

# MOL Tech

Business introduction



As a part of the Mitsui O.S.K Lines, Ltd. (MOL) Group, one of the world’s largest shipping companies, MOL Techno-Trade, Ltd. is a technology-specialized trading company that meets a broad range of needs – spreading from blue ocean – with advanced technology and decades of accumulated expertise.

Message from the President, CEO

As always, we would like to start by thanking you all for your continued support.

MOL Techno-Trade, Ltd. provides a range of solutions related to safety and the environment, from the blue ocean, backed by strong technological and marketing capabilities. We develop energy-saving products such as Propeller Boss Cap Fins (PBCF) and sell fuel oil and lubricant, including decarbonized fuel, mainly for vessels, spare parts, navigational equipment, and machinery, but our service lineup encompasses engineering work including maintenance and management of Japan's national oil storage base and other related businesses.

Since formulating our Vision in 2017, “To be the No.1 technology-specialized trading company in terms of environmental protection and safety related business, especially in the field of maritime affairs.”, and our Mission, “We will actively offer value added service to our customers and suppliers through innovative and original works.”, we have steadily grown, enhancing our practical experience and technical knowledge in the maritime industry.

Drawing strength from the technologies and expertise we have cultivated so far, we have developed a new management plan called "Techno-Trade NEXT10," with a vision to pursue our dream goals. This plan is designed to ensure the steady growth of our existing business while boldly venturing into businesses and products that will support the future of the maritime industry, such as H2 Business, ICT Business, and PBCF and wind propulsion devices as focused products. It outlines the direction of our company's business for the next ten years.

By faithfully implementing this new medium-term management plan, we aim to solidify our contribution to achieving the Group Vision set forth in the Mitsui O.S.K. Lines (MOL) Group's new management plan, "BLUE ACTION 2035," and provide new added value to the world, primarily in the maritime industry.



MOL-Techno-Trade, Ltd.  
President, Chief Executive Officer 川越 美一

■Corporate Profile

**Name**  
MOL Techno-Trade, Ltd.

**Head Office**  
KANDA SQUARE 18F, 2-1,  
Kanda nishiki cho 2-Chome,  
Chiyoda-ku, Tokyo 101-0054 Japan

**Found**  
June 11,1948

**Capital**  
490 million yen

**Annual turnover**  
62 billion yen  
(2022 fiscal year, non-consolidated basis)  
50 billion yen  
(2021 fiscal year, non-consolidated basis)

■MOL Tech Group Companies

**Japan Hydrographic Charts & Publications Co., Ltd.**  
6-85, Utoc Building 5F, Benten-dori, Naka-ku,  
Yokohama Kanagawa 231-0007 Japan  
TEL : +81-45-228-8808 FAX : +81-45-212-3828  
URL : https://www.jhchart.co.jp

**MOL Techno-Trade Asia Pte. Ltd.**  
5 Shenton Way #17-01 UIC Building, Singapore 068808  
TEL : 65-6272-6252 FAX : 65-6272-6428  
URL : https://moltech.asia

**MOTENA-Sea,Ltd.**  
KANDA SQUARE 18F, 2-1, Kanda nishiki cho 2-Chome,  
Chiyoda-ku, Tokyo 101-0054 Japan  
TEL : 03-6367-5400  
URL : https://motena-sea.co.jp/

Vision

To be the No.1 technology-specialized trading company in terms of environmental protection and safety related business, especially in the field of maritime affairs.

Mission

We will actively offer value added service to our customers and suppliers through innovative and original works.

Corporate Principles

- 1. Offer high-quality products, technologies, and services that meet customer needs.
- 2. Aspire to increase corporate value by complying with all applicable laws, treaties, regulations, and standards, and by promoting an open and visible management style.
- 3. Strive to ensure safety and protect the environment in all our business activities.

Corporate Management Plan

Techno-Trade “NEXT 10” ~Vision for 10 Years Ahead~

We are pursuing our dream goals and ensuring steady growth. We have become a unique trading company backed by technical knowledge, and we ensure the proper turnover of our products, including overseas expansion.

