on this success by becoming more deeply involved in natural gas liquefaction (i.e. the production of LNG), and financed the Brunei LNG project in the 1970s. Since then, MC has become involved in new LNG projects in Malaysia, Indonesia, Australia, and Oman.

About 130 million tons of LNG per year is traded around the world, of which Japan imports about 59 million tons. MC handles about 20% of the LNG traded in the world, and imports roughly 50% of the LNG used in Japan.

Moreover, MC is aggressively developing new businesses, both upstream (i.e. from exploration and development to pre-processing operations) and downstream, and is adapting to the global nature of LNG trading. Currently, MC has acquired more upstream rights by investing in the Sakhalin II Project and the Indonesia Tangguh Project, and has also made progress in acquiring downstream rights through its involvement in LNG-receiving terminal operations in the United States.

### Contributing to the Improvement of the Local Economy and Infrastructure

The North West Shelf Project greatly expanded local employment. A total of about 90,000 people were employed during the construction stages, while daily operations generate employment for 500 people. In addition, the project is making significant direct contributions to Karratha, where the project's onshore facilities are located. The North

West Shelf Project has spent 29 million Australian dollars for the enlargement of hospitals and schools, 10 million Australian dollars for the construction of sports facilities, libraries, movie theaters, and community centers, and 33 million Australian dollars for infrastructure improvements to develop roads, an airport, electrical and water supplies, and piping systems (figures as of 2002).

### Environmental Considerations

When making business investments, MC assesses an investment in terms of CSR and conducts environmental impact assessments and environmental reviews. This process was followed with the current North West Shelf Project.

The project pays attention to environmental considerations in all aspects of its daily operations. The two offshore platforms and the onshore liquefaction plants have all received ISO14001 certification. The operator has produced an environmental policy, and has established specific figures for items that have an environmental impact, including NO<sub>x</sub>, SO<sub>x</sub> and CO<sub>2</sub> emissions, waste produced and water usage. The project has been commended for reducing CO<sub>2</sub> emissions through these initiatives, and the operator has received accolades from the Australian government. In the future, the project will continue striving to further reduce its environmental impact.

### Paying Particular Attention to Safety

Safety is the number-one priority in operations at natural gas and petroleum production facilities and natural gas liquefaction facilities. The North West Shelf Project is no different; operations are being run with particular attention being paid to safety. The project has enhanced its risk management, built an appropriate health and safety system, established targets in all areas, and is continuously working to make improvements. Furthermore, to develop these initiatives more efficiently, the project operator has made health and safety performance an important factor on employee assessments.

## Outline of Business Ventures

Established in Australia in 1968 as a resource investment company, Mitsubishi Development Pty., Ltd. (MDP) supplies Japanese iron-manufacturing companies and other firms with coal, maintaining a largely stable supply in Japan of the type of coal used to produce coke. Since 2001, MDP has provided half of the capital for the BM Alliance (BMA), a joint coal business venture established with leading global resources company BHP Billiton. BMA operates seven mines in Queensland, Australia, with a total production surpassing 50 million tons a year (in which MDP holds a 50% interest). The bulk of what is produced by this venture satisfies demand for coal in 24 nations around the world, including Japan, South Korea, Brazil, India, and countries across Europe. Today, the amount of coal shipped by BMA to destinations across the globe represents approximately 30% of the world's total maritime coal trade.

## Coking Coal

The coal mined by BMA and shipped to Japan is primarily of a type used to produce coke. Coal is designated as either coking coal or steam coal, according to the purpose for which it will be used. Coking coal is the raw material used to produce the coke needed to manufacture iron. For this process, coke acts as a reducing agent in the blast furnace and as a distributor and heat source to ensure that heat and air rotate evenly within the blast furnace. It is important to have durable, high-quality coke, and the primary source for this coke is high-quality hard coking coal. More than 80% of the coal that BMA produces in Queensland is hard coking coal.

