Turning people's dreams into reality, JFE Engineering aims to "Create" and "Underpins" the foundations for life

In the Fifth Medium-term Business Plan, JFE Engineering's key measures include expanding overseas business, supporting electricity generation with power plants of various resources and actively proposing integrated services.
We have made steady progress toward achieving our goals by developing systems for overseas business, contributing to infrastructure creation in Southeast Asia, especially Myanmar, expanding renewable-energy power-generation business and electric-power sales and steadily growing proposal-based integrated services centered on the environment.
We will continue to strive toward our next leap forward with a clear vision and unbroken dreams.

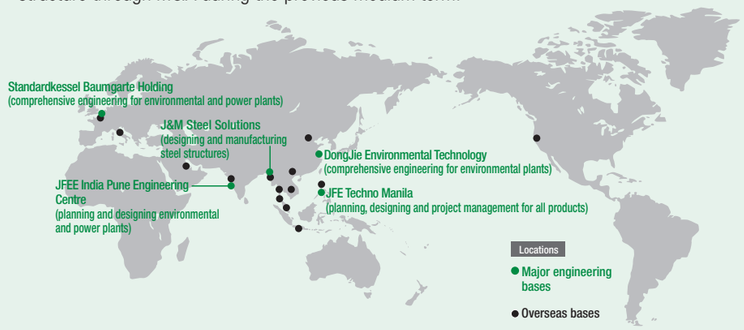
President and CEO
JFE Engineering
Hajime Oshita

Efforts of JFE ENGINEERING

Increasing our presence by accurately grasping needs in Japan and abroad

Expanding overseas business

JFE Engineering is responding to overseas infrastructure demands with superior products, including waste-to-energy plants (waste incinerators), water treatment plants and steel structures. These initiatives have been supported by improving the company's global engineering structure through M&A during the previous medium term.



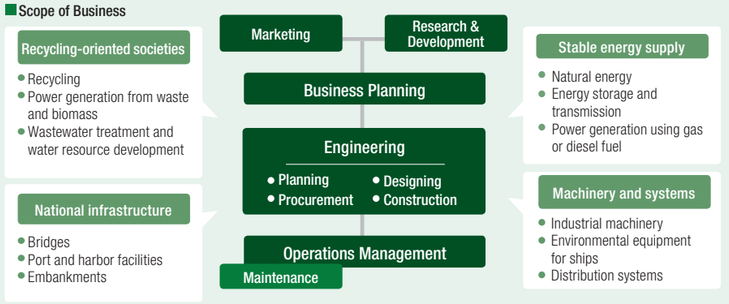
Supporting electric power generation with various kinds of plants

JFE Engineering responds to customer needs with products suited to diverse energy resources, including waste, biomass energy, geothermal power and solar power, and power capacities ranging from 5 to 100 megawatts.

Offering proposal-based integrated services

JFE Engineering is expanding its services by proactively proposing integrated services for developing business plan, engineering, procurement and construction (EPC), as well as facility operation. New technologies and construction methods are being incorporated in total solutions for infrastructure upgrades.

■ Scope of Business



Developing and launching new products and services

JFE Engineering launches new products and services meet the needs of customers and markets for diverse fields, such as ship ballast-water treatment systems, smart-agriculture, and medical systems.

Efforts of JFE ENGINEERING-1

Expansion of Overseas Business


Opening ceremony

First waste-to-energy plant built in Myanmar

Establishing and expanding global bases to promote know-how developed in Asia

JFE Engineering is striving to expand business centering around urban infrastructure and environmental energy in overseas markets where infrastructure demands are increasing.
As the center of overseas expansion, we are setting up bases to further develop our markets in Asia. In Myanmar, we established J&M Steel Solutions as a joint venture with the Ministry of Construction of Myanmar to take a role in infrastructure development associated with rapid economic growth. We also established a design center in India to provide high-quality services at low cost.
In Europe, we acquired a German plant engineering company to undertake projects on full turnkey basis, from design to construction, for power plants and other infrastructure in Europe and the Middle East.
We also plan to expand existing overseas subsidiaries and optimize our sales, procurement, design and manufacturing functions in each country to build a global engineering network and expand into new regions.

Expanding J&M Steel Solutions from 20,000 tons/year to 30,000 ton/year

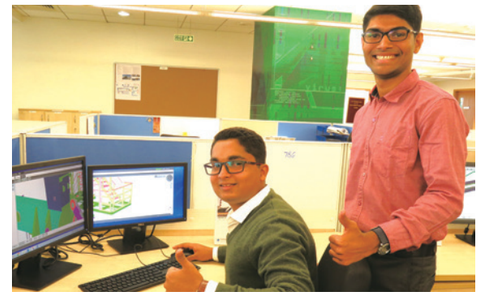
J&M Steel Solutions, a joint venture with Myanmar's Ministry of Construction, is undergoing expansion of its steel structure fabrication plant in Thaketa Township, Yangon. The company will respond to demands for high-quality bridges, including for expanding ODA projects in neighboring countries.

