

Gas Segment



Characteristics of the Japanese Gas Industry

- Although more than 200 gas companies exist in Japan, the market is dominated by a few major gas suppliers.
- The industry's supply of LNG, the primary source of natural gas, is almost completely dependent upon imports.
- In contrast to many other countries, Japan does not have any international gas pipelines or gas pipelines interlinked nationally.
- The natural gas business is operated in an integrated manner, from import to transmission, storage, distribution and sales.

Special Qualities of Natural Gas

Compared to other fossil fuels, natural gas has a much smaller impact on the environment. In addition, natural gas reserves are more abundant than those of crude oil and, unlike crude oil, are not concentrated in specific geographical locations.

In particular, because of its environmental advantages, demand for natural gas as a more environmentally friendly energy resource is expected to increase in the future, reflecting the public's increasing concerns and heightened awareness regarding the environment.

Deregulation in the Natural Gas Sector

Retail sales of natural gas in Japan began to be deregulated in 1995. Since then, the extent of retail deregulation has steadily increased, resulting in the deregulation of the natural gas sector. Currently, deregulation applies to customers with annual gas contract volumes of 100,000 m³/year or more. Measured by sales volume, approximately 60% of the natural gas sector is now deregulated.

Reserve/Production Ratios for Natural Gas and Oil



Source: BP [Statistical Review of World Energy 2008]

Emissions of Combustion Products From Fossil Fuels (Coal = 100)

	CO ₂	SO _x	NO _x
Coal	100	100	100
Oil	80	68	71
Natural Gas	57	0	20–37

Source: Report relating to field tests on technology for measuring air pollution caused by thermal power plants (March 1990, The Institute of Applied Energy); IEA (International Energy Agency) Natural Gas Prospects to 2010 (1986)

Deregulation Timeline in the Electric Power and Natural Gas Sectors

	Electric Power Sector			Natural Gas Sector			Customers
	Scope of liberalization	% of national sales open for competition	Features	Scope of liberalization	% of national sales open for competition	Features	
1995	—	—	Introduction of IPP and fuel cost adjustment system	2 million m ³ or more per year	44%	Introduction of third party access to pipelines and fuel cost adjustment system	Large factories and office buildings
1999/2000	More than 2,000kW	26%	Creation of retail power generation and supply business	1 million m ³ or more per year	50%	Third party access to pipelines made mandatory (four major companies only)	
2004	More than 500kW	40%	Abolishment of zone-based transmission tariff (pancake pricing)	500,000 m ³ or more per year	53%	Third party access to pipelines made fully mandatory	Large commercial facilities, hotels, etc.
2005	More than 50kW	63%	Creation of power exchange market	—	—	—	Small and medium-sized factories, hospitals, business hotels, supermarkets, etc.
2007	—	—	—	100,000 m ³ or more per year	60%	—	

Sources: Denki Shimbun's "Description of Electric Power Liberalization and New Systems" and 2007 Subcommittee to Evaluate System Reforms materials

The Osaka Gas Business Area

Gas sales by volume of the Osaka Gas Group are approximately 8.8 billion m³, representing about 30% of gas sales nationwide. The number of Osaka Gas customers amounts to approximately 6.8 million, accounting for about 25% of such customers nationwide. Our supply area is in the Kansai region with 77 cities and 29 towns in six prefectures. Approximately 57,900 km of gas pipelines cover an area of 3,184 km². In order to improve the stability of supply, we are currently

working in cooperation with Chubu Electric Power in the eastern side of our supply area to build the Mie-Shiga Line (a pipeline of about 60 km between the town of Taga in Shiga Prefecture and Yokkaichi City in Mie Prefecture, scheduled for completion around 2010). On the western side of our supply area we are investigating the construction of a gas pipeline from Himeji City to Okayama City. Looking ahead, these actions will help steadily expand our supply area and strengthen our supply infrastructure.

Residential Gas Marketing

In the residential gas market, the Osaka Gas Group develops products that are environmentally friendly, economical, and allow customers to lead a "smart home lifestyle" that is more comfortable, convenient, safe and secure in ways that only gas makes possible. We are dedicated to promoting the further popularization and use of such gas appliances as the residential gas cogeneration system ECOWILL, a separate bathroom heater-drier system with a mist sauna for health and comfort, and gas stoves for everyday cooking.

Our ECOWILL residential gas cogeneration system is a highly energy-efficient system that enables users to generate electricity at home, using exhaust heat from the generation process to supply hot water and heat. Compared to conventional hot water and heat supply systems, it reduces energy consumption by approximately 22% over first-generation systems, and enables approximately 32% reduction in CO₂ emissions. By achieving energy savings, the system also enables customers to control their overall lighting and heating costs. The number of units sold has grown solidly since its release in March 2003, reaching 11,900 units in the year ended March 2008 for a cumulative total of 45,700 units.

