New Businesses Creation

Principle and Outline

The Daigas Group has expanded its business domains to the Urban Development Business, Materials Solutions Business, and Information Solutions Business by taking advantage of technologies and strengths nurtured in the energy business and creating products and services that help resolve issues customers are facing. We will continue to work on the creation of new businesses, aiming to facilitate the Group's sustainable growth and contribute to the resolution of social issues.

Open Innovation Activities

Open Innovation

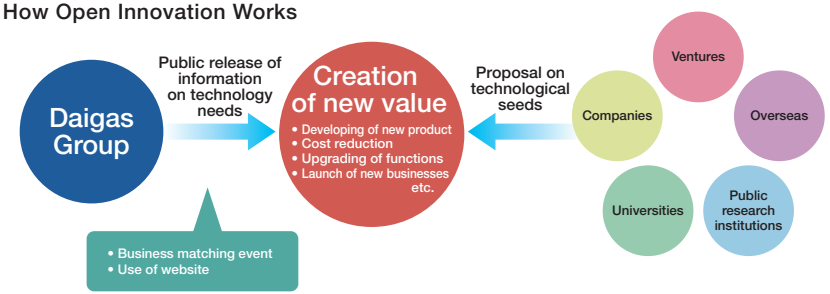
Open innovation refers to an efficient approach used to seek solutions outside the company to the problems that Osaka Gas is unable to solve independently, with the aim of creating new value. Osaka Gas has pioneered this approach since 2009. Our efforts have led to the building and expansion of a network of partnerships (Open Innovation Platform) with universities, public research institutes, small enterprises, large corporations, ventures and overseas companies.

To find outside partners to work with, we have revealed details of our technology to-do list, something we have rarely done in the past, in order to solicit promising technical ideas from outside parties. After we launched full-fledged open innovation activities in FY2010, we have achieved many matchmaking opportunities. Some cases have actually led to commercialization and practical applications.

For example, we are creating new value by combining our technologies and needs with external technologies and ideas, including gas pipe patrols using in-vehicle AI cameras to automatically identify construction sites, the use of drone technology for facility inspections, and the expansion of new businesses in the EV field.

The task ahead is to introduce some of the efficient technologies that we obtained externally, and together with our alliance partners, actively promote the creation of new R&D themes and creation of new businesses through the Open Innovation Platform.

■ How Open Innovation Works



Developing new EV-related businesses with partners

Expanding the use of EVs along with providing carbon neutral power sources is positioned as an effective means to achieve carbon neutrality by 2050. Against such backdrop, Osaka Gas is driving forward new initiatives, including capital and business alliances in the EV-related field with REXEV Co., Ltd., NExT-e Solutions Inc., folofly Inc., and Terra Motors Corporation[1].

Specifically, we are considering business in a variety of fields through the alliance with these companies, such as utilizing EVs for the adjustment of power supply and demand and car sharing, converting mobility-derived reused storage batteries to grid storage batteries[2], utilizing commercial EVs in the car leasing business, and proposing and developing EV charging infrastructure.

In addition, one of our Group companies, Daigas Energy Co., Ltd., launched in November 2023 the D-Charge service, where the company provides EV charging solutions that combine the installation of EV chargers with energy management[3] to commercial and industrial customers without any initial investment.

D-Charge offers both fast and regular chargers and meets the needs for base charging[4] and destination charging[5]. In accordance with customer needs, the service can also incorporate D-Green[6], which supplies electricity from 100% renewable energy sources.

1 The company renamed to Terra Charge Corporation in February 2024.
2 Grid-scale battery storage systems connected directly to the power grid to help stabilize the grid by storing surplus electricity and discharging it when needed.
3 Cutting peak power use and shifting peak power loads to reduce the impact of EV charger use on power demand.
4 Charging at the base for the vehicle, such as home or company parking lots.
5 Charging at the destination, such as commercial facilities, while staying there.
6 Tariff for the supply of electricity from 100% renewable energy sources.

Developed the AI-based composition estimation system to promote DX in manufacturing industry

By combining AI with the near-infrared spectroscopy analysis technology* we have accumulated to date, we have developed the AI-based composition estimation system (the "system") to enable the stable manufacturing of high-quality products.

