

JFE Engineering



Corporate Information



Creating the Foundation for Life



All of our technologies are for the protection of this beautiful planet.



Protecting the global environment.

“Preservation of the environment” is the universal desire of every person who lives on this planet. Today, in the 21st century, more concrete solutions are demanded in order to achieve this goal.

Every product of JFE Engineering is created based on our philosophy of protecting the global environment. The origin of those products is technologies that create and utilize new energy. Searching for the ideal form of energy, and producing new resources by applying our unrivaled technical capabilities. Building cities. As a true force for “**Creating the foundation for life**” of all people, this has realized the construction

of a rich infrastructure for daily life, as well as the infrastructure for industry, and always in harmony with the environment. The DNA of our predecessors, who pioneered their own road and created things that had never existed before, has been handed down from generation to generation to today’s JFE Engineering as a true innovator, and that same DNA continues to light the flame of our passion.

Protecting this beautiful planet, ensuring a safe and secure living environment, building a more pleasant life for all people. And continuing to advance into the future. JFE Engineering is opening the door to a new global era with the “**Power of technology.**”







◇ Nerima Waste Incineration Plant (Tokyo) /
A waste to energy power plant constructed in the center of an urban area that clears strict environmental standards.



◇ Malun Bridge (Myanmar) / Constructed across the Ayeyawady River, this bridge is indispensable transportation infrastructure for the economic development of Myanmar.



◇ Container cranes at the Port of Yokohama, Minami Honmoku (Kanagawa Pref.) / The world's largest seismic-isolated cranes are playing an active role in improving cargo-handling in the Port of Yokohama.







◇ Marina Bay Sands SkyPark (Singapore) /
A "hanging garden" constructed 200 meters above the ground by JFE Engineering's "Mega Lift" construction method.

JFE Engineering is creating the foundation for life with diversified original technologies.





◇ Sodeshi LNG Terminal (Shizuoka Pref.)



◇ Tozai Renkei Gas Pipeline (linking Kanagawa Pref. and Chiba Pref. across Tokyo Bay)



◇ Yufutsu Natural Gas Plant (Hokkaido) / Realizing stable energy supply by treating natural gas extracted from several thousands meters below the surface.



◇ Tanker VOC recovery system (Kagoshima Pref.)



◇ Noi Bai International Airport fueling equipment (Vietnam)

**Creating and delivering energy.
JFE Engineering uses unique technologies
for all energy-related processes.**

Through the construction of natural gas plants and pipelines, JFE Engineering is creating infrastructure that will ensure an unbroken supply of energy. In all the processes of transportation, storage and use of energy resources, JFE Engineering utilizes state-of-the-art technologies. To meet the ever-increasing demand for stable energy supplies, JFE Engineering is providing diverse energy solutions based on our wealth of experiences and unique technologies.



◇ Sakaide LNG Terminal (Kagawa Pref.)

■ Pipeline Systems

- City gas/natural gas pipelines
- Petroleum pipelines
- Heat supply pipelines

■ Storage Base Systems

- LNG/LPG receiving/storage/delivery facilities
- Storage facilities (gas/oil/water)

■ Process Plants

- Petroleum and natural gas production/treatment facilities
- Gas production/treatment facilities
- Chemical plants
- Synthetic gas production

■ Recovery of Impurities/Harmful Substances

- VOC (volatile organic compound) recovery systems
- CO₂ recovery/fixing



◇ 1,000 t/d Incinerator in Spremberg (Germany)



Project name: Minamisoma City Waste Treatment Project for Countermeasures Area (Volume Reduction Treatment)
Client: Ministry of the Environment, Tohoku Regional Environment Office, Fukushima Office for Environmental Restoration
Photograph taken on March 24, 2015 in Odaka-ku, Minamisoma City, Fukushima Pref.

◇ In Fukushima Prefecture, JFE Engineering carried out an incineration and volume reduction project for disaster wastes.



◇ Clean-Hill Homan Gasification and Melting Furnace (Fukuoka Pref.) / Facility where wastes are gasified and melted at high temperature, and are converted into slag, metal and other resources that can be utilized effectively.



◇ Shinden Refuse Incineration Center (Niigata Pref.)