Eco-Jozu, our energy-saving hot water heater, improves upon conventional systems by recovering and reusing heat released into the air to supply hot water. Through this mechanism, the system significantly improves heat efficiency and contributes to both energy conservation and reduction in CO₂ emissions volumes. Since Eco-Jozu first went on sale in 2000,

the number of units sold has climbed along with an increase in environmental awareness. In the fiscal year ended March 2008, annual unit sales were 46,000, for a cumulative total of 128,000 units sold.

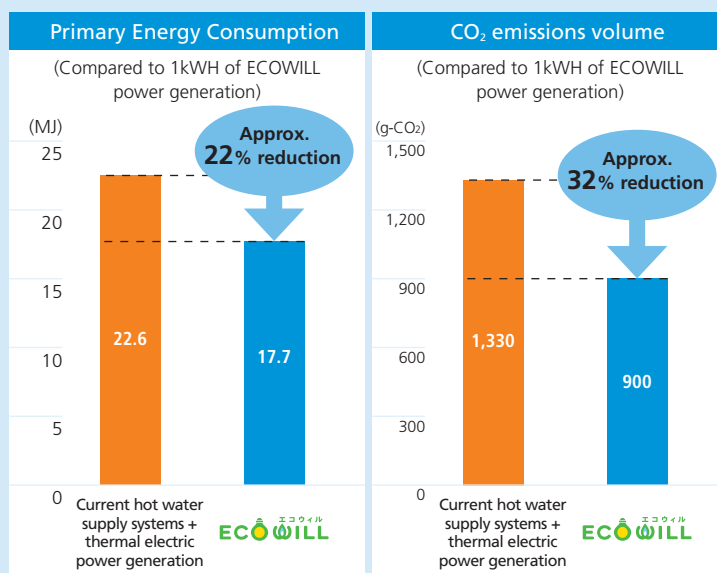
Our mist sauna products make it easy for customers to enjoy a sauna experience in the home. Products such as the MIST KAWACK, a bathroom heater/drier equipped with mist sauna functionality, turn the bathroom into a sauna by nebulizing hot water into a fine mist. These products have been well received in the market since we launched them in April 2004 in response to the heightened interest in health and beauty in recent years. Sales in the fiscal year ended March 2008 totaled 53,000 units, for a cumulative total of 157,000 units sold.

Glass-top, built-in gas stoves enable users to create delicious foods for a more exciting dining culture. We achieved robust sales by expanding our range of glass-top, built-in gas stoves, which are popular for their attractive, easy-to-clean design. Osaka Gas responds to a broad range of requests from our customers. In September 2007 we released the COLORS lineup of built-in gas stoves, offering customers seven color choices for color-coordinating their stoves with the rest of their kitchens. In October of the same year, we introduced the Udea glass-top built-in gas stove, which incorporates the principles of Universal Design to ensure that it is easy for anyone to use.

Osaka Gas seeks to support a safe and secure lifestyle for our customers through the provision of a diverse line of products and services. In addition to gas devices, we also promote the Piko Piko gas leak alarm system and the Kemupiko fire



The ECOWILL residential gas cogeneration system supports both a comfortable lifestyle and environmental conservation



Note: Primary energy equivalent: 9.97 MJ/kWh of electricity
Gas: 45 MJ/m³
Hot water heater efficiency: 80%

Note: CO₂ emissions coefficient: 0.69 kg-CO₂/kWh electricity ("Interim Report by the Central Environment Council Subcommittee for Establishing a Scenario for Achieving the Kyoto Target and the Subcommittee for New Policies for Achieving the Kyoto Target," July 2001)
Gas: 2.29 kg-CO₂/m³ (Company data)

LPG specifications are approximately 27% lower
LPG: 6.01kg-CO₂/Nm³

alarm system. In response to rising awareness concerning crime prevention, we collaborate with a subsidiary to provide various services such as I-rusu, an Internet-based home security service.

We will further strengthen our marketing activities to convince customers of the advantages of gas and gas appliances. We will offer a lifestyle enhanced in ways that only gas can make possible, so that customers will continue to choose gas as competition with all-electric systems grows ever more intense.