- Develop global supply chain of H2 business.
- To become market leader of ESD (Energy Saving Device), with our strength of PBCF and wind propulsion technology.
- To become specialist in satellite communications and cybersecurity.
- To remain most reliable supplier in MOL Group for Ship’s management and fuel oil supplier. Even to expand our field to 3<sup>rd</sup> parties.
- We lead in the safe management of national oil storage business.

Eco Action 21

● Basic Principles

We recognize that global environmental issues are important tasks common to all humankind and promote corporate activities with the aim of environmental conservation and social contributions related to the environment. In addition, we comply with all relevant environmental laws and regulations, and engage in meticulous environmental management on a voluntary, proactive basis, to continually reduce the environmental impact of our operations.



エコアクション21  
認証番号0001669

We obtain certification and registration for Japan's unique environmental management system "Eco Action 21" established by the Ministry of the Environment.

Organization Chart

As of February, 2024

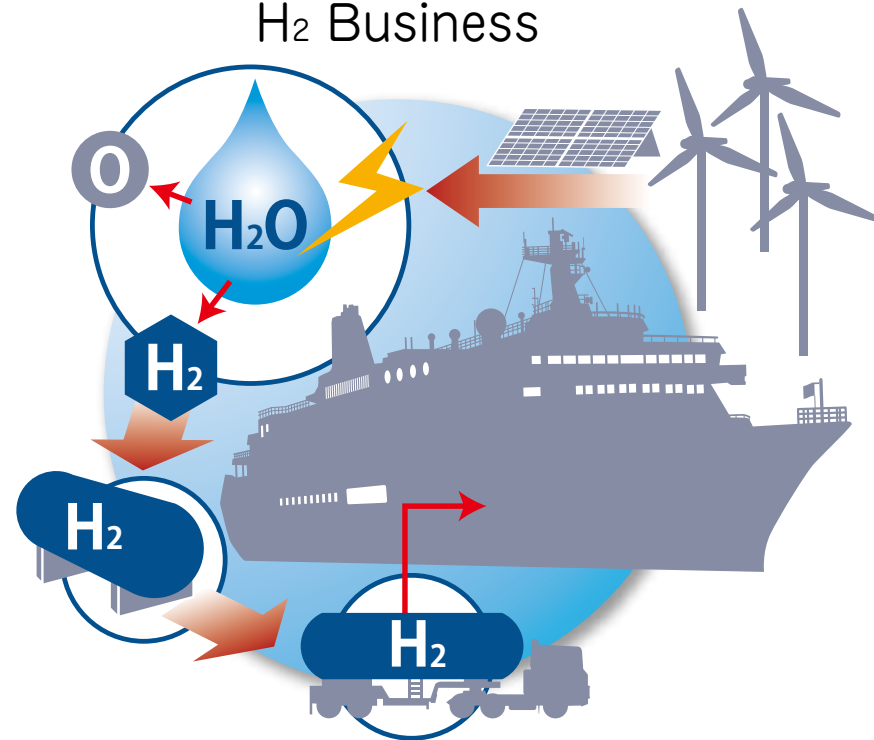


Internal Audit Office	TEL 03-6367-5300 FAX 03-6367-5511
Planning & Administrative Department	TEL 03-6367-5300 FAX 03-6367-5511
EBINA FARM	
Accounting Department	TEL 03-6367-5340 FAX 03-6367-5512
Technology Planning Department	TEL 03-6367-5490 (Tokyo) FAX 03-6367-5516 (Tokyo) TEL 078-771-5304 (Kansai) FAX 078-771-5314 (Kansai)
H <sub>2</sub> Business Design Department	TEL 03-6367-5440 (Tokyo) FAX 03-6367-5526 (Tokyo) TEL 078-771-5301 (Kansai) FAX 078-771-5311 (Kansai)
Business Project Department	TEL 03-6367-5480 FAX 03-6367-5525
Fuel Department	TEL 03-6367-5360 (Tokyo) FAX 03-6367-5514 (Tokyo) TEL 03-6367-5361 (Domestic) TEL 03-6367-5362 (International) TEL 03-6367-5363 (Land Fuel) TEL 078-771-5302 (Kansai) FAX 078-771-5312 (Kansai)
PBCF & Wind Propulsion Department	TEL 03-6367-5380 FAX 03-6367-5516
Environment and Safety Related Devices Department	TEL 03-6367-5370 (Tokyo) FAX 03-6367-5515 (Tokyo) TEL 078-771-5303 (Kansai) FAX 078-771-5313 (Kansai)
Fleet Logistics Department A	TEL 078-771-5305 FAX 078-771-5315
Kobe Distribution Center	TEL 078-652-2818 FAX 078-652-1685
