JQA-QMA14933

091

Negishi Refinery has obtained ISO 9001 certification, an internationally recognized standard for Quality Management Systems.
The scope of the Quality Management System certification covers:
The manufacture of LPG, Gasoline, Benzene, Kerosene, Aviation Fuel, Gas Oil, Fuel Oil, Asphalt, Lubricating Oil and Sulfur.

JQA-EM7027

091

Negishi Refinery has obtained ISO 14001 certification, an internationally recognized standard for Environmental Management Systems.
The scope of the Environmental Management System certification covers:
All activities in relation to the oil refining processes from material receipt to delivery of products and all activities in relation to the generation processes of electricity.

JAB
CM009

Negishi Refinery
GUIDE BOOK

SOFINE

The Future of Energy, Resources and Materials
JX Nippon Oil & Energy Corporation
6-3 Otemachi 2-chome, Chiyodaku, Tokyo 100-8162, Japan

Negishi Refinery
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http://www.noe.jx-group.co.jp

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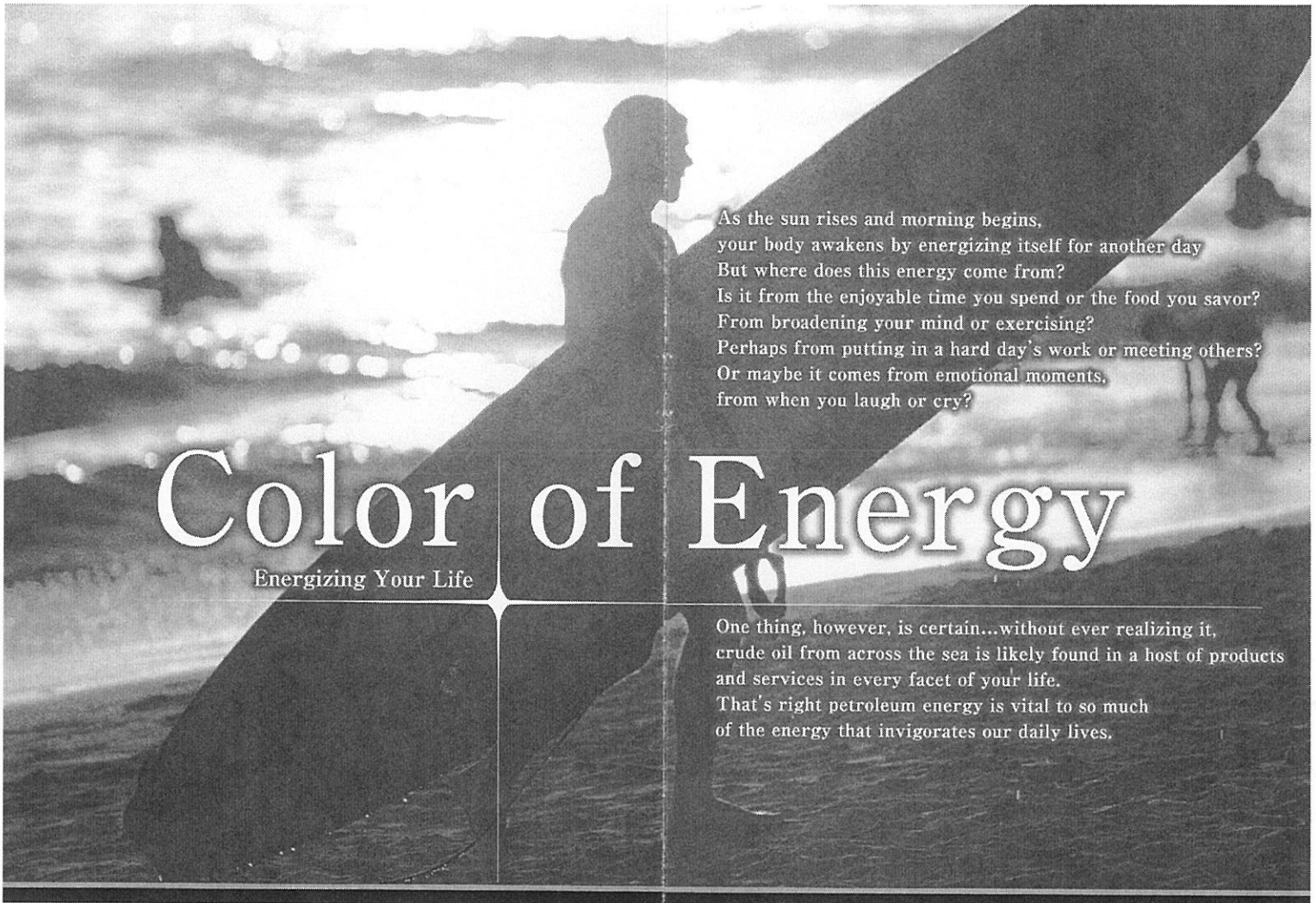