Non-residential Gas Marketing

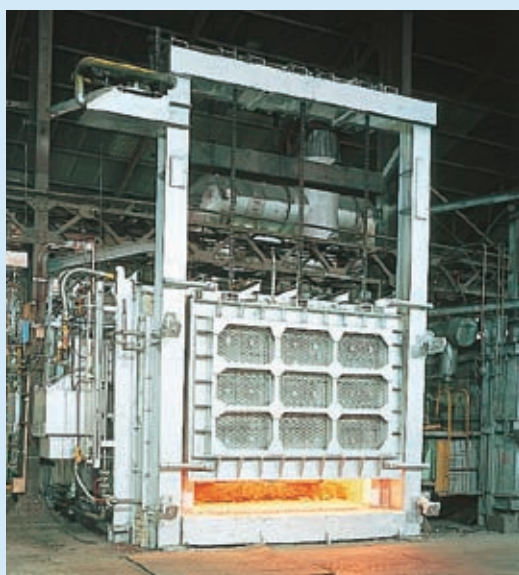
Natural gas plays a crucial role as a principal energy source for a wide variety of industries, including steel, metals, chemicals, and machinery. Natural gas itself is a superior energy source in terms of environmental friendliness, comparing favorably to other primary energies in terms of energy conservation and space conservation. Building on these basic advantages, Osaka Gas has steadily grown its sales record in the non-residential gas market by promoting detailed, solutions-based marketing activities based on a firm grasp of customer needs and strong technological and engineering capabilities.

In the industrial energy market, we are developing new demand for natural gas for furnaces and boilers. Here, we are taking advantage of unique technologies and engineering prowess that we have developed over many years in areas such as combustion technologies tailored to manufacturing processes, and burner systems tailored to specific needs in different industries' business styles. Natural gas is increasingly

used in cooling processes and clean rooms, and cogeneration systems, able to generate both heat and electricity simultaneously and realize substantial energy savings in factory operations, are increasingly being utilized.

We are developing new demand for gas in the commercial, public and medical sectors, focusing on air conditioners and cogeneration systems. Gas absorption air-conditioning systems have become the dominant technology for air-conditioning in large buildings, while gas heat pump air-conditioning systems are becoming increasingly popular in small and medium-sized buildings because they offer the convenience of individual climate control. High Power EXCEL is a commercial-use gas heat pump air conditioner that can generate electricity while cooling or heating air to supply to the building. The product is enjoying increasing popularity, mainly in office buildings and commercial facilities. Since its introduction in April 2006, we have installed over 1,300 units. We are also enhancing our lineup and marketing of commercial-use kitchen air-conditioning systems under the product name Suzuchu. These units provide cool and comfortable working conditions in a kitchen environment through efficient ventilation and insulation.

As energy prices soar, consumers are seeking higher added-value from energy. Osaka Gas promotes the supply of multiple forms of energy, including natural gas, electric power, and LPG, as well as providing suggestions for conserving energy that demonstrate our engineering abilities. We combine this with management services that make use of financial instruments and IT to allow our customers to achieve ideal energy use.



Regenerative burner system that realizes high-efficiency, energy-saving fuel combustion for industrial furnaces



Suzuchu enables cool comfortable kitchens by reducing the heat generated through cooking to levels such that equipment surfaces are cool enough to be touched

Cogeneration Systems (CGS)

Installed on the customer's premises, cogeneration systems (CGS) recover heat emitted from power generation and use it for air-conditioning and thermal applications. Energy efficiency improves up to approximately the 70%–90% level with the use of CGS, as exhaust heat can be effectively utilized, and there is minimal transmission loss because electricity is generated on-site.

Strengths of Osaka Gas Cogeneration Systems

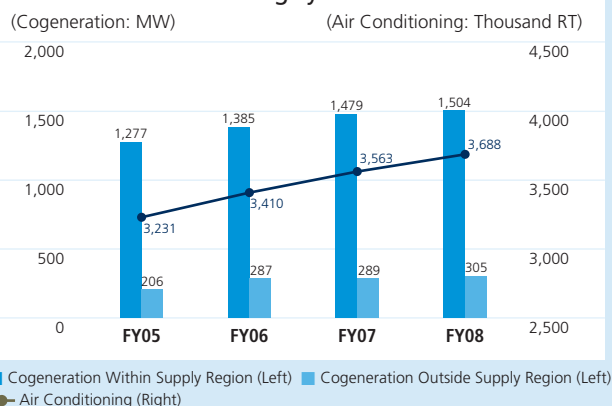
- (1) We have developed a highly efficient power generation system. Compared with the average electrical efficiency of approximately 40% at existing thermal power plants, our advanced CGS achieve electrical efficiency of around 45%. As a result, there are an increasing number of customers enjoying the cost benefits of introducing Osaka Gas CGS.
- (2) We offer a diverse product lineup, ranging from large CGS with over 5,000 kW of generation capacity to the Genelite series of small CGS with generation capacity of 5-25 kW.
- (3) Our maintenance system, which includes the Web Echo Line remote monitoring system and Sky Remote Service, leads the industry in service and maintenance quality. The new Eneflex Service, which also utilizes the Web Echo Line and Sky Remote Service, provides customers with a wide array of data on the operating status of gas appliances, helping them to conduct efficient and effective energy management.
- (4) We offer a variety of financing schemes enabling us to meet such diverse customer needs as avoiding ownership of capital assets or requiring preset rate fluctuations for changes in fuel costs.