◇ Qingdao Xiaojianxi Municipal Solid Waste (MSW) Incineration Plant (China) / Realizes low NOx and dioxin emission reduction.

Technologies that control “fire” and utilize “heat” are creating safe, affluent urban environments.

As experts in waste management, JFE Engineering constructs incineration facilities that consider the environment. Our advanced combustion technologies, which were developed over a long history of steel manufacturing and shipbuilding, are not limited only to the construction of facilities. We also have an outstanding record that includes operation and maintenance (O&M) of environmental facilities. JFE Engineering is also actively grappling with the construction and operation of waste to energy plants which use waste as a fuel for power generation. In recent years, we have constructed safe, pleasant urban environments in Europe, where regulation of landfill disposal of wastes is increasingly strict, and in Asia, which is experiencing rapid economic growth.



◇ Remote Service Center (JFE Engineering Yokohama Head Office) / Centralized management of the operating condition and power generation status of waste to energy plants by a 24-hour-day system.

- Environmental Plants
 - Stoker furnaces
 - Gasification and melting furnaces
 - Ash melting furnaces
 - RDF (refuse derived fuel) plants
- Operation and Maintenance (O&M) (including total plant operation under a consignment)

Power Generation



◇ Lünen Biomass Power Plant (Germany)



◇ Biomass boiler at Hokuetsu Kishu Paper Co., Ltd. (Mie Pref.)



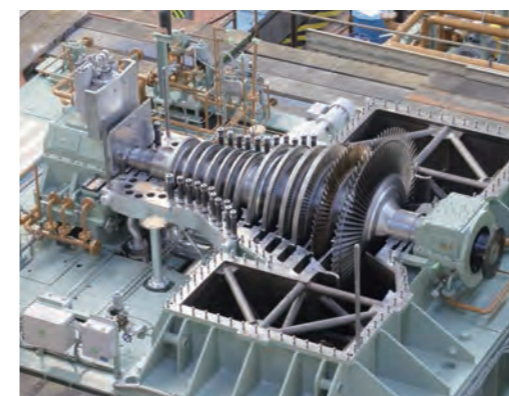
◇ Miho Solar Power (Shizuoka Pref.) / Solar plant constructed and operated by JFE Engineering.



◇ Medipolis Ibusuki Geothermal Power Plant (Kagoshima Pref.)



◇ Gas engine



◇ Steam turbine

***Creating electric power from renewable energy.
Development from proposals for power generation projects
to operation by “One-stop service.”***

JFE Engineering is resolutely taking on the challenge of global environment-friendly power generation with its outstanding engineering capabilities. The combustion heat of biomass, the geothermal heat hidden in the earth, and the light of the Sun. Our goal is to create electric power with high efficiency to make the maximum possible use of the potential of renewable energy. In the Power Generation field, JFE Engineering has accumulated the know-how to provide total support in all phases from proposal of power generation plans to the design and construction of facilities and business operation, including sale of electric power.

- Power Generating Plants
 - Biomass power
 - Solar power
 - Geothermal power
- Waste Heat Recovery Boilers
- Power Generating Systems
 - Gas engines
 - Steam turbines



◇ Sludge incinerator that reduces generation of greenhouse gases (GHG) by high temperature incineration of sewage sludge at 850°C or higher



◇ Sewage sludge digestion gas power generation facility (Kanagawa Pref.)



◇ Biomass power generation from kitchen waste (Niigata Pref.) / Collected kitchen waste is fermented, producing biogas for use in power generation.

Changing the “Quality of life” from familiar water to realize a better life.

JFE Engineering constructs water and sewage plants and water pipelines all over the world, beginning in Southeast Asia, where improvement of waterworks and sewerage is an urgent issue.

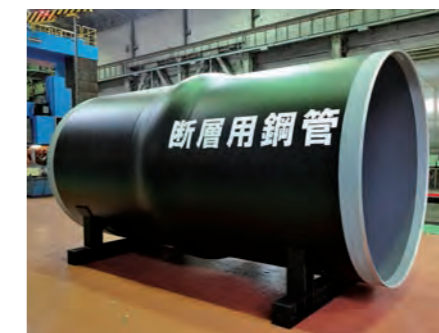
Creating delicious water and recycling wastewater. Generating electricity from sewage sludge. JFE Engineering develops total solutions that include management/operation business as a “One stop service” for both tap water and sewage. JFE Engineering’s technologies are leading the way to an abundant water society.



