



100

Prosperity for Our Next 100 Years, With You

**Mitsui
Engineering &
Shipbuilding**

100



Technology for Our Next 100 Years



100

Society for Our Next 100 Years

100

Prosperity for Our Next 100 Years, With You

Established in 1917 as the Shipbuilding Division of Mitsui & Co., Ltd.
Since then, for nearly 100 years,
Mitsui Engineering & Shipbuilding has put numerous ships to sea.

From mechanical and electrical engineering to
civil works and communications,
MES has developed a diverse business portfolio based on a platform
of our highly advanced shipbuilding operations.
Proven under the toughest conditions on the open ocean,
our technology evolved to be used in numerous applications on land.
MES technology came to become a vital component
in the development of critical social infrastructure,
including power plants around the world.

And today, we stand on the cusp of a new age.
Global increase in energy demand,
major changes in industry structures caused by the shale gas revolution,
unilateral need for advancements in environmental performance.
The work we do today can create prosperity
in our society for the next 100 years.
That is the challenge facing our generation.

Shipbuilding, Machine, Engineering, Offshore Equipment.
As MES, we will consolidate our diverse array of advanced technology
into four business segments as begin to walk
with you towards the next 100 years.

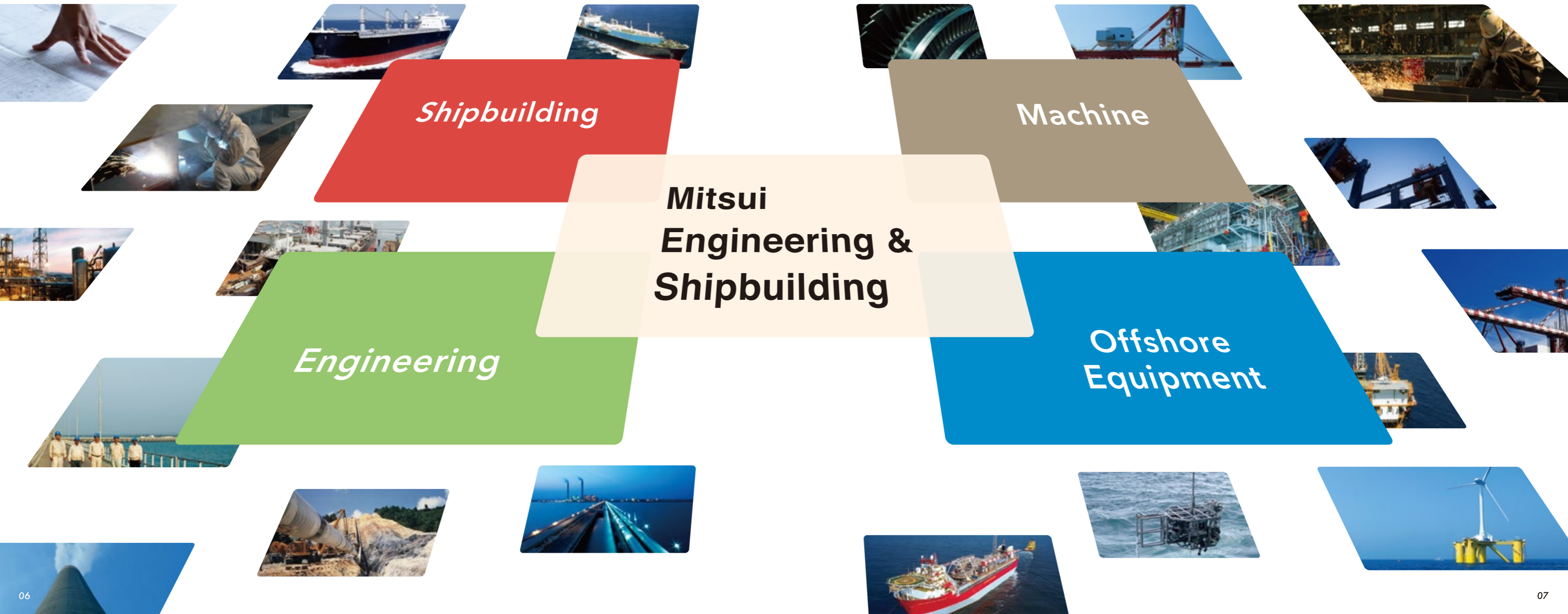


The Path to Prosperity for Our Next 100 Years

- Our 4 Core Business Segments

The ocean covers approximately 70% of the earth's surface. Beyond enabling marine transport that connects the world, the ocean is a place for excavating valuable resources and creating renewable energy. This need is expected to grow over the next 100 years. To address changes in the global energy structure, at MES we will consolidate our diverse range of technologies developed over the years into four business segments. Our mission will not end with the construction of products and plants. We will broaden our stance to provide continuous support for both operations and maintenance and business management. Through this initiative and together with our customers, MES will create prosperity for the next 100 years.