(5) For franchise chain owners with stores located outside our service area, we comprehensively meet customer needs through our subsidiary Cogeneration Technology Service Co., Ltd., which is in charge of cogeneration operations outside our service areas.

(6) In addition to supplying natural gas as a fuel, Osaka Gas also provides a wide variety of CGS, including engines that use biogas as fuel and agricultural systems that supply CO₂ to plants.

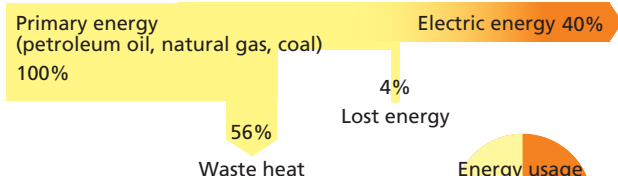
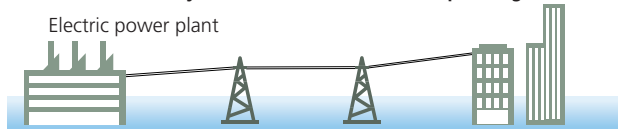
Based on these strengths, the Osaka Gas Group has gained the business of a diverse group of customers of all sizes, from factories and large-scale commercial facilities to hospitals, hotels, and small businesses, delivering cogeneration systems with a total generation capacity of approximately 1,500 MW.

Cumulative Capacities of Gas Cogeneration Systems and Gas Air Conditioning Systems Installed

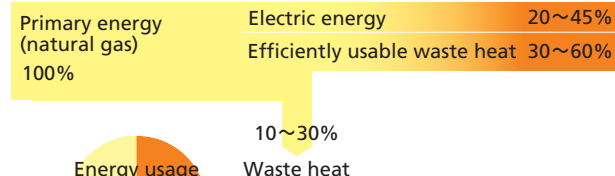
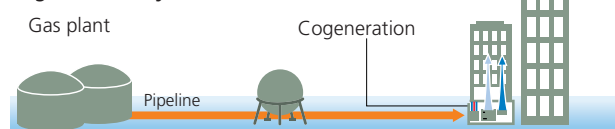


General View of Natural Gas Cogeneration

Power Generation System (Traditional) [Thermal power generation]



Cogeneration System



Note: Power generation efficiency is calculated using fiscal 2003 results (LHV standard).

Source: The Japan Gas Association, "Gas Cogeneration Systems"

LNG Procurement

In the natural gas market worldwide, rising prices and a tight demand and supply condition continue, and natural gas procurement plays an increasingly important role in the energy industry. Osaka Gas views the securing of long-term contracts for LNG procurement as a fundamental task. The Company has realized stable and flexible LNG procurement through spot procurement for a portion of its supply. Currently, we have long-term contracts with producers in a total of six countries, including Indonesia and Australia. We plan to add the Sakhalin II Project in Russia to our list of suppliers as we work to ensure stable procurement through diversification of our raw material procurement sources. Additionally, we work to prepare for emergency situations, such as problems at LNG liquefaction plants or during transport. To this end, the Company has built cooperative relationships with other LNG purchasers in terms of allocation of freight, and reserves a fixed amount of LNG for emergency use.

Expanding the Natural Gas Value Chain

In the future, the tight supply situation in the international LNG market is expected to continue. Given these conditions, we are expanding our upstream business in the natural gas value chain in order to ensure stable resources and reducing the cost of raw materials, as well as boosting revenues by capitalizing on the know-how and networks acquired over the years.

Our main areas of activity in the energy resources development business are our existing participation in development of offshore natural gas fields and gas condensate fields in Northern Australia, our investment in a gas-producing field in Indonesia, and our investment in Idemitsu Snorre Oil Development Co., Ltd., which owns an interest in a North Sea oil field. We are expanding the energy resource development business by focusing on the following three business categories: participation throughout LNG projects from the early stages; participation in projects as an LNG purchaser and minority shareholder (including participation in liquefaction only projects); and acquisition of interests in oil and gas fields with limited commercialization risk because they are already in production or about to be developed. In our natural gas transportation business, we reduce our transportation costs and increase their transparency by owning our own LNG carriers for the transportation of LNG we have purchased. We also aim to earn revenues by utilizing the spare capacity of LNG carriers to transport LNG for other companies, and by trading. We already have four LNG carriers, and plan to increase the fleet to six carriers by the fiscal year ending March 2010.

Moreover, aiming to expand our business in LNG-related areas in the future, we have initiated efforts in LNG terminal operations, and have invested in a LNG receiving terminal in Freeport, Texas, in the United States.

Note: Procurement of gas for supply purposes is included in the Gas segment, while energy resource development and LNG transport are included in the LPG, Electricity, and Other Energies segment.

World's Major Nations With Natural Gas Reserves and Suppliers to Osaka Gas (trillion cubic meters)

