

Business overview

Service business

SERVICE BUSINESS



Engineering Service

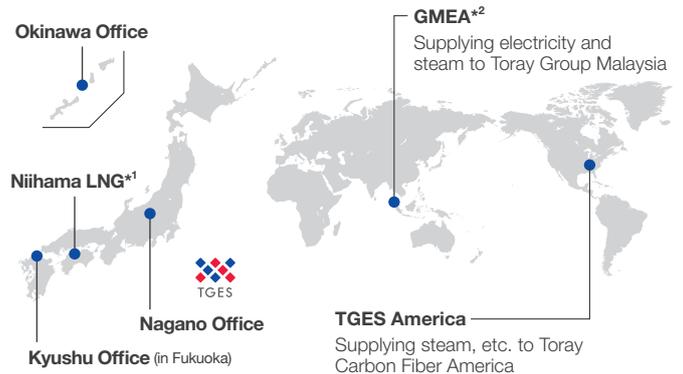
Outline

For almost half a century, since introducing LNG to Japan for the first time in 1969, Tokyo Gas has consistently handled processes across the entire LNG value chain, including both upstream and downstream processes, from procurement and transportation to manufacturing and supply, sales and energy solutions. Utilizing the technological capabilities and know-how developed through these processes, Tokyo Gas provides one-stop solutions to match the needs of customers both in Japan and overseas, including LNG terminals, pipelines, district heating and cooling, and energy services.

Net sales	Operating profit
¥118.1 billion FY2017	¥3.5 billion FY2017

From Kanto to the whole of Japan, and to the world

Tokyo Gas Engineering Solutions Corporation (TGES) was established in April 2015, by integrating the Group's capabilities in engineering and energy solutions. In April 2017, TGES opened new offices in Nagano and Fukuoka. Following on from this, in April 2018 we also opened a new office in Okinawa, while in Ehime Prefecture we established Niihama LNG Co., Ltd., as a joint venture with four other companies, including local companies, that will engage in engineering service business operations together with TGES. By partnering with energy suppliers in various regions and utilizing its technological capabilities and know-how, TGES provides engineering solutions to customers both in Japan and overseas.



*1 Niihama LNG Co., Ltd. (TGES: 50.1%, YONDEN Shikoku Electric Power Co., Inc.: 30.0%, Sumitomo Chemical Co., Ltd.: 9.9%, Sumitomo Joint Electric Power Co., Ltd.: 5.0%, Shikoku-Gas Co., Ltd.: 5.0%)
*2 GAS MALAYSIA ENERGY ADVANCE Sdn. Bhd. (Gas Malaysia Co.:66%, TGES:34%)

Providing individual solutions as a bundle

By bundling TGES' various engineering solutions to cater to the specific needs of customers, we provide an optimal engineering service.

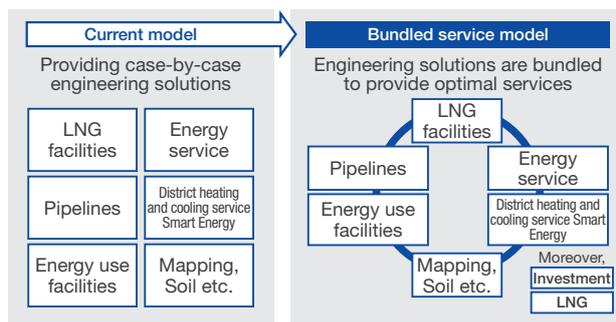
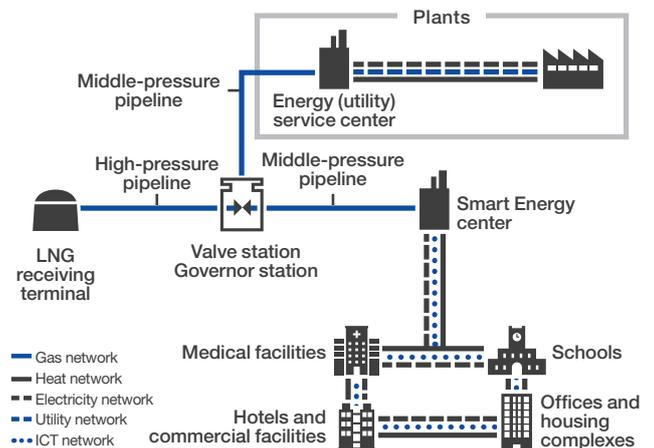