As the sun rises and morning begins,
your body awakens by energizing itself for another day
But where does this energy come from?
Is it from the enjoyable time you spend or the food you savor?
From broadening your mind or exercising?
Perhaps from putting in a hard day's work or meeting others?
Or maybe it comes from emotional moments,
from when you laugh or cry?

Color of Energy

Energizing Your Life

One thing, however, is certain...without ever realizing it,
crude oil from across the sea is likely found in a host of products
and services in every facet of your life.
That's right petroleum energy is vital to so much
of the energy that invigorates our daily lives.

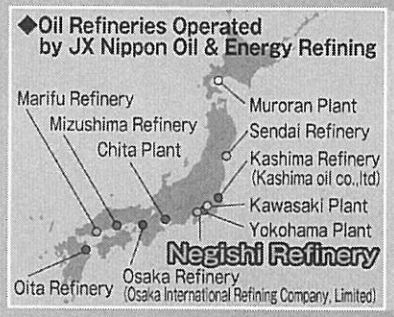
Connecting the Oil Road With Your Daily Life. JX Nippon Oil & Energy Leverages a Global Network to Bring Stability to the Supply of Oil.

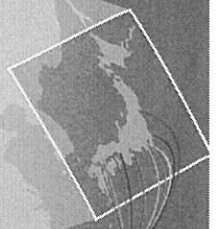
Japan depends on imports for over 99% of its crude oil needs.
More than 80% of that oil comes to Japan via the "Oil Road," a route that begins in Middle Eastern oil-producing nations in the Persian Gulf some 12,000km away.
This crude oil is transported to refineries and storage terminals operated throughout Japan by JX Nippon Oil & Energy, where it is kept in tanks specifically for crude oil.
This same oil is transformed into a variety of products and services essential to daily life for people across Japan
Bringing viable energy resources from around the world to Japan. Delivering products from the refinery to every facet of our lives.
But perhaps most importantly, entrusting to the future a world of abundance and beauty, where people, nature and the use of petroleum exist in perfect balance.
JX Nippon Oil & Energy is working day and night to become a bridge to the future, contributing to the stable supply of petroleum products that meet today's needs.