## Protecting the Environment

In Queensland, the primary method used to extract coal is open-cut mining, which is followed by successive rehabilitation rotations to revitalize the depleted mine sites. The mining and rehabilitation process involves first removing one to two meters of topsoil, which is then stored in a different location for later use. Once the thick sediment covering the green coal zone is removed, the coal is extracted, and the depleted area is filled in with the same topsoil that was initially removed from the site once mining operations move on to an adjacent section. These steps are repeated, with a section mined and then refilled as mining begins at the next site. Sections that are refilled after being mined are leveled off using heavy machinery and other equipment; they are first stripped and then covered with high nutrient topsoil held in special reserve. The final step in rehabilitating the earth is planting the newly laid topsoil. Sections are replanted with the vegetation taken from the site before mining, as well as grass and trees collected from the surrounding area. Rehabilitation aims to restore the mining site to the same natural conditions that existed before mining. Experts provide special care for plant life, checking the amount of rainfall and watering as necessary, and work to restore the native ecological system.

## Reusing Water Resources

The process of producing coal requires a large amount of water. Water is used, for example, to wash away the soil and mud that adheres to extracted coal. To protect this resource, water is siphoned into a small pond referred to as a tailing pond. The water is stored here for several years, during which time it is subject to environmental regulations requiring strict control until impurities naturally settle and

# A Framework for Sustainable Development of Mineral Resources

Coking Coal for Business Australia

Special Feature (1) A Review of Our Major Businesses in Terms of Sustainability

Sustainable Development of Mineral Resources

# COKING CO

clear water rises to the top. The clear surface water is checked for quality and PH balance and then reused or returned to rivers. In addition, the scraps of coal that settle to the bottom of the tailing pond may also be used as fuel for power generators.

In order to ensure that as little rain and ground water is wasted as possible, water is collected at several points inside the coalmine. Collected water is sprinkled to prevent dust from scattering, used in maintaining roads, and also sprinkled over recovered soil ready for planting. MDP promotes the reuse of water by implementing strict management controls to ensure that valuable water resources are not wasted, but are instead put to the best use possible.

### Thorough Safety Training

Safety is the highest priority issue for both a corporation and its employees. For this reason, MDP places great emphasis on training and focuses on the safety of basic operations. Frequent checks are conducted to ensure that casing covering wires supplying electricity to large machinery is properly secured; all necessary precautions are taken during basic operations to ensure the safety of those in the vicinity of employees operating tools; and all concerned have a thorough understanding of the methods for using the emergency kits and oxygen pumps that workers are required to carry into coal mine shafts. Our employees are also trained in the measures to be taken and the process for evacuation in case an accident occurs, and evacuation shelters are constantly maintained for when they might be needed. Eliminating dust by sprinkling water on the roads inside coalmines is another safety precaution in place to ensure that the vision of vehicle operators is not compromised. In addition, visitors arriving for mine tours are given thorough safety instructions before being allowed to enter the mine.

The key to safety lies in preventing accidents before they occur. As a further measure, however, MDP maintains an expert rescue team of employees prepared for the unlikely event of an accident. The team receives regular training in first aid for treating the injured, artificial respiration, and the proper methods of transporting injured workers. Each coalmine is manned by a dedicated rescue team, and regional and state rescue competitions help keep our teams' skills sharp.

### Contributing to Local Communities

Most of the communities in which MDP and BMA operate are mining towns. In order to begin mining operations in the Queensland wilderness when it was established in 1968, MDP needed to start from scratch in building towns for its employees to live in, laying the basic infrastructure needed for employees' day-to-day lives, such as roads, electricity and waterworks. Though this responsibility has since passed to local governments, MDP continues to be actively involved in activities that contribute to local communities. The company develops a diverse array of activities designed to facilitate collaboration with local residents. These range from donations to hospitals and local universities that have been operating for more than 10 years and providing financial support for various town's activities, to building parks and administering tours of the coal mines for employees' children.