100



*A century of shipbuilding tradition.
Continuous advancements,
towards the oceans of tomorrow.*



310,000 DWT Tanker, "GASSAN"

Shipbuilding



Shipbuilding

From a diverse range of merchant vessels to the most advanced military ships. Advanced ocean technology is our strength.

The prosperity of MES is founded on our shipbuilding business.

We continue to evolve by applying current needs to our accumulated technology to drive innovation.

MES has launched a vast number of ships. From a diverse range of commercial ships including LNG carriers, very large crude carriers, and bulk carriers, to the most advanced military ships, including naval vessels for the Ministry of Defense and patrol boats for Japan Coast Guard.

And to address the global issue of environmental preservation,

MES has proactively worked towards the reduction of greenhouse gases and has become a leader in the development of environment-friendly ships that significantly reduce CO₂ emissions.

Completion of the neo 66BC, a fuel efficient eco-ship that reduces CO₂ emissions by 20%.

Our best-selling ship with more than 170 new orders received, the neo 66BC is an eco-ship that maintains the operability of the Mitsui's 56 while increasing the ship's size and incorporating an electrically controlled engine to vastly increase both energy conservation performance and cargo capacity. The neo 66BC succeeds in cutting CO₂ emissions by 20% compared to conventional ships. (Awarded the Award for Excellence at the 2011 Nikkei Superior Products and Services Awards) Together with the neo 56BC and the neo 60BC, MES will continue to solidify its position as a pioneer in the eco-ship segment.



neo66BC 66,000 DWT Type Bulk Carrier, "CLIPPER EXCALIBUR"

We are responding to the need for LNG ships that can safely transport LNG, considered a valuable clean energy resource.

The growing global demand for LNG (liquid natural gas). The ships that transport LNG require special technology able to maintain gas liquefied at -162°C in a low temperature state during transport. Thus far, MES has built 16 LNG carriers and we will continue to meet global demand by building environment-friendly LNG ships.



145,000m³ LNG Carrier, "GRAND MEREYA"

Products



Membrane Type LNG Carrier, "PUTERI DELIMA SATU"



320,000 DWT Ore Carrier, "BRASIL MARU"



310,000 DWT Tanker, "GASSAN"



174,600 DWT Type Bulk Carrier, "NEW EXPEDITION"



neo56BC 56,000 DWT Type Bulk Carrier, "AFRICAN PUFFIN"



Destroyer "Fuyuzuki"



1,000 Ton Type Patrol Boat "Aguni"



Training Vessel "Taisei Maru"



Tank Landing Ship "OSUMI"

*Proactive in technology partnerships with
manufacturers around the world.
Technology advancements propelling us to new heights.*



Quay Gantry Crane "PORTAINER"

Machine



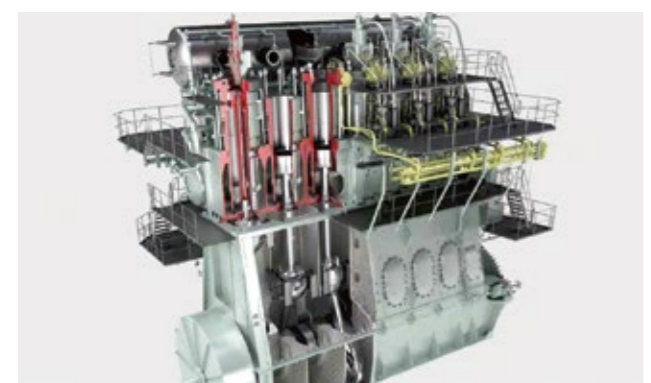
Machine

Building engines that have revolutionized shipbuilding, crane systems that have supported distribution, and industrial machinery that is vital to furnaces and plants.