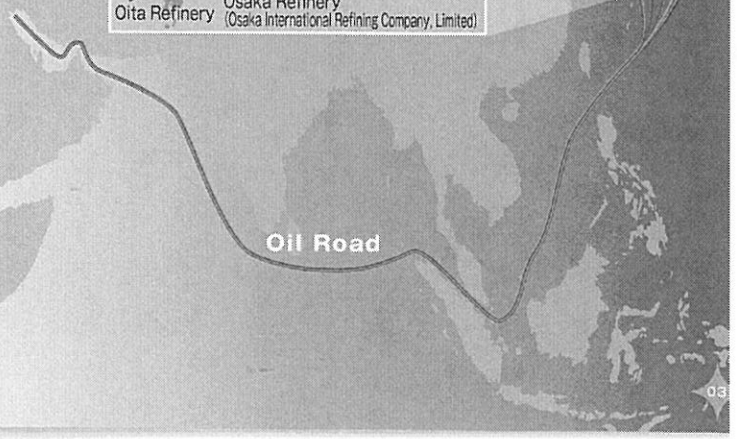
Exploration and Development

Refining and Production

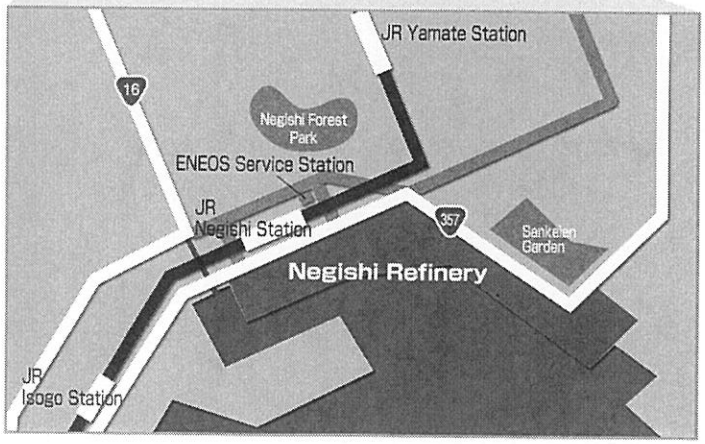
Retail Sales







The Negishi Refinery: Japan's Largest Refinery Meeting Energy Demand in the Tokyo Metropolitan Area; Creating a Better Future for People, Petroleum, and the Environment



Nestled in a spot surrounded by the beautiful environs and fashionable residential areas of Yokohama is the Negishi Refinery, the largest refinery of its kind in Japan.

Boasting an area of 2.2 million square meters and located on a large and lush site some 12km in circumference, the Negishi Refinery is often seen as more park than industrial plant.

But not many parks have an oil processing capacity of 270,000 barrels per day (BD).

Just a short distance away is a massive area of consumption: the nation's capital, Tokyo, and the greater metropolitan area. This geography puts the refinery in a prime location to serve as a base for the supply of petroleum products.

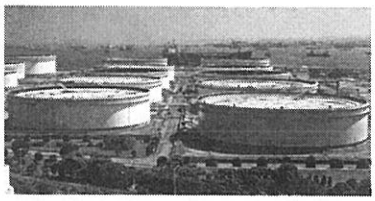
Each day, the Negishi Refinery makes the most of its production capacity to unfailingly meet the enormous energy demands of the region. At the same time, the facility contributes to society as a model refinery by creating an abundant environment for the future; one in which a better balance between people, petroleum and the environment is attained.

Efficiently, Safely and Accurately Meeting Diverse Petroleum Needs

"Refining" is the process by which petroleum products are derived from crude oil, following distillation and a host of other steps.
Crude oil is brought via tankers to the refinery, where it is kept in crude tanks.
First, the oil is sent through a facility known as a crude distillation unit. Here, the crude oil is distilled and separated into five basic distillates based on their respective boiling points.
Finally, after a great deal of processing, what was once crude oil is transformed into an array of products vital to daily life.
Especially for automotive fuel, we are focused on creating environmentally friendly "sulfur-free" products, including ENEOS VIGO, an environmentally friendly premium gasoline.