Fleet Logistics Department B	TEL 03-6367-5400 (Fleet 1 Group) FAX 03-6367-5518 (Fleet 1 Group) TEL 03-6367-5401 (Fleet 2 Group) FAX 03-6367-5531 (Fleet 2 Group) TEL 078-771-5306 (Fleet 3 Group) FAX 078-771-5316 (Fleet 3 Group)
LNG Fleet Logistics Department	TEL 078-771-5307 FAX 078-771-5317
ICT & Marine Electronics Business Department	TEL 03-6367-5410 FAX 03-6367-5519
Oil Storage Tank Maintenance Department	TEL 03-6367-5430 (Tokyo) FAX 03-6367-5521 (Tokyo) TEL 093-751-5675 (Kyushu) FAX 093-751-1612 (Kyushu)





## H<sub>2</sub> Business



We aim to become an energy trading company that produces, delivers, stores, and utilizes hydrogen and electricity, and establish an energy production, sales, and supply system for both domestic and international markets. To achieve this, we are advancing the following three projects.

### ■MOTENA-Sea Project

Our company's flagship project in the H<sub>2</sub> business involves the construction and operation of 240 gross tons hybrid sightseeing ship, for about 100 passengers, powered by a combination of hydrogen fuel cells and biodiesel fuel. This vessel, which was launched in September 2023 at the HONGAWARA SHIP YARD CO.,LTD in Fukuyama, Hiroshima Prefecture, is scheduled to commence operations around April 2024, based in the Kanmon Area, including Kitakyushu and Moji Ports. We aim to propose innovative and unconventional ways of utilizing ships that go beyond the traditional image of passenger vessels.

### ■SeaEra Project

We are currently advancing a project to commercialize a barge-type hydrogen production plant that utilizes onshore electricity to electrolyze seawater, produce hydrogen, store it, and supply it, with the support of the New Energy and Industrial Technology Development Organization (NEDO), in collaboration with three other parties, including our company.

### ■SHE's Project

A project involving seven parties, including our company, has been established to collectively explore the commercial operation of next-generation inland vessels that prioritize environmental considerations by introducing hydrogen-powered cargo ships. The primary objective of this project is to reduce greenhouse gas emissions generated by inland shipping while considering the Earth's environment.



MOTENA-Sea Project



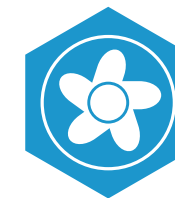
Sightseeing ship's business company  
MOTENA-Sea, Co.,Ltd.