MDP has been highly commended for contributing to the development of Queensland through activities that support both the local community and the export of coal. In addition to receiving the Premier of Queensland's 2004 Export Awards in September 2004, BMA also earned Australia's 2004 National Safety and Health Innovation Award for an innovative crane operation method developed in one of its own mines (the Blackwater coal mine) that drastically reduces accidents and the risks to operators.

### Supervisor's Opinion

Tatsuichi Taneda

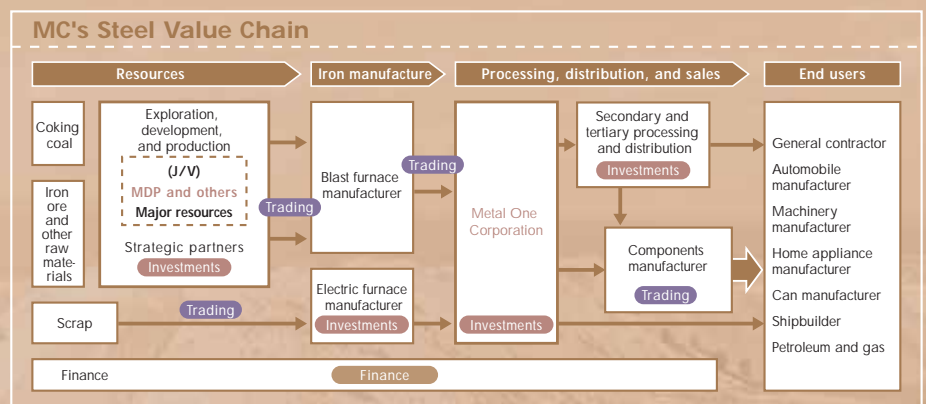
Manager, MDP Unit



The coal that we extract and ship to Japan is converted into iron and electricity. It gives me great pleasure to know as I carry out my duties that not only does Mitsubishi profit financially from the work I do, but that I am also contributing to society as a whole. I have been responsible for coal business since I joined Mitsubishi, and had been working in Australia for about six years. I am extremely grateful to Mitsubishi for allowing me the opportunity to work for the good of society through my work in our coking coal business.



Rehabilitation of mining sites restores native ecological systems



# AL BUSINESS

## Support of the Global Food Supply Chain

## FOOD BUSIN

## MC's Business in Support of the Global Food Supply Chain

Food Business

Global

**MC Food Commodity and Food Product Businesses**

Japan's self-sufficiency rate for food commodities is roughly 40%. Though domestic production is able to supply most of the rice, vegetables, and eggs that are needed to satisfy domestic demand, Japan depends on imports for a large percentage of most other food commodities. MC focuses on building a value chain that ensures a stable food supply in Japan. We actively invest in each stage of the food supply chain that covers everything from importing from overseas production bases to processing, distribution, and retail sales of a wide variety of items – including grain, stock farm products and seafood. With increasingly diverse needs, users and consumers are now demanding that suppliers not only guarantee a stable supply of food commodities, but guarantee food safety as well. In order to meet these needs, MC is committed to supply chain management (SCM) that is designed to ensure safer, more stable and more efficient food provision at each stage of the supply chain.