Crude Jetty

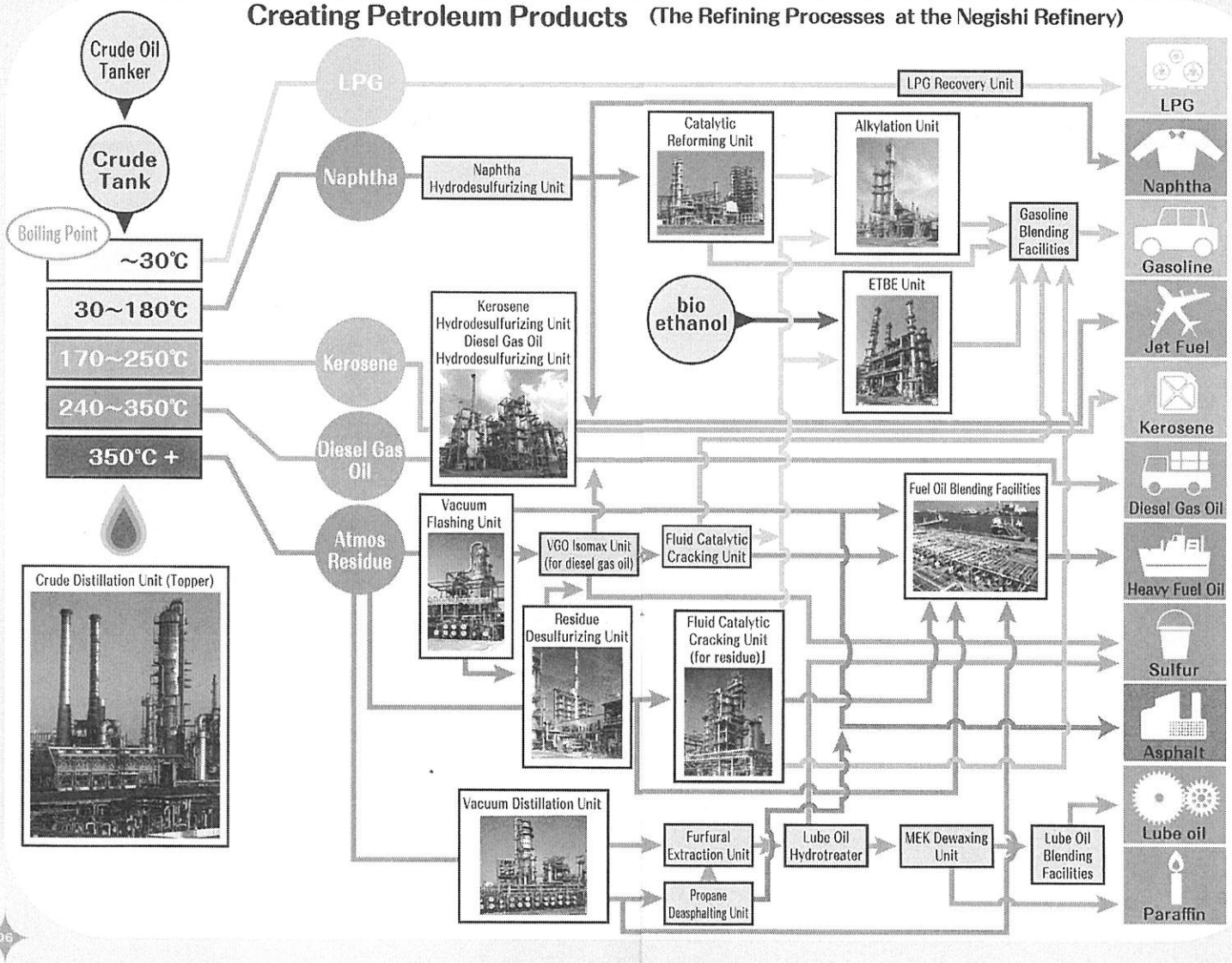
Most of the crude oil processed at the refinery is imported from the Middle East and Southeast Asia. The crude is transferred from the crude jetty via pipelines to crude tanks.



Crude Tanks

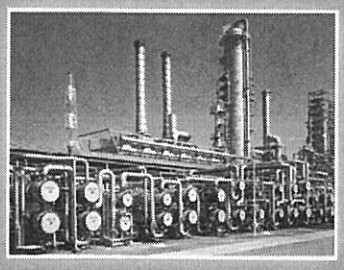
Crude oil is separated and stored in the 17 enormous "floating roof" storage tanks onsite.

Creating Petroleum Products (The Refining Processes at the Negishi Refinery)



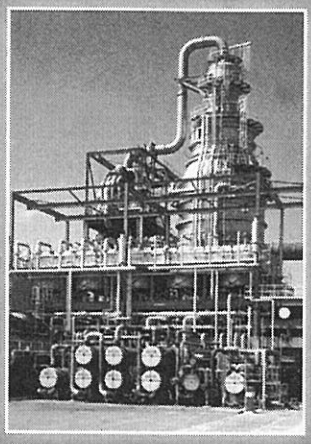
Adopting the Latest Facilities to Respond Efficiently to the Substantial and Diverse Needs of Today

As Japan's largest refinery, the Negishi Refinery has adopted a host of state-of-the-art facilities that enable it to respond to both the demand for lighter petroleum products, and to boost production of premium gasoline and middle distillates. For more efficient, safer and optimal operation of these facilities, the refinery relies on a computer system that makes centralized facility management possible.