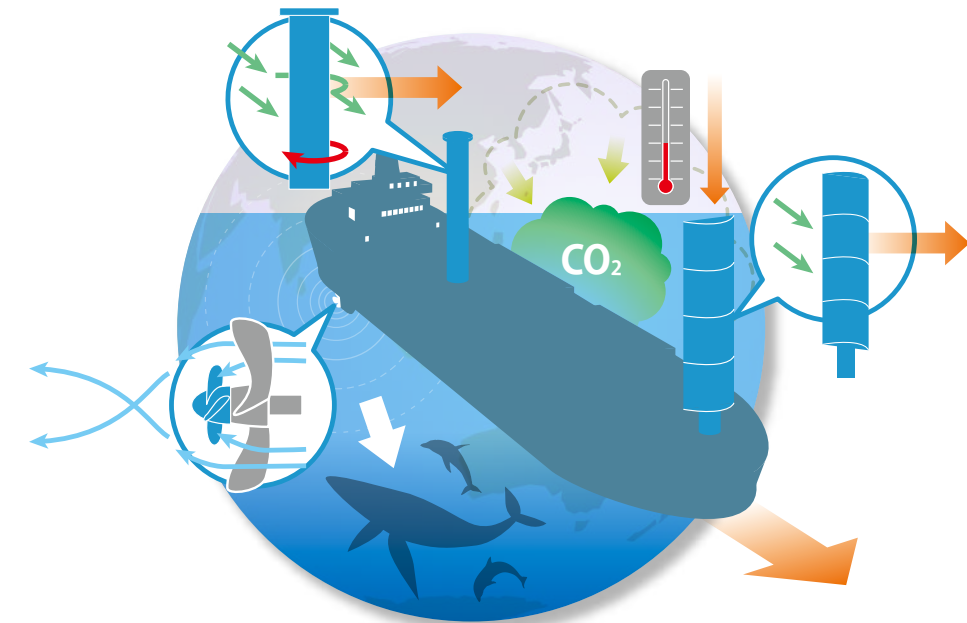
SeaEra Project



SHE's Project



## Eco-friendly and Safety Business – PBCF & Wind Propulsion



With our long-established expertise in high energy-efficient technology and wind power technology, we contribute to reducing environmental impact through CO<sub>2</sub> reduction and to marine conservation by reducing underwater noise.

### ■PBCF (Propeller Boss Cap Fins)

PBCF improves propeller efficiency by weakening the hub vortex generated behind the rotating propeller and reduces fuel consumption by about 5%. On a large containership, for example, that adds up to a 9,000-ton reduction in annual CO<sub>2</sub> emissions.

Another benefit of PBCF is the reduction of underwater noise in a specific frequency range by 3 to 6 decibels, as confirmed by water tank testing. This led to its selection as a vessel noise reduction technology in the "EcoAction Program" implemented by the Port of Vancouver, Canada.

### ■Norsepower Rotor Sail

The Rotor Sail is an auxiliary wind propulsion system based on the Flettner rotor, which uses wind power, and was developed into a modern, sophisticated system by Norsepower.

It can reduce fuel consumption by an average of 5%~20% with a corresponding reduction in CO<sub>2</sub> emissions annually. The Rotor Sail is a product that can be installed on both newbuild and existing vessels, contributing to global environmental conservation.

### ■Maritime Energy Efficiency Consultant

As a strategic subsidiary responsible for technology research and development within the Mitsui O.S.K. Lines (MOL) Group, we have been dedicated to research and development efforts related to emission reduction in shipping with a focus on mitigating global warming.

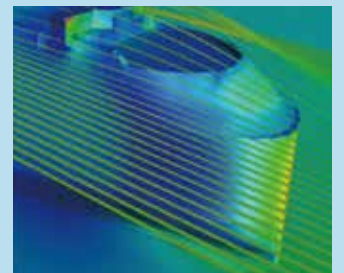
Our initiatives extend beyond underwater solutions, as we also focus on harnessing offshore wind power. We have independently developed the "ISHIN ship design" <sup>\*1</sup>, which utilizes lift generated by the airflow around the ship's hull to provide propulsion, reducing wind resistance around the vessel. Additionally, we have undertaken the development of a similar technology called "bow wind deflector" <sup>\*2</sup> specifically designed for container ships.

Furthermore, we are currently collaborating with the Mitsui O.S.K. Lines, Ltd. on their "FOCUS" project, which leverages operational big data. This collaboration aims to evolve into data-driven energy-saving solution development, further reducing emissions from vessels.