**Stable Grain Supply**

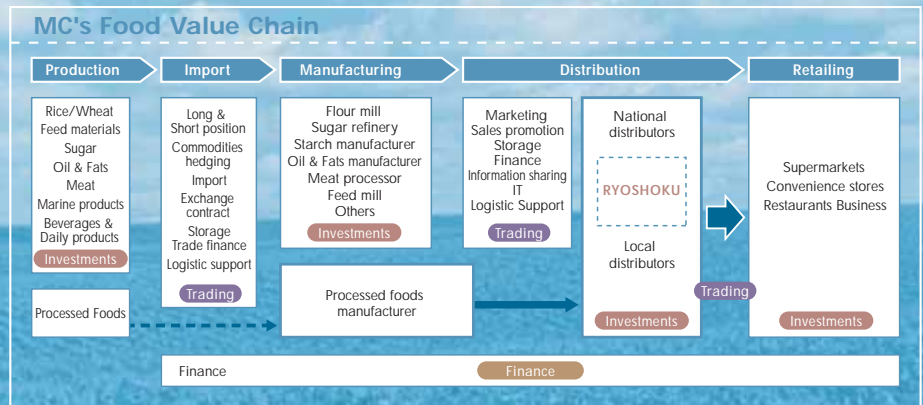
The amount of grain produced in a given year is subject to intensely fluctuating factors such as the weather, making this industry quite unstable – countries that normally export grain can in some years be forced to import it. Dependency on imported wheat, soybeans, corn and most grains other than rice, and managing the risks involved in procuring commodities under such dynamic conditions, is a serious issue facing Japan. Through bases established in grain-producing regions such as the U.S., Australia, Brazil, and Argentina, as well as our global information network, MC has a firm grasp on worldwide

production conditions as they unfold. We analyze information gathered from around the world to create stable supplies by ensuring the volume of each commodity purchased accurately reflects demand.

**Ensuring Food Safety  
A Case Study: Corn**

Corn is one of the major staples of the Japanese diet, and its use in Japan can be broadly divided into two categories: as an ingredient in food products, such as sweeteners and snack foods; and as an ingredient in the feed given to domestically raised poultry and cattle. Japan imports roughly 16 million tons per year of corn, primarily from the U.S., four million tons of which is used in sweeteners and snacks, and the remaining 12 million tons in animal feed.

MC operates a well-established corn importation business. Based on the needs of the consumer market, a certain amount of the corn we handle for food products is grown under contract with producers obligated to follow specific guidelines. MC not only provides the producers it commissions with guidelines, but also sends representatives from the U.S. grain dealer AGREX, Inc. (a company in which we have invested) or a contracted company on regular visits to producers to conduct detailed inspections. To ensure that the corn we cultivate under contract is environmentally friendly and results in safe, high quality food, we insist that everyone involved in its production meet before any planting is undertaken to discuss cultivation, harvesting, categorization, and storage procedures, and ensure that few pesticides are used. Product quality is further checked through post-harvest inspections and the presence of third-party organizations



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Supervisor's Opinion

Shuji Kobayashi

Manager  
 Grain Unit  
 Foods (Commodity) Division

The import of corn to be used as ingredients in food products and feed may hardly seem to impact the average consumer, but this grain is in fact quite important to the production of a great many food products. Dextrose and fructose used in carbonated drinks, for example, are made with the starch extracted from corn. When I pick up the products that contain the corn I deal with everyday as an ingredient, I am keenly aware of the food value chain and how closely linked industries are with their end users.

that conduct inspections during the distribution process. MC also works to enhance food safety with measures to ensure that no genetically modified crops are accidentally mixed in the crops we import.

Outbreaks of diseases such as bovine spongiform encephalopathy (BSE or "mad cow disease") have turned attention to the safety of feed, which accounts for a significant percentage of corn usage in Japan. It is thought that BSE is caused by the ingestion of animal proteins from ground animal meat and bones and other sources. To prevent outbreaks of the disease, the Japanese government has announced guidelines designed to prevent animal proteins from being mixed into livestock feed. MC complies with these guidelines to strictly control each stage of the feed supply chain to ensure that no mixing occurs.

Structure for Meeting Demand

As part of its investments, MC owns numerous large-scale silos in ports large enough to accommodate major ships. These silos are used as bases to store grain and other food commodities, and form part of the MC structure for ensuring a stable food supply for Japanese demand. With the stored food shipped from the silos in the amounts needed to meet demand, these structures represent a barometer of food demand in Japan at any given time. The shipping of procured food commodities to Japan is coordinated in concert with silo inventory and user demand. Access to large-scale silos that are able to accommodate large-scale transport and storage helps MC guarantee a stable supply structure by requiring fewer transport trips to cut back on wasted energy and reduce costs.