◇ Activated carbon powder injection equipment / Components that cause bad odor, etc. are removed, creating delicious water.



◇ Poblacion Sewage Treatment Plant (Philippines)



◇ Steel pipe for crossing fault (SPF) / Prevents cracks and water leaks by absorbing ground deformation when fault displacement occurs.

- **Water Treatment Plants**
 - Sludge incineration and volume reduction treatment
 - Digestion gas power generation
 - Advanced sewage treatment
 - Sludge recycling
- **Waterworks Plants**
- **Water Pipeline Systems**
- **Operation and Maintenance (O&M)**
(including total operation under a consignment)



◇ Matoya Bay Bridge (Mie Pref.)



◇ Onitaka Parking Area bridge erection work (Chiba Pref.) / The bridge was fabricated with millimeter accuracy, and erection was completed in 3 hours at night.



◇ Irabu Bridge (Okinawa Pref.) / A huge bridge girder block with a total length of 140m and weight of 1,300t, which was fabricated in JFE's Tsu Works, was erected in only 1 day.



◇ Haneda Airport (Tokyo International Airport) D Runway / Pier section jacket (Tokyo)



◇ Yamada Fishing Port Hybrid Tide Embankment (Iwate Pref.) / On-site construction work was minimized by precasting the embankment blocks in the factory in advance.

***Building cities, creating an affluent life.
Technologies for steel structures that will live for more than
a century as part of everyday life.***

JFE Engineering constructs transportation and distribution infrastructure such as highway bridges and port facilities, and disaster prevention infrastructure including tide embankments and seawalls. We link cities by building bridges and creating ports and airports. Our new construction methods and new products shorten construction time and reduce costs when building cities. JFE Engineering is realizing an affluent life by applying outstanding technologies for the creation of steel structures.



◇ Kamaishi Port Breakwater (Iwate Pref.) / Hybrid Caisson of the breakwater entrance during towing

- Bridges
- Coastal Structures
 - Jackets
 - Hybrid Tide Embankment
 - Hybrid Caisson, etc.



◇ Shield machine for tunnel construction



◇ Automatic auction system at Ota Flower Market (Tokyo) / Full use of IT technology has revolutionized the auction system itself.

From large-scale containers to floral bouquets, technology that “moves” products and materials is opening new doors in logistics.

JFE Engineering supplies a wide variety of logistics system and industrial machinery, ranging from large-scale cranes, which are the key element in cargo-handling in ports, to auction systems for wholesale markets, facilities for disposal of goods, etc. We develop hardware and software for fast and safe movement and transportation. Techniques for “moving” and “carrying” are the arms and eyes that move everything from heavy objects to delicate floral bouquets in millimeter units. JFE Engineering’s mechanical technologies realize a safer, more pleasant working environment and everyday life.



◇ JFE Engineering’s “Cycle Tree” (mechanical multilevel bicycle parking system) can store bicycles efficiently (Kanagawa Pref.) / The winning solution for the problem of bicycles left around train stations.



◇ Biomass silos (Ibaraki Pref.) / Japan’s largest wood fuel storage and conveying facility.



◇ Oi Wharf multilevel container warehouse (Tokyo)



◇ Oil tanker equipped with JFE’s “Ballast Ace®” ballast water management system

- Logistics Systems
 - Multilevel automated warehouses
 - Livestock feed plants
 - Beverage water factory plants
- Conveying Equipment
 - Cranes
 - Conveyors
- Parking Systems
 - Mechanical multilevel bicycle parking systems
 - Mechanical multilevel automobile parking systems

- Shield machines for tunnel construction
- Distribution Systems
 - Automatic auction systems
 - Agricultural product traceability information services
 - Fresh food delivery centers
- Machinery for Ships
 - Marine Diesel engines
 - Ballast water management systems

Agriculture



◇ Harvesting tomatoes



◇ Smart Agriculture Production Plant / Creating the optimum environment for plant cultivation.