Diagram of Engineering Solution Supply



Niihama LNG Project

Bundling engineering and energy services

Niihama LNG Project: Constructing an LNG terminal in collaboration with YONDEN (Shikoku Electric Power) and the Sumitomo Group

In this joint project together with YONDEN Shikoku Electric Power Co., Inc., Sumitomo Chemical Co., Ltd., Sumitomo Joint Electric Power Co., Ltd. and Shikoku-Gas Co., Ltd., we will construct a new LNG receiving terminal at the site of Sumitomo Chemical's Ehime Works, and supply gas both to Ehime Works itself and to a new natural gas-fired thermal

power station that is to be constructed by Sumitomo Joint Electric Power.

The LNG terminal, which will be the largest in the Shikoku region, is scheduled to commence operation in FY2021, with TGES participating in its design and construction, as well as LNG demand development.

Providing engineering solutions leveraging technological capabilities and know-how developed almost half a century

The Tokyo Gas Group has handled processes across the entire LNG value chain for almost half a century, including both upstream and downstream processes.

We offer the knowledge and expertise that we have accumulated through actually using the LNG terminals, pipelines, district heating and cooling centers and various other facilities and equipment that we have designed and built during that time as engineering solutions based on user's know-how, to clients both in Japan and overseas.

Engineering business

Based on accumulated user's know-how, the Tokyo Gas Group provides total, optimal engineering solutions, including those for after facilities commence operation. Since the 1980s, the Group has built up a track record of achievements both in Japan and overseas, and is involved in numerous projects in regions such as Asia, where growth in demand is becoming increasingly evident.

Case1 Thailand: LNG receiving terminal construction PMC (January 2018)

In 2014, TGES was awarded an order for assignment as a project management contractor (PMC) for the capacity expansion construction project at PPT LNG Map Ta Phut LNG Receiving Terminals, Thailand. TGES was subsequently awarded another PMC contract by PTT LNG to manage its Nong Fab LNG Receiving Terminal construction project, and is currently engaged in associated project management duties. These projects involve the construction of new terminal facilities as part of a plan to increase LNG receiving capacity, in order to cater to the growth in energy demand in Thailand due to the nation's economic development.



PPT LNG Map Ta Phut Receiving Terminals

Case2 Bangladesh: LNG terminal feasibility study, etc. (July 2017)

TGES was awarded a joint feasibility studies and engineering contract (together with Nippon Koei Co., Ltd.) by Petrobangla (Bangladesh Oil, Gas and Mineral Corporation) regarding the feasibility of land-based LNG receiving terminals. The project represents the first order to be received by the Tokyo Gas Group in Bangladesh.

Although Bangladesh does produce natural gas itself, it currently faces a situation in which voracious demand is exceeding the country's existing supply capabilities, and the project aims to tackle this situation.

Energy service business

Through its energy service business, TGES supplies heat, electricity, water and air by building systems—which focus primarily around gas cogeneration, but also incorporate renewable and unharnessed energy sources—to meet customer needs that include energy-saving, CO₂-reducing, cost and labor saving, and BCP (Business Continuity Planning) solutions.

We also continue to evolve and adapt by engaging in new initiatives such as smart energy networks and regional lending.

Case1 Utility services at Osaki Citizen Hospital (Osaki, Miyagi Prefecture)

TGES has constructed a multiplex energy system at Osaki Citizen Hospital that combines a city gas fueled cogeneration system and boilers with heavy fuel oil and pellet boilers.

In addition to enhancing the client's energy-saving and BCP characteristics, the system has also created an environment in which the client can concentrate on hospital administration, by taking over the role of energy-related equipment management, which was a significant burden to the client in the past.

The installation of this system is also contributing to an increase in gas sales volume for Furukawa Gas Co., Ltd., which supplies city gas to the client, making this project a triple win for the client, gas operator and service provider.



Osaki Citizen Hospital

Case2 Energy services for Toray Group (Malaysia and United States)

TGES has been commissioned to deliver energy services to overseas plants owned by the Toray Group (a Japanese corporate group). The services include the construction of energy plants with gas cogeneration systems, boilers, and other equipment (such as for air-conditioning and water treatment), and the efficient all-inclusive supply of electricity, steam, water and other resources generated using those plants. Through efficient plant design and maintenance based on our extensive past construction and operational record, we will seek to achieve energy-saving benefits and long-term cost reductions through the delivery of optimal energy systems.

