Osaka Gas Group Technology Management

Residential appliances

In our residential gas appliance business, we develop products that leverage the advantages of gas based on the theme of providing safe, secure, and comfortable living environments for our customers.

Development of Residential Cogeneration Systems

Following our 2003 launch of ECOWILL, a 1-kilowatt gas cogeneration system, we have been working on the development of polymer electrolyte fuel cells (PEFC) and solid oxide fuel cells (SOFC) to enrich our product lineup of residential cogeneration systems.

In November 2006, we started marketing a new version of ECOWILL that is even more environment friendly and economical, achieving power generating efficiency of 22.5% through enhancements to the gas engine power generating unit.

As part of the development of residential PEFC cogeneration systems, since March 2006 the Osaka Gas Group has participated in the large-scale demonstration experiments for stationary fuel cells hosted by the New Energy Development Foundation. In fiscal 2007, we installed 80 units in residences, and started operations. The Group now has a total of 150 units in operation, including those undergoing field tests. Going forward, we intend to build on our forte of natural gas reforming technologies to extract hydrogen from natural gas to power fuel cells.

The household SOFC cogeneration system realizes power generation efficiency as high as 45% (LHV standard) and is expected to provide significant energy savings for customers who require only a small amount of heat from the system. In fiscal 2006, we commenced the first on-site tests of this system in Japan, starting up operation in our experimental house NEXT 21. In January 2007, we developed the world's smallest 700W residential SOFC cogeneration system. We are currently conducting field tests to improve durability and reduce costs, aiming for an early launch.

Technologies for Creating Comfortable Living Spaces

Since our 1982 launch of KAWACK, we have achieved substantial penetration of the bathroom heating and drying equipment market with this product. In 2004, in response to the recent heightened demand for health and beauty products, we launched the new MIST KAWACK, which incorporates a mist generator. Enabling people to enjoy a sauna in the comfort of their home, the product has been well received in the market. In August 2006, we added a lineup of compact models. In October of the same year, we also launched Micromist Sauna, which offers two sauna experiences, a mild setting that hardly dampens a users hair, and a powerful setting that quickly brings about perspiration.

Keenly concerned with residential air quality, including purity and humidity, in December 2006, we launched AIRCURE, a residential-use continuous central ventilation system that features both humidification/dehumidification functions using hot water desiccant technology. The Osaka Gas Group is fully committed to utilizing its strengths to expeditiously develop products that are connected with the daily lives of its customers.

PEFC cogeneration system for household use

MIST KAWACK offers an authentic mist sauna in the comfort of your own home.

Sophisticated Technologies for Energy Solutions

In our commercial and industrial gas equipment businesses, we are strengthening our ability to offer customers solutions tailored to their needs, such as greater efficiency and performance in their gas cogeneration systems or gas heat pump air conditioners (GHPs) and sophisticated commercial-use gas kitchen equipment.

High-efficiency Commercial and Industrial Cogeneration

As the demand for economically efficient and eco-friendly cogeneration systems steadily rises, we are responding to these needs by developing our technology to improve electricity generation efficiency and overall energy efficiency. Other actions include extending our product lineup to offer a range of electricity generation capacities, and reducing costs.

Upgrading Gas Air Conditioning Systems

The commercial air conditioning market has in recent years been calling for eco-friendly equipment that offers high energy efficiency and low CO_2 emissions, as well as the requisite low running costs. Launched in April 2006, the commercial-use gas heat pump (GHP) High Power EXCEL functions simultaneously as a high-efficiency conventional air conditioning system and a high-efficiency electric power generation unit with approximately 4kW of output. In addition to self-sufficiency of electrical power for its exterior unit, the system also supplies electricity within buildings to power lighting system and other internal equipment, making the High Power EXCEL more energy efficient and economical than existing GHPs. By expanding into the market comprising office buildings and commercial facilities, where cogeneration has not been widely utilized due to demand being limited mainly to use as a hot water source, we are working to promote greater adoption of GHPs that offer combined air conditioning and electric power generation.