Creating next-generation agriculture with engineering capabilities.

- Smart Agriculture
- Plant factories
 - Production of agricultural products

Medical Care



◇ Quality control device for radiopharmaceuticals



◇ Cyclotron / Produces radioactive substances used in PET (Positron Emission Tomography) examinations.



◇ PET test drug synthesis system / Produces radioactive drugs.

Advanced medical engineering with a gaze fixed on irreplaceable "life."

- Medical Systems
- Cyclotrons
 - PET test drug synthesis systems

Recycling



◇ Flakes recycled from PET bottles. These flakes will become the raw material for textiles products, etc.



◇ Fluorescent Light Tubes Recycling Factory (Kanagawa Pref.) / Fluorescent powder and mercury are removed, and the glass is recycled.

As a pioneer in recycling, JFE Engineering is helping to build a recycling-oriented society with its vision focused on the needs of the times.

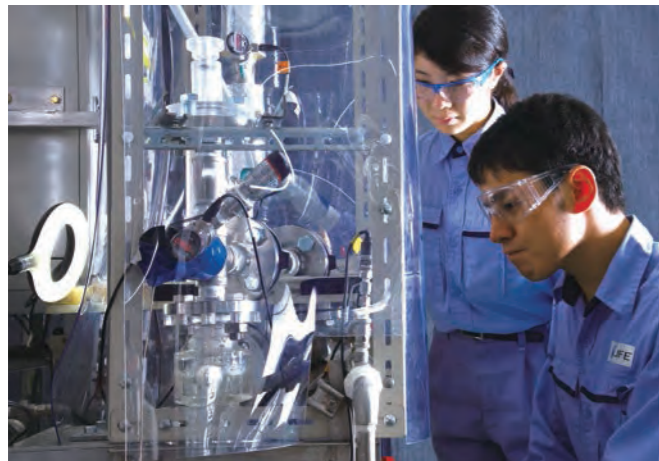
JFE Engineering collects, transports and properly treats a wide variety of wastes, including both solids and liquids, and recycles those materials as new resources. With its vision focused on the coming recycling-based society, JFE already has a long record of actual results as a pioneer in recycling. Thanks to the unique capabilities of JFE Engineering, intelligent recycling makes it possible to recycle PET bottles as raw materials for textiles, and to recycle various metals and other resources from fluorescent lamp tubes and dry cell batteries. With a sense of responsibility that says "the future is in our hands," JFE Engineering is opening new horizons in recycling.

- Recycling
- PET bottle recycling
 - Plastic recycling
 - Vinyl chloride recycling
 - Fluorescent lamp tube recycling
 - Dry cell/battery recycling
 - Used electrical appliance recycling
 - Automobile shredder dust recycling
 - Waste wood chip recycling
- Waste Treatment
- Liquid wastes
 - Solid wastes
- Collection and Transportation

Research



◇ Fluid test / Visualizes the condition of fluids in containers provides information for use in the design of internal structures, etc.



◇ Phase change test / Collects basic design data on condensation/vaporization processes that can be applied to various types of plants.



◇ Waste combustion test / Conducts various types of combustion tests for achieving even higher performance in waste plants.

Creating the new technologies which will support the future.