Local technicians apply Japanese technologies in Myanmar

Technicians trained at JFE Engineering's Tsu Works are contributing actively to J&M Steel Solutions, including helping to implement steel-bridge technologies from Japan for the ongoing construction of the Gumti Bridge in Bangladesh. JFE Engineering is also training local engineers in designing and construction.

First bridge erected with the incremental launching method in Myanmar

To implement an order for the 220-meter Myitnge Rail Bridge near Mandalay, J&M Steel Solutions employed the incremental launching method, which is suitable for locations where the use of cranes is problematic. The company is applying this and other advanced technologies for infrastructure development in Asia.



Leveraging overseas bases

JFE Engineering used M&A to set up a structure for the sharing of design work on environmental plants in India. With help from other bases, a cutting-edge IT-based design tool is being developed and 3D drawings are being created along with related programming.

Expansion of Manila base

In addition to the Manila Branch opening in October 2015, JFE Techno Manila (established in 1995) is expanding its scope of business as a base for core personnel in Southeast Asia, including about 400 engineers who are currently playing an important part of JFE Engineering's global engineering workforce.

Standardkessel completed a biomass plant

A group company in Germany, Standardkessel, completed a biomass plant in England to supply electrical power to the region, and steam to the Macallan distillery known for its single-malt whisky, to contribute to CO2 reduction.

Efforts of JFE ENGINEERING-2

Provision of Integrated Solutions
—Power Generation and Operations Management—


Miho Solar Power-plant on former site of Shimizu Shipyard

One-stop power supply

Electric power generation involving various types of plants has become one of JFE Engineering's core businesses in Japan, where renewable energy is gaining increasing popularity and the energy market is being liberalized.
Since the full deregulation of the electricity market in April 2016, electricity companies have been increasingly upgrading their facilities. In response, JFE Engineering has enhanced its product appeal with new technologies. Most notably, in collaboration with Urban Energy Corporation, a group company engaged in electricity retailing, JFE Engineering is offering one-stop total solutions ranging from business planning to plant design, construction and operations management of biomass, solar and geothermal power and other renewable-energy facilities.

Tsu biomass power generation business

A biomass power plant at the Tsu Works operated by Green Energy Tsu, a company in which JFE Engineering owns a stake, started operating in July 2016. JFE Engineering has been fully involved in the business from the start, including retail sales of electricity produced at the plant.

Turnkey contract received for geothermal power facility in Japan

JFE Engineering received its first turnkey contract for steam-production and power-generation facilities in a geothermal power plant in Matsuo-Hachimantai, Japan, where the company has been involved since initial well excavation. The company will be in charge of plant construction and operations management thereafter.

PFI project to turn food waste into bio gas in Japan

Bio gas, which is generated when food waste is fermented and decomposed by microorganisms, is used for high-efficiency power generation. Fermentation residue is also sold as fuel to effectively use food waste without wasting it. JFE Engineering will be involved with operations management for 15 years after completing the construction of a bio-gas plant under a private finance initiative (PFI) in Nagaoka, Japan.


Kumamoto City Seibu Incineration Plant


Plant No. 2, Higashi-Saitama Resources and Environment Association


Clean Energy Park Nanbu, Fukuoka-Nanbu Waste Treatment Cooperative

Advancing into infrastructure management

JFE Engineering is actively engaging in private finance initiatives (PFI) to undertake public works amid the increasing trend of outsourcing municipal services due to tight fiscal budgets and aging municipal workforces in Japan. We are continuously receiving contracts for PFI projects by leveraging expertise accumulated from past projects and by offering business models for not only engineering, procurement and construction but also operations management. In the future, we will aim to secure stable earnings by expanding our integrated service business while also proposing total solutions including new technologies and construction methods that meet needs for infrastructure upgrades.

PFI project at Yokohama's North Sludge Recycling Center

JFE Engineering, in addition to conducting comprehensive management of sludge treatment facilities, is also engaged in a PFI project that produces fuels and improved soil from sewage sludge. Our proposed solution is contributing to the creation of a recycling-based city envisioned by Yokohama.

PFI project to utilize biomass resources in Toyohashi, Japan

This is the first project in Japan to generate energy from raw garbage, sewage sludge and human waste collected in one place. Demand for such technology is also expected to increase in overseas markets such as in Southeast Asia where rapid urbanization is taking place.

24-hour centralized management of environmental plants across Japan

At the Remote Service Center (RSC) in the company's Yokohama Head Office, JFE Hyper Remote® has been introduced to support the stable operations of plants and optimized management of power sales.

Efforts of JFE ENGINEERING-3

Development of New Business Areas

Leveraging accumulated know-how and creating business models that satisfy real needs

In response to the diversifying needs in society, the development of and expansion into new business areas are important missions for JFE Engineering. The company strives to accurately assess the needs of customers and the market and then offer new products incorporating existing or newly developed technologies.