Crude Distillation Unit (Topper)

Crude oil is first treated by this facility, of which the Negishi Refinery has two onsite. Inside the topper, a petroleum refining furnace heats the crude to roughly 350°C. The oil then enters the distillation tower, where different boiling points are used to separate out the five basic distillates from which petroleum products are derived: gas fraction, naphtha fraction, kerosene fraction, diesel gas oil fraction, and residual oil.

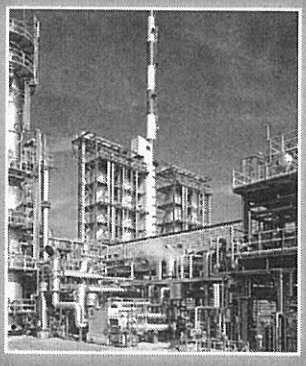


Vacuum Flashing Unit

This facility vacuum distills residual oil from the topper, separating it into vacuum gas oil and residue. The vacuum gas oil is transferred to the hydrodesulfurization unit for processing. Once complete, the vacuum gas oil is then sent to the fluid catalytic cracking unit.

Hydrodesulfurization Unit

The naphtha, kerosene and diesel gas oil fractions taken from the topper are subjected to catalysts under high temperature and pressure, removing sulfur, nitrogen and other impurities. The end product is high-quality naphtha, kerosene, diesel gas oil, and jet fuel.
The hydrodesulfurization unit for diesel gas oil utilizes a two-step desulfurization process developed by Nippon Oil, reducing the level of sulfur in diesel gas oil to less than 10ppm.



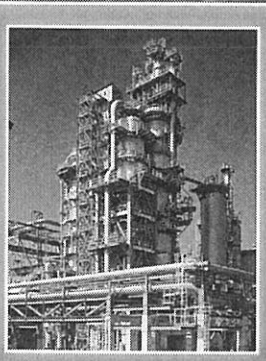
Residue Desulfurizing Unit

The primary purpose of this facility is to remove sulfur and metals from heavy fuel oil. Using residual oil as a feedstock, the hydrotreating process in this unit produces heavy fuel oil with even lower sulfur content, as well as middle distillates.

Catalytic Reforming Unit

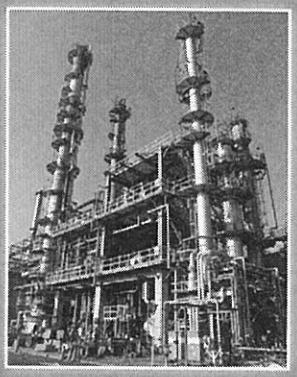
(Continuous Catalytic Regeneration)

Heavy-grade naphtha fractions taken from the hydrotreating unit are subjected to a catalyst at high temperature, reforming them into high-performance, premium gasoline.



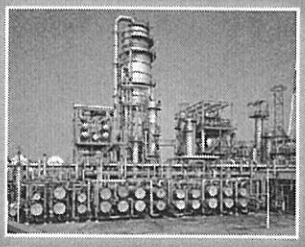
Fluid Catalytic Cracking Unit

This facility circulates a catalyst at high temperatures, bringing it into contact with crude oil. The "cracked" oil produces both gasoline and middle distillates. A special feature of this facility is its ability to crack heavy residual oil, such as those from heavy fuel oil C.