<sup>\*1</sup> Adopted on 4 vessels of the Mitsui O.S.K. Lines' next-generation car carrier series "FLEXIE" and 2 state-of-the-art LNG-powered ferries  
<sup>\*2</sup> Bow Wind Deflector installed on the bow of the container ship ONE MARVEL to reduce wind resistance

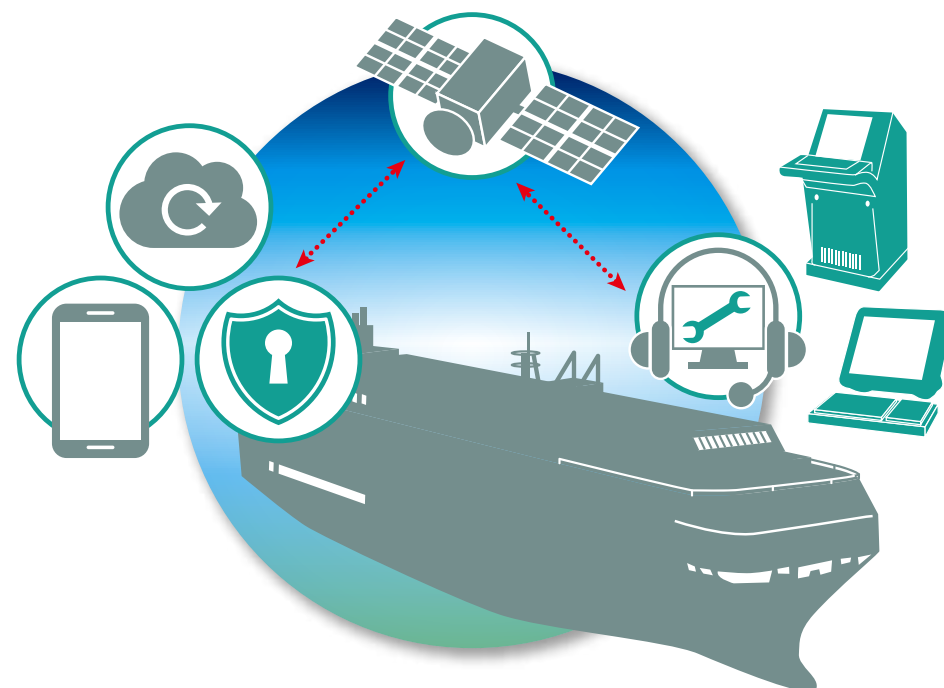


"Photo credit: Norsepower" in the Maersk's lican deck photo





## ICT Business



As a specialist in information communication and digital technology within the Mitsui O.S.K. Lines (MOL) Group, we aspire to be a service provider that offers safety and security in the maritime domain. We will continue to expand the following businesses.

### ■GNSS Jamming and Spoofing Onboard Alarm Device

#### •GNSS Jamming and Spoofing Resistant Antenna

The 8230AJ GPS/GNSS Anti-Jam Antenna blocks signals coming from low angles, where most interference waves arrive, and receives satellite signals only from high angles.

#### •GNSS Jamming and Spoofing Detector

BroadSense Nano is characterized by its small size, lightweight design, and low power consumption. Its ease of connection and operation with peripheral devices is notable.

### ■Cybersecurity

Through a partnership with Athena Dynamics Pte Ltd, which has an application for remotely monitoring the vulnerability of ships to cyberattacks, we will provide remote cybersecurity services to vessels in operation. Without the need for technicians to visit the ship, the application examines the information equipment and network system configuration on board, identifying security vulnerabilities.

### ■Atomic clock SAFRAN The miniature Rubidium Atomic Frequency Standard (miniRAFS)

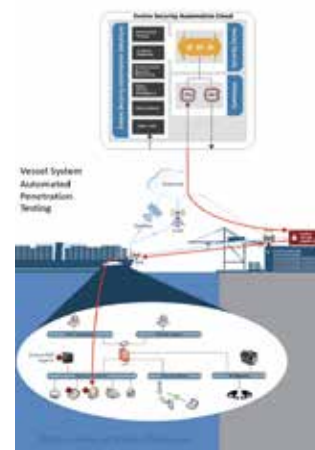
MiniRAFS is an advanced ultra-stable atomic clock that achieves frequency accuracy superior to 1E-9 over a 10-year operational period in orbit, as well as exceptional short-term and medium-term frequency stability. Designed using state-of-the-art technology, it offers advanced features such as long lifespan, high reliability, ultra-lightweight design, and ultra-low phase noise, making it ideal for next-generation space applications.