Left: An American cornfield in Illinois  
 Right: Corn growers in a meeting



# Toward the Pr

## Working to Prevent Global Warming

The Kyoto Protocol, which went into effect in February 2005, has brought international attention to the fact that global warming is an issue that affects all of humanity.

MC is actively involved in energy businesses that help curb global warming, such as hydrogen and biomass power generation and emission credits trading. Our approach to preventing global warming is not based solely on our belief that it is our corporate social responsibility to help realize sustainable societies. MC also recognizes that pursuing business opportunities that anticipate future market needs is a strategic investment of management resources.

### GHG emissions trading and CDM projects

The Kyoto Protocol, which came into force in February 2005, contains flexible mechanisms that allow for the creation and trading of emissions credits to help countries achieve the Protocol's emissions reduction targets. MC already has business experience in this field, recognizing the great potential in such emissions trading mechanisms.

In 2000, MC participated in the Prototype Carbon Fund (PCF), launched by the World Bank, in order to acquire emission reduction credits. We also invested in a major American GHG brokering company, Natsource LLC. Natsource Japan was established in 2001 jointly by MC, Natsource LLC, a leading Japanese bill broker by the name of Tokyo Tanshi, and another 11 companies. Natsource Japan's purpose is to expand emissions trading in Japan and Asia.

More recently, we participated in the Japan GHG Reduction Fund as a core member, and we have also been an active player in CDM (Clean Development Mechanism) projects and emissions trading. For example, an HFC23 decomposition project in Ulsan, Korea has been officially recognized by the CDM Executive Board of the United Nations Framework Convention on Climate Change (UNFCCC), and MC will start receiving Certified Emission Reductions (CER) through this project in the near future.

Building on this experience, MC will aggressively advance our emissions trading and related businesses to provide solutions for our customers' future emission risks.

### Preparing for a Hydrogen Energy Society

Fuel cells that use hydrogen to produce electricity via electrochemical reactions are the ultimate clean energy source. Numerous technical difficulties, however, have frustrated the practical application of these cells. As part of its efforts to find a solution to this problem, MC has partnered with Kobelco Eco-Solutions Co., Ltd. to sell the patented high-purity hydrogen oxygen generator (HHOG) for use with industrial gases, and to develop a next-generation high-compression hydrogen energy generator (HHEG).

Though progress is being made in Japan to convert to



The next-generation high-compression hydrogen energy generator (HHEG) is now in development.

more environmentally friendly energy sources, such as diesel hybrids and gas-to-liquid (GTL) fuels, the gas infrastructure required to service a future hydrogen society remains underdeveloped. MC recognizes that, in addition to the social contributions made through its diverse businesses dealing in fossil fuels, the company has a responsibility to society to reduce CO<sub>2</sub> emissions and help develop the infrastructure that societies will require in the future to run on hydrogen energy. It is our responsibility to ready ourselves to take advantage of these future business opportunities not only from the point of view of developing our business portfolio, but also simply to deliver profits to our shareholders. For these reasons, MC is committed to developing new uses for hydrogen based on our HHOG technology, which is already in the application stage, and to developing new hydrogen infrastructure businesses that make further use of this technology.



#### Supervisor's Opinion

Katsuyoshi Tanaka

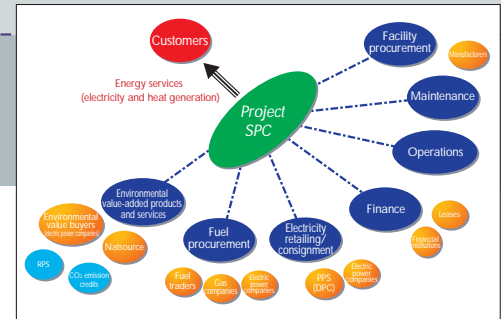
Manager, Energy Business Development Unit  
Energy Business Group

With the Kyoto Protocol now in effect, the era of petroleum as the ultimate driving force behind advanced economic growth is coming to an end. As energy professionals, we take Japan's energy security very seriously, and are dedicated to ensuring that Japanese consumers have easy access to safe sources of energy at a fair price. Above all, though, we are committed to leaving a clean environment to our children.