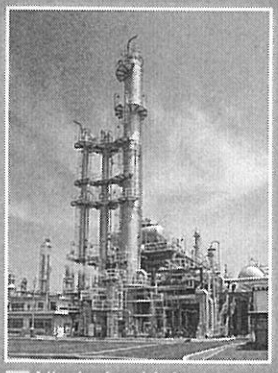
ETBE Unit

Japan's first ETBE Unit began operation at Negishi Refinery in November 2009 as part of ongoing efforts to reduce CO_2 emissions. Isobutene, a byproduct of petroleum cracking, is combined with bioethanol of plant origin to create bio-ETBE which is utilized in the production of environmentally-friendly bio gasoline.
(ETBE : Ethyl Tertiary Butyl Ether)



Lube Oil Production Unit

An array of products can still be produced from the residual oil left after removal of the various fractions created through crude distillation. All told, more than 300 different products can be created, from high-quality gasoline, to all varieties of diesel gas oil, heavy fuel oil, lube oil, sulfur, asphalt, and paraffin, to name a few. Of these, lube oil stands alongside gasoline as a high-value-added product. High-grade lube oil is produced from residual oil created through atmospheric distillation, which acts as the feedstock. The residue is put through the vacuum distillation unit, the propane deasphalting unit, the furfural extraction unit, the lube oil hydrotreater, and the MEK dewaxing unit. The Negishi Refinery has an annual lube oil production capacity of 270,000 kiloliters.



Alkylation Unit

Used to produce the base material for premium gasoline.

(Refining Facilities at the Negishi Refinery 2)

Making effective use of by-products produced from the enormous plant.

Besides the production of gasoline, heavy fuel oil and other fuel oils and lube oil, the Negishi Refinery's sophisticated facilities make possible the use of byproducts from the refining processes. As basic materials for industry, these products play useful roles in a wide range of fields in our daily lives.

Supply of Electricity

As part of operations as an IPP (Independent Power Producer), the term for a general firm that supplies electricity to power companies, the refinery has built an Integrated Gasification Combined Cycle Unit, the first in Japan to utilize asphalt to generate power. Here, a gasifier is used to turn asphalt into gas consisting mainly of hydrogen and carbon monoxide.
After removing impurities such as sulfur, the gas is used as fuel for gas turbine and steam turbine combined cycle power plant to generate electric power.

Power Generation Capacity: 431,000kw
Amount of Power Transmitted: 342,000kw (Supplied to TEPCO)
Generation Method: Combined Cycle Gas Generator
Fuel: Asphalt

Sulfolane Unit

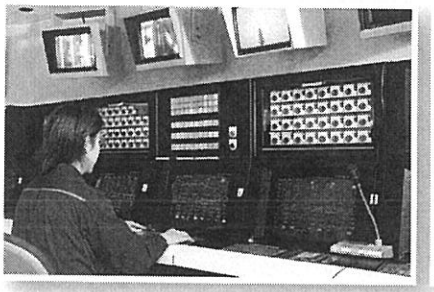
This facility lowers the benzene content in gasoline to less than 1%. The Negishi Refinery began manufacturing and shipping this gasoline in 1997. The benzene removed in the process is shipped as a separate product.

Sulfur Recovery Unit

The sulfur removed as hydrogen sulfide from oil by the hydrodesulfurizing units is recovered as elemental sulfur by the sulfur recovery units. The recovered sulfur is shipped out in liquid form by ship or tank lorries.

(Shipping Facilities at the Negishi Refinery)

Supplying Products Quickly and Consistently Through Efficient and Low-Cost Shipping and Logistics Systems



Control Room/Quality Control

The operations of each facility are centrally managed from the control room. Meanwhile, the Quality Control Group rigorously inspects each product once it has left its final processing facility. Only products that pass this inspection are ready for shipment.

Heavy Fuel Oil Blending Facilities

Heavy fuel oil comes in many varieties, depending on the application.
From its storage tank, heavy fuel oil passes through a line blender, after which it is loaded onto shipping vessels and sent out.

Tank Lorry Loading Station

Tank lorries that carry gasoline, kerosene, diesel gas oil and heavy fuel oil to service stations and other customers are filled at this facility. A total of 28 trucks can be filled simultaneously. Products from the 24-hour facility are distributed primarily to locations within Kanagawa Prefecture.

Tank Car Loading Station

This facility has 22 loading stalls, enabling it to fill 44 cars at once when using both sides of each stall. The shipping volume from this station is the largest in Japan, with fuel oil from the facility transported mainly to inland shipping terminals throughout the Kanto region.