Products that are drawing special attention include the company's ballast-water management system and smart agriculture.

Ballast water is stored in cargo ships to increase stability. Discharging ballast water, however, can negatively affect a local ecosystem by introducing alien species from faraway seas. In order to prevent this, JFE Engineering developed a system that combines filtration and formulated chemical injection to eliminate organisms in the ballast water regardless of the water source or water quality, thereby contributing to ecosystem protection.

Smart agriculture is a new system of agricultural production that combines engineering technologies of energy and environmental fields and our unique production know-how. The system creates optimal environments in greenhouses regardless of local climates to enable efficient cultivation diverse crops throughout the year, including using optimal energy sources.

JFE Engineering is also creating successful business models in other new areas. One example is the development of equipment to produce a diagnostic agent for cancer based on the company's medical agents manufacturing system.

Expansion of service network for ballast-water management system

JFE Ballast Ace®, a ballast-water management system, has been installed in more than 400 vessels. JFE Engineering is now expanding its service network to provide follow-up services for customers using this system.

Panoramic view of J Farm Tomakomai Plant

Inside a smart-agriculture plant

Expansion of smart-agriculture plants in Hokkaido and other areas

Smart-agriculture plants create optimal growing environments though the use of state-of-the-art technologies. In addition to a business expansion being pursued by a smart-agriculture subsidiary in Hokkaido, JFE Engineering received its first EPC order in Niigata based on growing recognition of the company's innovation in this field.

Cyclotron for producing radioactive substances necessary to synthesize PET radiopharmaceutical agent

Development of leading-edge cancer diagnostic agent

PET examination technology is being used to develop new antitumor agent and a therapeutic agent for dementia. The aim is to develop a new cancer diagnostic agent in addition to sales of conventional devices.

2017 Sapporo Asian Winter Games Winning a bronze medal in the 5,000 m speed skating

Mai Kiyama, who belongs to the Smart-Agriculture Division, is training hard every day for the Pyeong Chang Olympic Games.

JFE ENGINEERING HIGHLIGHT 2016

2016

April	Completed south septage treatment plant in Manila, Philippines
	Received order to upgrade steam turbines for power plant of Ube Industries, Ltd.
May	J&M Steel Solutions started operating 20,000 tons/year production system, which it will expand to 30,000 tons/year
	Completed Cycle Trees in Otemachi, Chiyoda-ku, Tokyo and Hirakata, Osaka Prefecture
June	Grand prize for technology and technology prize awarded for city-gas supply technologies, AtoMS and MiReMo respectively, by the Japan Gas Association
July	Biomass power plant completed and commercial operations started by Green Energy Tsu
	First smart-agriculture EPC order received in Niigata
	Completed Myitnge Rail Bridge with unprecedented application of incremental launching method in Myanmar
	First order received for 75 MWe-class large biomass power plant in Hachinohe, Japan under cooperative agreement with Valmet, Finland
	SKG completed biomass plant for Macallan distillery
August	Then-President Kanou accompanied Prime Minister Abe at Tokyo International Conference on African Development
September	Completed shield machine with largest diameter (Φ16.1 m) in Japan for Tokyo Gaikan Expressway construction
	Contracted operations and maintenance of main water purification plant in Fukuyama, Japan
October	JFE Kankyo started business for temporary storage and marine transport of contaminated soil
	Completed integration of shield tunneling machine businesses
November	Technology Prize of the Combustion Society of Japan received for low-NOx stoker furnace incorporating countercurrent combustion
	Completed and started commercial operation of biomass power plant in Saiki, Japan
December	Completed OTA Flower Station, a flower cold-chain facility at Ota Market, Tokyo
	Completed reinforcement of Koshijihara Plant at Minami-Nagaoka gas field, Japan
	Received order for bridge replacement construction on international highway in Laos, first ODA project for river bridge
	Received order for 75 MW-class biomass-fired power plant for Buzen New Energy

2017

January	Received order for 112 MWe CFB boiler power plant by Kushiro Thermal Power Plant
	Received order for first shaft-type gasifying and direct melting furnace in Southeast Asia from Nanyang Technological University in Singapore
	Received order for renovation of La Mesa Water Treatment Plant, largest water-purification plant in Philippines
February	Started verification work on regional power system to significantly reduce CO2 in Minamata, Japan
	Agreed on joint services for renewable energy and municipal infrastructure with TEPCO Fuel & Power, Inc.
March	Received order for 75 MWe-class biomass-fired power plant in Ofunato, Japan
	Completed No. 5 Plant for Higashiosaka Toshiseisou Union
	Completed Tatebayashi Clean Center for Tatebayashi Hygiene Facilities Union
	Completed Mahoroba Clean Center for Cleaning Kounan Union
	JFE Kankyo entered food recycling business with JR East Group
	Received order for LNG gasification facility expansion of Fukushima Gas Power
	Received turnkey contract for geothermal power facility in Matsuo-Hachimantai, Japan