### ■Satellite VDES

VDES (VHF Data Exchange System) is a system designed to expand the Automatic Identification System (AIS) and establish a two-way communication network. To promote the use of Satellite VDES, we are participating in a consortium where various stakeholders from industry, academia, and government collaborate.

### ■Remote maintenance

We aim to achieve remote maintenance services for inspections, servicing, repairs, and replacements without the need for technicians to visit the vessel, in line with the proliferation of remote monitoring technology.



## Fuel Business



Leveraging the strength of the Mitsui O.S.K. Lines Group's credibility and brand strength, we offer marine transportation and sales from existing fuels to new fuels and add them to our customers. We aim to make further progress as a fuel sales company that provides value.

### ■Fuel/Lubricant Supply Service

We provide ship fuels and lubricants not only in Japan's domestic market but also worldwide, for coastal ships and ocean-going vessels alike. We have five of our own fuel supply vessels providing swift, efficient service to vessels calling in Tokyo and Osaka bays.

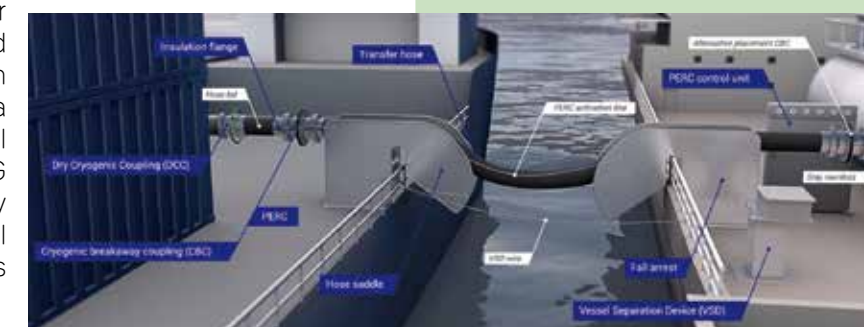
We are upgrading our owned and operated fuel supply vessels to add even greater value, meeting the needs of the times with enhanced with the environmental performance and safety equipment. In Tokyo Bay, we launched our new fuel supply vessel, the Techno Star, in 2017, followed by the Techno Ace in April 2022.

The Techno Ace is Japan's first fuel supply vessel to earn the top rating of five stars for its superior environmental performance in the Ministry of Land, Infrastructure, Transport and Tourism (MLIT)'s energy conservation rating system for Japanese coastal ships. We developed the Ship-to-Ship (STS) auxiliary device that uses electromagnetic force to connect vessels, acquired the patent, and installed it on vessel.

In addition, as an initiative on new fuels, we procure and sell LNG fuel in Japan as a bridge solution toward zero emissions in the future.

### ■LNG-Related Equipment Sales

Building upon the LNG handling expertise that the Mitsui O.S.K. Lines Group has cultivated over the years, our company deals in equipment related to cryogenic gases, including LNG. In recent times, there has been a transformative shift from traditional heavy oil to cleaner fuels such as LNG for ship propulsion. We are actively riding this wave of technological innovation, supporting stakeholders during this period of change.







## Ship Management Support Business



We are engaged in the sale of various parts, materials and equipment used in ships. Leveraging the purchasing power, technical expertise, and proposal capabilities of the Mitsui O.S.K. Lines Group, we aim to become a globally trusted technology trading company by ship management companies.

### ■ Meeting customer needs with high-quality products, technology, and services

We offer an amazing selection of products for vessels, from equipment for main engine and auxiliary machinery to foodstuffs. We also support the operation of all types of vessels with a range of marine products such as paints, high-pressure washing equipment, and special cleaning agents, along with supplies required for sale and smooth cargo handling. We have established bases not only domestically but also in Singapore and the Netherlands to provide support worldwide.

### ■ We provide value-added services based on the information cultivated through the Mitsui O.S.K. Lines (MOL) Group's procurement

Drawing upon our extensive experience of supplying the MOL fleet over the years, we offer the best products necessary for safe vessel operation at competitive prices.