Since a technology partnership formed in 1926, our diesel engine business has grown to secure a more than 50% share of the domestic market as MES maintains a firm position as the top manufacturer in Japan. And with more than 1,500 cranes and 200 CTMSs operating in terminals around the world, MES holds a strong share of the domestic and international container crane market. MES also has a strong record of delivering critical industrial machines used in steel refinery furnaces and chemical plants in Japan, Southeast Asia, and around the world.

Full-scale provision of the ME-GI / ME-GI-Ethane / ME-LGI, An electronically-controlled Gas injection diesel engine.

The ME-GI is an engine that is able to use both heavy oil and natural gas for fuel. The ME-GI is a revolutionary low-speed diesel engine that achieves superior environment-friendly and economic performance. The world's first low-speed gas injection diesel engine (GIDE) power plant was constructed inside the Chiba Works. Conducting some 20,000 hours of test runs, we confirmed performance and endurance, while also gaining valuable knowledge concerning operation. MES can meet a wide range of fuel needs, including the ME-GI (liquefied natural gas (LNG) and heavy oil), the ME-GI-ethane (ethane and heavy oil), ME-LGI (heavy oil, methanol, and other fuels). We will continue to provide our customers with eco-friendly and highly economical propulsion systems.



The ME-GI electronically-controlled gas injection diesel engine

Into the growing port regions of Southeast Asia and Africa. Comprehensive container terminal planning.

As global distribution volume grows, there is booming demand for new container terminal construction, terminal expansion, and terminal replacement. Our large-scale cranes are being deployed throughout Southeast Asia and Africa, regions that are seeing increased port construction. Recently, MES has delivered a wide range of environment-friendly products, including rubber tyred gantry cranes and new highly efficient quay side gantry cranes, as well as comprehensive management systems for container terminals. MES contributes to the optimization of container distribution.



Our record of performance includes over 300 Portainer quayside gantry cranes, 1,200 Transtainer rubber tyred cranes and 200 CTMSs all over the world.

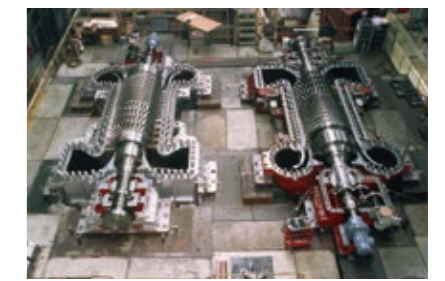
Products



Electronically Controlled Diesel Engine (Mitsui-MAN B&W Type)



Reciprocating Compressor



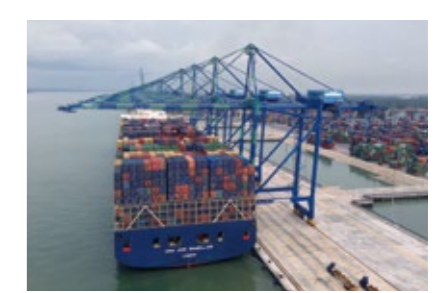
Axial Flow Compressor



Top Pressure Recovery Turbine



MSC Series Gas Turbine Co-Generation System



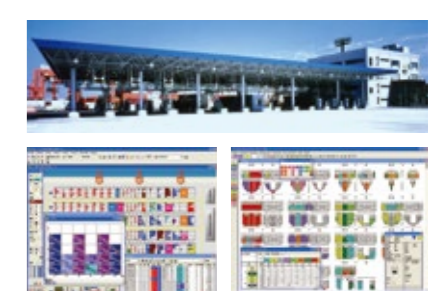
Quay Gantry Crane "PORTAINER"



Container Yard Transfer Crane "TRANSTAINER"



Bridge Type Crane for Shipment of Products



Container Terminal Management System

*Design, procurement, and construction.
Your total solution for plant construction.*



Indonesia Tanjung Jati B Coal-Fired Power Plant

Engineering



Engineering

Record of more than 1,300 plant projects in 40 countries around the world. Our strength lies in our ability to provide a total solution, including design, procurement, and construction.

Since our first involvement in a chemical plant construction in 1926, MES has built a vast portfolio of experience in numerous plant projects. Our record of experience spans more than 1,300 plant projects in 40 countries around the world. Founded on a platform of shipbuilding technology such as ship boilers and power generators, from design to maintenance, MES provides comprehensive engineering solutions. Our other major strength is the fact that we have our own plants and we have the internal capacity to design and manufacture the devices and equipment necessary for projects.