The manufacturing industry in Japan is facing increasingly severe labor shortages due to a declining population, as well as a lack of successors to skilled workers. The system, independently developed by the Company, quantifies the state of raw materials, manufactured products, and other items, understanding of which conventionally relied on workers' intuition and experience. By controlling production equipment based on this data, the system enables stable manufacturing of products. The system also facilitates the digital transformation for the frontlines of production by automating time-consuming and resource-intensive process management.

Moving forward, the system will be offered by Osaka Gas's two sales partners: NOMURA JIMUSHO, INC., a trading company that offers and proposes unique technologies, products, and services from around the world, and Fujiwara Techno-Art Co., Ltd., a brewing machinery manufacturer that focuses on fermentation and brewing technologies, including *koji* production, and has an impressive delivery track record in Japan and overseas.

We will continue to actively conclude sales partnership agreements with external partners who have expertise in different industries. By delivering our sensing technologies to as many sites as possible, we will roll out solutions that support DX and sustainable growth of Japan's manufacturing industries as a whole.

* A method of irradiating a target object with near-infrared light and identifying and quantifying its components based on the degree of light absorption

Creating new business related to carbon neutrality

Osaka Gas is promoting technology evaluation and project development in collaboration with overseas startups. In October 2024, we invested in Koloma, Inc. ("Koloma"), a U.S. startup engaged in the exploration, development, and production of natural hydrogen[1].

The widespread adoption and utilization of carbon-free hydrogen and its derivatives, such as e-methane and ammonia, are crucial for achieving carbon neutrality by 2050, a goal set by over 120 countries and regions worldwide.

Koloma aims to commercialize natural hydrogen using its own data. We will work with the company to promote the production and use of natural hydrogen, which is expected to be an inexpensive and clean source of hydrogen.

In addition, in November 2024, we invested in FPR Energy Limited ("FPR Energy"), an Australian startup engaged in the development of next generation concentrated solar thermal system (CST). Going forward, we will collaborate with FPR Energy to commercialize its technology and aim to contribute to the decarbonization of industrial heat demands. The CST system is being developed as a next-generation clean energy technology that efficiently converts sunlight into thermal energy for storage and supply, using a thermal medium that absorbs solar energy and stores it as heat, and the heat and steam generated from it can be used in various industrial and utility applications. FPR Energy was established in 2023 as a startup to implement the next generation of concentrating solar thermal technology developed at Australia's leading scientific research organization, the Commonwealth Scientific and Industrial Research Organization (CSIRO), into society. FPR Energy has already completed a 1 MWt[2] scale demonstration and plans to develop the technology and optimize the operating system to scale up to 50 MWt by the end of 2026.

1 Natural hydrogen is found in natural deposits (areas where specific resources or minerals are concentrated in underground rocks) located hundreds to thousands of meters underground. Its existence has been confirmed in various parts of the world, and development has been progressing in recent years, mainly in the United States and Australia. Some already established oil and natural gas drilling technologies can be used to extract natural hydrogen, and since greenhouse gas emissions from production are expected to be smaller, natural hydrogen, which is cost-effective and environmentally friendly, is expected to contribute to realizing a carbon-neutral society.

2 MWt stands for megawatt of thermal energy, which indicates the capacity to collect and store 3,600 MJ of thermal energy per hour.

Creation of Innovation (FY2026 Results)

The Daigas Group is working to commercialize technologies it has cultivated, and also aims to create new businesses by combining the technologies and services of other companies with the strengths of the Group.

Major social implementation examples

- Launched DaigasID to enable the use of the Daigas Group's various digital services through a single ID
- Launched a multiple moving quote service to enable users to compare and request quotes online from multiple moving companies
- Started offering home routers that enable easier Internet access without the need for installation work
- Developed the AI-based composition estimation system using sensing technologies (See the left column)
- Started a business for the creation and sale of credits generated from paddy fields under the Joint Crediting Mechanism (JCM) (P.50)
- Established a control system for storage batteries (P.82)