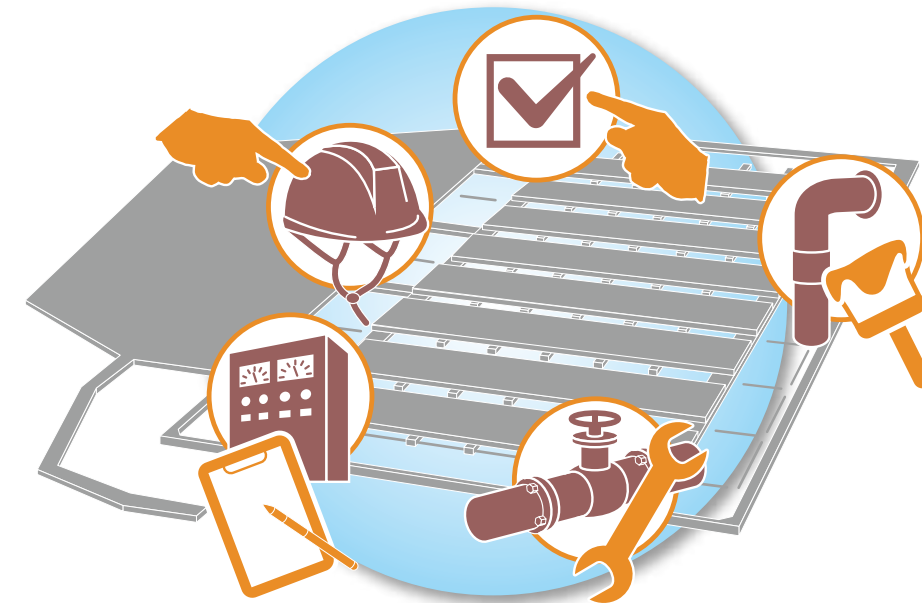
### ■ We support the safe operation of ship crews

We promptly and reliably deliver safety equipment, including VIKING products (PPE, etc.), to vessels.

We propose systems tailored to various purposes, such as shipboard fire prevention, cargo handling, security surveillance, based on our experience and track record. We assist in understanding on-site conditions, decision-making, and implementing safety measures.



## Facility Maintenance Business for National Oil Storage Vessels



Since the commencement of operations at the Shirashima National Petroleum Stockpiling Base to the present day, we have extensively applied the advanced maintenance techniques developed through our experience in shipping to the maintenance and management of storage vessel facilities. At Shirashima National Petroleum Stockpiling Base, we extensively deploy advanced maintenance techniques and play a significant role in the maintenance and management of storage vessel facilities. In the year 2000, we obtained certification for ISO 9001, the international standard for quality management systems (updated to ISO 9001:2015 in 2017). We continue to operate under this certification, aiming to enhance quality through ongoing maintenance and management of crude oil storage vessels while meeting the needs of our customers.

### ■ Key Operations:

#### (1) Maintenance and Management Services

To ensure the safe and stable storage of crude oil and the ability to handle oil receipts and deliveries at any time, we conduct equipment inspections and maintenance, keeping all the facilities on the storage vessels in good working condition.

#### (2) Evaluation of New Technologies and Cost-effectiveness for Long-term Maintenance and Preservation

We are conducting investigations and evaluations, including new technologies, for the renewal of equipment and replacement parts, in response to the aging of facilities and structures, as well as component failures and production discontinuations, and making proposals accordingly.

#### (3) Overall Management of Inspection Work Conducted Every Five Years on Emptying Storage Vessels (700,000 kL each)

We are responsible for supervising and managing extensive construction tasks such as the installation of new temporary facilities, transportation of crane barges, placement of heavy machinery, and similar activities, acting in a supporting role for Shirashima Petroleum Reserves personnel.





## **MOL Techno-Trade, Ltd.**

KANDA SQUARE 18F,2-1, Kanda nishiki cha 2-Chome, Chiyoda-ku, Tokyo 101-0054, Japan



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