Upgrading Commercial-use Gas Kitchen Equipment

The commercial kitchen market of course seeks low running costs but also a comfortable kitchen environment. Our Suzuchu series of commercial-use gas kitchen equipment, launched in 2003, simultaneously achieves low costs and a cooler kitchen environment through a highly efficient centralized exhaust system and superior thermal insulation. In fiscal 2007, to promote further market penetration, we further upgraded our Suzuchu series lineup with a rotating kitchen range and box-shaped washing-machine.

Technologies That Underpin the Benefits of Gas (Stable Supply, Safety, and Peace of Mind)

Evolution of Safety Technologies

To ensure the safe supply of gas to customers, we carry out routine patrols of all gas transmission pipelines and stations as well as taking such preventative measures as regular replacement of old pipelines.

In the pursuit of efficient and effective maintenance, we developed and launched in fiscal 2007 a new small ground penetrating radar (RADAR MINI), which is capable of accurately assessing shallow underground installations. We also developed and launched acoustic pipeline inspection equipment, that is capable of quickly and easily verifying concealed portions of gas pipelines in large buildings. Osaka Gas remains fully committed to the research and development of technologies that support the stable supply of gas.

A commercial-use High Power Excel GHP unit with a generator function to supply power while it is providing air conditioning

Sophisticated Safety Functions in Gas Equipment

To ensure our customers can use gas equipment safely with peace of mind, as of August 2006 we have equipped all the burners on all models of our mainstay built-in gas stoves with sensors to prevent overheating of deep-frying oil. We have also built into all burners safety sensors to prevent fires that could result from users' leaving pans unattended or forgetting to turn off flames, as well as gas leaks due to the gas supply being left on after the flame has been extinguished.

In view of the phasing in of obligations to install residential fire alarms in accordance with recent revisions of the Fire Defense Law, we launched the fire alarms KEMU PIKO in April 2006. We are promoting the greater use of such systems to offer customers increased safety and peace of mind in their homes. To do so, we leverage the sales network used to promote the use of PIKO PIKO, an alarm that senses any concentration of gas in a room caused by gas leaks and incomplete combustion. In addition, we are drawing on our know-how in penetration and managing the service life of such systems.

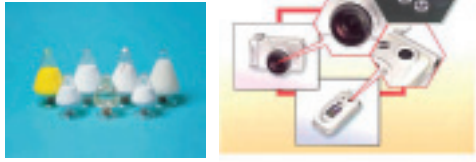
KEMU PIKO, a fire warning system for residential use

Technologies to Develop New Business

From Carbon Materials to Fine Materials

Since the days of producing gas from coal, we have actively expanded our business with a focus on coal-related carbon material technologies and in other areas of activated carbon, electrode materials, and fine materials.

In our fine materials business, we have focused our attention on the fluorene contained in coal tar and developed an industrial method for producing dozens of fluorene conductors and marketing them as materials. The high refraction rates and low optical distortion properties of fluorine conductors are highly valued in the market. As a result, sales to manufacturers of lenses for camera-equipped mobile phones expanded sharply in fiscal 2007. We intend to continue expanding this business, with a focus on supplying materials for digital devices.



Fluorene semiconductor (left) and usage example (right).

Hydrogen Production Technologies

We have leveraged our accumulated catalyst technologies to develop HYSERVE natural gas-reforming hydrogen production equipment, which carries half the installation costs and is half the size of existing equipment. Aiming for application in hydrogen stations for fuel cell-powered automobiles and commercial facilities, we are commercializing equipment with hydrogen production capacity of 30Nm^3/hour and 100Nm^3/hour, and working on the development of a unit with a capacity of 300Nm^3/hour. Also, since March 2007 we have been a participant in a hydrogen fuel cell demonstration project that has been grant-aided by the Ministry of Economy, Trade and Industry. As part of this project, Osaka Gas is constructing a hydrogen station in front of the Osaka Prefectural Government Office.

HYSERVE equipment for manufacturing hydrogen.

Linking Technologies With Early Commercial Returns—Thorough Technology Management

We have invested our resources strategically in technology development, deeming it to be the most effective method of differentiating ourselves in the market to bolster our technological competitiveness. Amid constantly shifting customer needs in an intensely competitive business environment, we are rigorously implementing technology management that can translate development into early outcomes in terms of commercial application, thus boosting our competitiveness.