In the Niihama LNG Project, companies from industries with different backgrounds and different values are coming together to build and operate a single LNG terminal. We consider this to be an ideal project format for creating new energy infrastructure, where companies concentrate their various individual strengths and expertise to contribute to the advancement of the local economy and reducing environmental impacts, in addition to furthering their own mutual interests.

In FY2016, I was responsible for sales to the Sumitomo Chemical Group, and since FY2017 I have handled discussions with each partner company regarding the conversion to joint business operations. Because the negotiations involved multiple companies with different backgrounds and values, there were some difficult situations, but each of the companies brought their own strengths to the table, and with our passionate enthusiasm we were able to overcome numerous hurdles and eventually achieve the establishment of the joint venture company in April 2018.

Currently, all project members are running around Niihama City, working hard to get the blood of this newly born company pumping as it should. Moving forward, too, I will continue to make my very best efforts, together with the assembled members from other firms who have come together for this project, as we work towards beginning the construction this October, commencing operation in FY2021, and achieving the subsequent advancement of the entire local area and the reduction of our environmental impact.



Message

Niihama LNG Co., Ltd.
Naoya Murata

Business overview

Service business

SERVICE BUSINESS



Urban Development Service (Real Estate)

Outline

Over the course of 130 years in business, the Tokyo Gas Group has acquired large-scale and medium-scale properties (areas of land) with high utilization value, in high-profile areas such as Shinjuku, Ginza, Tamachi and Toyosu. Utilizing sites which it owns but which are no longer required for business purposes, and with a primary focus on city center areas, the Group operates an office and residential real estate leasing business, working around the basic concept of securing stable revenues and improving asset value.

Net sales

¥42.3 billion
FY2017

Operating profit

¥7.9 billion
FY2017



msb Tamachi (musubu Tamachi)

Sustainable Development Goals

Initiatives Towards Achieving the Sustainable Development Goals (SDGs)

Urban Development in Tamachi Station East Exit area (North Zone)
In the Tamachi Station district, Tokyo Gas is engaged in an attractive urban development project, in which offices, public facilities, hotels, hospitals and other buildings coexist with the surrounding environment. Through the implementation of a smart energy network that utilizes gas cogeneration systems, renewable energy and other smart energy features, we are helping to improve the area's energy-saving, environmental and disaster-readiness characteristics.

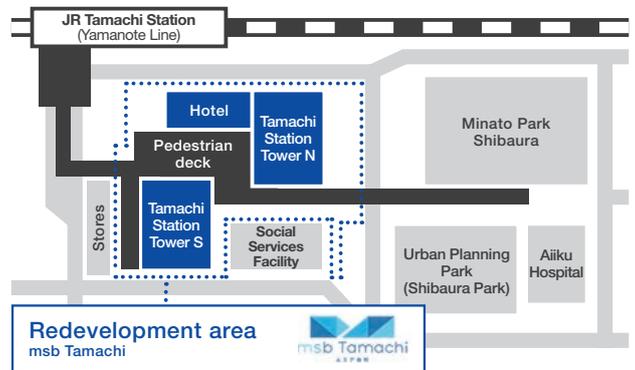


Office leasing business

msb Tamachi (musubu Tamachi)

At our property which connects directly to the East Exit of Tamachi Station on the JR Yamanote Line, we are engaged in the development of a smart energy network and enhanced Business Continuity Planning (BCP) functionality (such as by installing dual-fuel emergency generators that can run on both heavy fuel oil and city gas). Through this project, we aim to contribute to the local community by creating an advanced and appealing urban development and real estate leasing business. Phase I of the development (Tamachi Station Tower S and Pullman Tokyo Tamachi) was completed in May 2018, and we are currently working with the aim of completing construction of Phase II (Tamachi Station Tower N) in FY2020.