High-Speed High-Grade Lube Oil Can Filling Machines

This lube oil filling and shipping facility is also called the "Automated Lube Oil Filling and Shipping Facility." As the name suggests, select lube oil products are loaded into drums, pails, bottles and a variety of other containers at high speed in this automated facility. The containers are then sealed, packed in boxes, and labeled. These and other steps are fully automated. Once filled, the products are carried by conveyer line to an automated warehouse where they are temporarily stored. From there, the products are sent out by truck to JX Group shipping bases across Japan.

(Safety Measures at the Negishi Refinery)

Ensuring a Framework for Responding Rapidly to Foreseeable Disasters

As a sprawling, city-based facility facing Tokyo Bay and adjacent to urban areas, the Negishi Refinery has extensive land and marine safety measures in place. The refinery has also established a regional disaster prevention framework in partnership with affiliated business sites outside of the company.

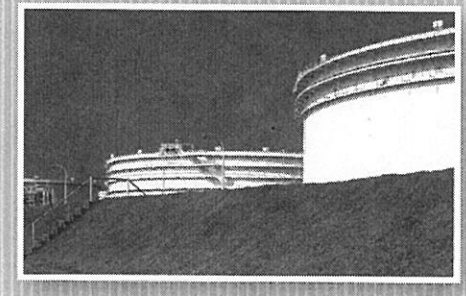
Countermeasures Against Oil Spills

The refinery deploys an oil fence when loading and unloading tankers, and has a firefighting vessel, which doubles as an oil recovery ship, at the ready should a spill occur. Land facilities, meanwhile, are designed to withstand damage exceeding that caused by the major earthquake that once struck the Kanto region, or by the powerful Ise Bay typhoon. The refinery's extensive spill prevention countermeasures also include concrete and earth oil retaining walls that surround tanks at the facility to contain potential spills.

Chemical Fire Trucks and Other Firefighting Vehicles

The refinery has a total of seven specialized firefighting trucks onsite. These include large trucks that combine the ability to fight chemical fires with elevated hoses for spraying high places, as well as foam liquid transport trucks. The refinery also has a foam and water cannon with the spray capacity of two large chemical fire trucks.

Fixed Firefighting Facilities



All facilities are surrounded by fixed and mobile foam fire extinguishers, fixed sprinklers and other firefighting facilities. Moreover, on parts of the premises adjacent to urban areas, water curtains are in place to ensure that any fires that may occur have no impact outside of the refinery.

(Environmental Preservation Measures at the Negishi Refinery)

Showing Concern for the Earth's Environment Through Extensive Measures to Combat Air and Water Pollution

As an energy producer supporting the Tokyo Metropolitan Area, the Negishi Refinery pursues various environmental measures that seek the best balance between petroleum, nature and communities.

Countermeasures Against Air Pollution

The refinery uses the following countermeasures to minimize the release of air pollutants (SOx, NOx, and soot and dust) generated from the burning of fuels by its facilities.

SOx countermeasures
- The use primarily of off-gases with low sulfur content as fuel
- Installation of exhaust gas desulfurizers

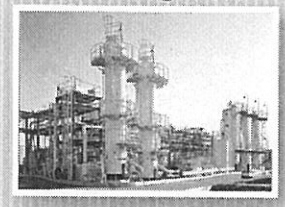
NOx countermeasures
- Installation of low NOx burners and exhaust gas denitrizers
- Soot and dust countermeasures

The use primarily of byproduct gases with low sulfur content as fuel
- Installation of electrostatic precipitators in facilities using low-sulfur heavy fuel oil

Controlling the Release of Hydrocarbons

Hydrocarbons have been identified as one cause of photochemical oxidants. The refinery controls the release of these chemicals by installing hydrocarbon recovery equipment at shipment facilities where tank lorries and tank cars are loaded.

Water Pollution Prevention/Wastewater Management



Wastewater from refining facilities is passed through a wastewater stripper to remove ammonia, hydrogen sulfide, and other substances. The water then undergoes more sophisticated processing (sand filtration, bio-treatment, activated carbon absorption, etc.) to remove oil, phenol and other pollutants before being released into the sea.