# evention of Global Warming

## Onsite Power Generation

The onsite generation of power is an entirely new business model that involves the outsourcing under contract of comprehensive energy services – from fuel supply and facility selection to operation oversight and the sale of surplus electricity – by the energy supply divisions of large-scale plants. Despite the transition at most manufacturers from conventional heavy oil to liquefied natural gas (LNG) and other fuels as a measure for curbing CO<sub>2</sub> emissions, investment in the energy sector has not kept up with the pace of conversion. MC's onsite power generation systems solve this problem and contribute to the transition to environmentally friendly energy by providing comprehensive energy services. The fuel used to generate power is either LNG or the biomass/biogas generated at the plant. In terms of biogas, consumable gases and other byproducts generated in the manufacture of goods at the particular plant are used along with LNG as fuel. In the case of biomass, the scrap lumber and wood generated at timber and building material plants is used as fuel to generate power at the plant. MC has established several Special Purpose Companies (SPCs) for customers operating in these fields, and has begun to see results in reduced CO<sub>2</sub> emissions and energy costs at dozens of plants throughout Japan where it has launched projects under this business model.



Onsite power generation business scheme

### Supervisor's Opinion

Yoshihiro Iwasaki

Manager, Energy Businesses, Power Systems Unit, Power & Electrical Systems Division



Seeing customers so pleased to be able to lower energy costs while they help to protect the environment is the aspect of my job that gives me the most pleasure. I also enjoy the challenge of working under an entirely new business model that allows us to contribute to energy conservation, generate cost savings, and protect the environment.

## Generating Biomass Power From Food Waste

Biomass (Note 1) has come into the spotlight as an energy resource with little negative environmental impact. MC operates in the food waste recycling business, both through our subsidiary SAN-R Co., Ltd. and a biomass power generation plant in Tokyo's Ota ward, which is currently under construction and scheduled to commence operation in February 2006. The plant processing system decomposes food waste using methane bacteria, with a cogeneration system to produce electricity and heat energy after biogas, the main component of methane gas, has been recovered. Plants absorb CO<sub>2</sub> from the atmosphere as they grow, and this CO<sub>2</sub> is released in the combustion of biogas from the plant matter contained in food waste. In terms of the overall life cycle, this return of CO<sub>2</sub> does not represent a net gain or reduction of CO<sub>2</sub> in the atmosphere – unlike CO<sub>2</sub> emissions released by energy generated from petroleum and other fossil fuels. Once it is up and running, the biomass plant will process approximately 110 tons of food waste per day, generating 24,000kwh of power per day and enabling MC to cut CO<sub>2</sub> by roughly 14 tons per day over the same amount of power generated from fossil fuels.

Note 1: Biomass

Recyclable organic resources that come from plant and animal matter, including food waste

## Experimental GTL Fuel Application

Demand for oil in newly developed nations has surged in recent years, and we are facing the possibility that oil producers will be unable to meet future growth in demand. As a limited resource, the price of oil is expected to continue to rise in the future. In preparation for possible future strains on oil supply and demand, MC is undertaking experiments in the application of GTL (Gas-To-Liquid) fuels, produced from natural gas and with properties similar to those of diesel oil. GTL, however, does not emit SO<sub>x</sub>, since it is produced from natural gas; it is therefore an environmentally friendlier fuel, producing much less black smoke and imposing less of a burden on the environment. GTL can be stored and transported at normal temperatures and under normal pressures, which eliminates the need for specialized shipping vessels and facilities, like those required for LNG, and increases the safety and convenience of transport and storage. This fuel can also be used within the existing infrastructure; new gasoline stations and automotive engines need not be developed, making new investment in infrastructure unnecessary. Offering significant advantages in terms of the environment, safety, and infrastructure, GTL is a promising alternative energy source that will help move the global community away from its dependence on oil.