Note: Phase I: Land leasing business, Phase II: Office leasing business (based on Tokyo Gas capital investment)

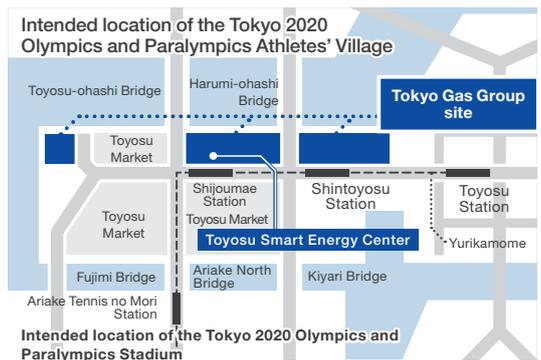


Residential leasing business

We are also engaged in proactive leasing business operations on small to medium-sized properties (as of March 2018, 9 buildings w/ 204 residential units). As we head towards the 2020s, we will aim to achieve further business growth and expansion, as we acquire more real estate properties in order to create good quality assets that are well-suited to leasing. In May 2018, we commenced construction of a rental housing complex (provisionally named Toyotama Rental Housing Complex) in Nerima-ku, Tokyo.

Toyosu mixed land area property development

The Toyosu area is situated in a prime location, approximately 4km away from Tokyo Station. With significant events ahead such as the opening of the new Toyosu Fish Market in October 2018 and the hosting of the Olympic and Paralympic Games in 2020, the area is now attracting even greater attention. The Tokyo Gas Group aims to create a new mixed land area development in Toyosu that will include both residential and commercial properties, in a development area covering approximately 17ha.





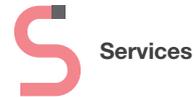
Optimal proposals with GAS & POWER + SERVICE x GLOBAL

With GPSxG, Tokyo Gas is delivering not only gas, but gas and electricity as a set package to all customers. In addition to proposing optimal gas and electricity plans, we will combine them with other services that meet customers' lifestyle and business needs, and use various means to deliver them to a greater number of customers.



Work to achieve more widespread use of city gas and LPG

Increase numbers of customers for whom we provide gas and electricity services as a set by proposing optimal energy plans that combine gas and electricity as only Tokyo Gas can



Optimal proposals, implementation and maintenance for energy facility and equipment
Smart management utilizing smart meters, IoT and AI
Lifestyle and business support
New value-added proposals to address low-carbon, digitalization and new technologies



Residential Customers

Always Plan (total energy service plan)

The Always Plan is a total energy service plan that combines a gas and electricity packaged discount with various services, which customers can choose freely. Through the plan, Tokyo Gas aims for customers to enjoy value for money, peace of mind, simplicity and convenience.

Tokyo Gas's Always Plan



- Always Gas +Points linked to gas rates
Tariffs for the specific gas equipments ("Danran Plan", etc.)
Always Electricity +Points linked to electricity rates +Gas and electricity package discount
Always Reliable Services Simple, convenient web services Fiber-optic communications services

Provide optimal energy supplies that are aligned with customers' actual energy use

Combine services to support daily life and deliver value for money, peace of mind, simplicity and convenience

When you have any troubles in your life, think of Tokyo Gas

Tokyo Gas has prepared an extensive menu of lifestyle services to cater to the life stages and requests of individual customers, and has developed a platform that will offer one-stop services in combination with gas and electricity.

Customer service flow diagram with table of services including Energy, Facilities/equipment, and Services.



Commercial and Industrial Customers

Energy Solutions Business

Through the promotion and expansion of widespread natural gas usage by extending its pipeline network and increasing lorry-based supply, and by providing a competitive supply of electric power to large-scale customers in cooperation with partners such as ENNET and Synergia Power, Tokyo Gas is providing energy solutions that achieve benefits such as energy conservation, CO2 reductions and cost reductions for customers.

Case Study Saku Central Hospital (Nagano Prefecture)

At Saku Central Hospital in Nagano, we are achieving energy conservation and cost reductions through regional energy use between multiple buildings. We are also utilizing renewable energy, through the installation of a woodchip-fueled biomass boiler. From a BCP perspective of ensuring operational continuity, we introduced a cogeneration system that restarts operation automatically in the event of a power outage, and adopted medium-pressure gas supply pipes offering a high level of resistance to seismic activity.



A biomass boiler and woodchips

Smart Menu Development

With a view toward the low-carbon society of the future, we are also working to develop a "smart menu" of services, which will introduce and utilize features such as demand response, renewable energy and storage cells (accumulators).

Supplementary Information

What is Demand Response Service?

Demand response is a mechanism whereby electricity users adjust their volume of demand in order to match the balance of supply and demand of electric power. The Tokyo Gas Group provides this demand response service as a response to open calls from general transmission and distribution operators for load adjustment capabilities.