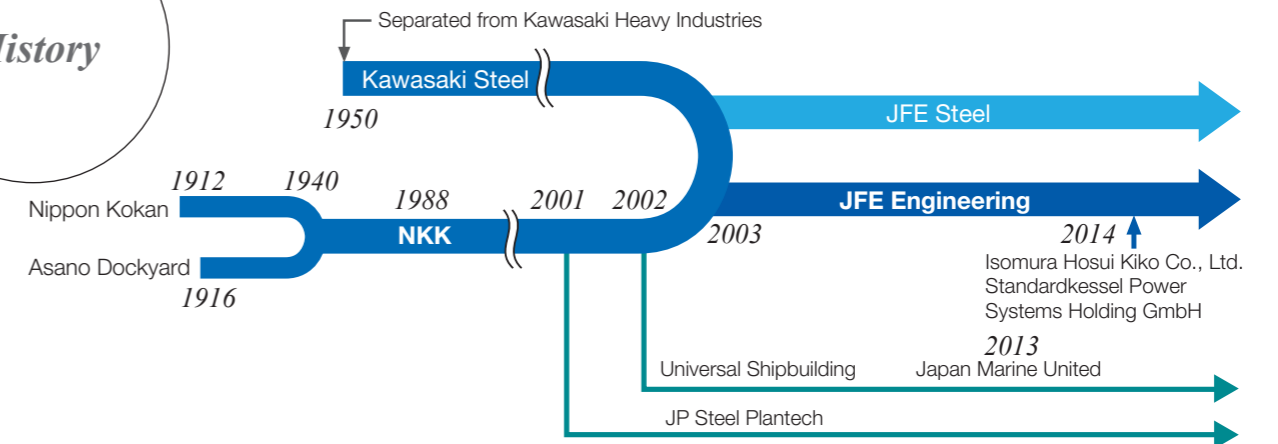
JFE Engineering is devoting its full capabilities to research and development of the new technologies which will support society in the future, particularly in the creation of next-generation energy and solution of global environmental problems.

As the brain trust responsible for the core functions of a “technology-oriented company,” which is a basic part of the JFE philosophy, JFE Engineering researchers have developed more advanced generic technologies while also creating a large number of new products and new technologies based on unique new ideas.

Against the backdrop of this impressive record, JFE researchers are continuing to advance to even higher levels.

- **Gas Treatment and Chemical Reactions**
 - Chemical reactions
 - Separation
- **Heat and Combustion**
 - Combustion
 - Heat transfer and thermal fluids
- **Water Treatment and Fluids**
 - Membrane and biological treatment
 - Transport and fluid analysis
- **Materials and Measurement**
 - Materials, corrosion resistance and inspection
 - Mechatronics
- **Engines**
 - Internal combustion engines
- **Plant Factories**

History



The history of JFE Engineering Corporation began when the company inherited the steel manufacturing technologies and shipbuilding technologies developed by NKK (Nippon Kokan) and Kawasaki Steel. These two fields of technology were fused over the course of 100 years, and are now used to produce resources, build cities and protect the environment. JFE Engineering is truly building a more abundant living environment and industrial infrastructure as a force that “creates the foundation for the lives of people.”



◇ First ship built by Asano Dockyard, “Hakushika Maru” (1919)



◇ Pipeline in Kenya (1978)



◇ Kyoto Minami Waste Incineration Plant (1983)



◇ Pipeline in Indonesia (2008)



◇ Shinminato Bridge, Toyama Pref. (2011)

History

- 1912 Establishment of Nippon Kokan (NKK).
- 1916 Establishment of Yokohama Dockyard (name later changed to Asano Dockyard).
- 1936 Asano Dockyard renamed Tsurumi Iron Works Dockyard.
- 1940 Merger of Nippon Kokan and Tsurumi Iron Works Dockyard.
- 1944 Start of operation at NKK Shimizu Shipyard.
- 1950 Establishment of Kawasaki Steel Corporation.
- 1969 Start of operation at NKK Tsu Shipyard.
- 1970 Reorganization of NKK in a 3-division system (steel, heavy industries, shipbuilding).
- 1973 Start of Kawasaki Steel Engineering Center.
- 2001 Establishment of JP Steel Plantech by merger of the steel plant divisions of Hitachi Zosen, Sumitomo Heavy Industries, and NKK.
- 2002 Establishment of Universal Shipbuilding by merger of the shipbuilding divisions of Hitachi Zosen and NKK.
- Establishment of JFE Holdings by management consolidation of NKK and Kawasaki Steel.
- 2003 Establishment of JFE Engineering Corporation.
- 2008 Universal Shipbuilding becomes a member of the JFE Holdings Group.
- 2013 Establishment of Japan Marine United by management integration of Universal Shipbuilding and IHI Marine United.
- 2014 Merger of Isomura Hosui Kiko Co., Ltd. and JFE Engineering waterworks plant business.
- Establishment of Engineering Centers in Indonesia and India.
- Acquisition of 100% of shares of Standardkessel Power Systems GmbH.