Countermeasures Against Odors

In addition to combating odor through the hermetic construction of all facilities onsite, deodorizing equipment is also installed at the refinery.

Countermeasures Against Noise

Low-noise models have been adopted for most facilities at the refinery. Soundproof walls have also been built where necessary.

The Green Belt

A "Green Belt" has been placed along the perimeter of the refinery where adjacent to residential areas. The grounds of the Negishi Refinery cover roughly 2.2 million square meters (or about 4 times the area of Tokyo Disneyland), 260,000 square meters of which is the Green Belt. Bayberry, Kaizuka Ibuki and a number of other tree species have been planted at the refinery.

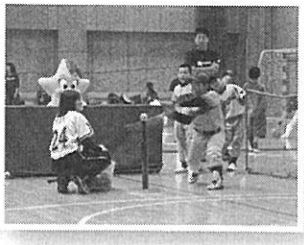
Actively Promoting Social Contribution Activities Rooted in Community as a Good Corporate Citizen

"Summer Vacation Science Bus Tour"

The refinery sponsors a "Summer Vacation Science Bus Tour" for elementary schoolchildren and their parents or guardians during summer vacation. Traveling by bus around the refinery, participants learn about the processes taking place, from the import of crude oil, to its refining and shipment. Participants then have the opportunity to observe live hose drills conducted by fire trucks onsite.

"kids baseball school"

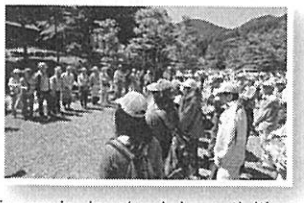
"Kids baseball school" is held in the gymnasium of our refinery every fall for local elementary school students and their parents. They enjoy playing catch and tee batting with former professional baseball players of Yokohama Baystars and former players of ENEOS baseball team as coaches.



"ENEOS Future Forest" Conservation Activities

"ENEOS Future Forest" refers to a partnership between JX Nippon Oil & Energy and local governments, or the National Land Afforestation Promotion Organization, in which JX Nippon Oil & Energy supports the conservation of a specific area of undeveloped forest. Such forests have been designated for eight locations in close proximity to JX Group refineries.

In the Negishi Refinery area, an "ENEOS Future Forest" has been set up within the Yadoriki Water Catchment Forest, located in the town of Matsuda in Ashigarakami, Kanagawa Prefecture. Through the work done by company volunteers, who carry out tree plantings, brush clearing, branch trimming and other forest conservation steps, the refinery is involved in activities designed to protect the environment and the natural ecosystem.



"Fresh Air Cleaning Activities"

On the last Wednesday of each month, employees use their lunch hour to conduct "Fresh Air Cleaning." Once a cleaning area is designated, usually the area directly outside of each entry gate, the area around Negishi Station, or the nearby park, trash from the spot is collected and separated for proper disposal.

History of Negishi Refinery

Oct. 1951	Nippon Petroleum Refining Company Limited established
Mar. 1961	Construction of Negishi Refinery started
Apr. 1964	First fuel oil manufacturing unit completed
Apr. 1968	High-grade lube oil manufacturing unit completed
Oct. 1968	Second fuel oil manufacturing unit completed in Honmoku No.1 Area
Jan. 1972	Third fuel oil manufacturing unit completed in Honmoku No.2 Area
Aug. 1991	Oil processing capacity increased to 360,000 BD
Oct. 1995	Oil processing capacity increased to 385,000 BD
Jul. 1999	Company renamed Nippon Mitsubishi Petroleum Refining Co., Ltd.
Apr. 2001	Oil processing capacity decreased to 360,000 BD
Apr. 2002	Company renamed Nippon Petroleum Refining Co., Ltd.
Apr. 2003	Oil processing capacity decreased to 340,000 BD
Jul. 2010	Company renamed JX Nippon Oil & Energy Co.,Ltd
Nov. 2010	Oil processing capacity decreased to 270,000 BD