Reliable support at each phase for EPC project.

Since shale gas became available as a low-cost resource, large-scale chemical plant projects are on the rise in USA. MES was quick to recognize this trend and was successful in securing new EPC (engineering, procurement, and construction) orders for petrochemical plants by the involvement at early planning stage of the project. We will continue to respond rapidly to the needs of the plant market.



Synthetic Resin Plant

New orders received are growing in Singapore and other regions of Southeast Asia.

Since 1982, we have completed more than 30 petrochemical EPC projects in Singapore. We will continue to focus sales activities on securing new orders in the Southeast Asia region, which is seeing increased investments in the petrochemical industry.



MES plant construction history

Products



Petrochemical Plant



Sulfuric Acid Plant



Rotary Dryer



Reactor



Marine and Land Public Work for Coal Fired Power Station "TANJUNG JATI"



Diesel Engine Generating Plant



Biogas Plant



Biomass Plant



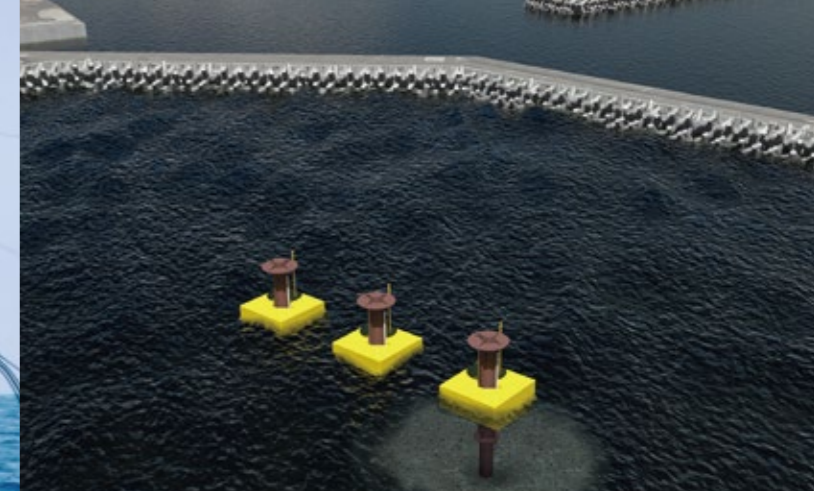
Kitchen Garbage Recycling Plant for Cattle Feed and Fertilizing Compost "Templar M21"

*Technology for surviving on the open ocean
now used to develop the ocean's hidden potential.*



Hull part of a Floating Production, Storage and Offloading Unit ("FPSO Hull")

Offshore Equipment



Offshore Equipment

From power generation to resource production and seabed exploration, we are combining accumulated technology to provide a diverse range of support for next-generation ocean resource development.

Through our many years of experience in shipbuilding and offshore structure construction, MES has developed the technology to battle the severe natural environment of the ocean.

We have cultivated numerous technologies to suppress the power of the ocean, including floating structure design technology and mooring technology. Moving forward, we will apply these technologies toward further harnessing the power of the ocean and solidify our businesses related to ocean resource development.

Offshore wind power and other power generation systems, FPSO (floating production, storage, and offloading), exploration systems using underwater robots: MES has the technology to contribute in a variety of areas.

Through our technology portfolio, we will work to meet the bustling needs of the ocean development industry.

Enhancing our FPSO business: A floating system for production and storage of oil and gas at sea to deliver them to oil tankers directly on the sea.

An FPSO (Floating Production Storage and Offloading System) is a massive ship-like structure in the ocean that is equipped with large-scale heavy oil and gas production equipment; an FPSO is the equivalent of a floating plant. The merits of FPSO have it a popular format for ocean-bound petroleum production. Such merits include the ability to handle severe climate conditions, operability in deep-sea environments, the ability to develop heavy oil in remote offshore sites, and a smaller environmental footprint in comparison to fixed-location facilities. MES and MODEC will continue our focused efforts on this segment.



The FPSO Cidade de Angra dos Reis MV22, currently being offered on charter by MODEC to Petrobras.

The dream of new energy development is within our sights.

Compared to inland sites, wind power is more suited to the ocean environment due to stronger and more consistent winds. MES has remained step ahead of our competitors in the effort to validate offshore wind power for commercialization. This accumulated technology was a major benefit to the success of constructing and installing a 2MW floating wind turbine in the Fukushima Bay.



The wind turbine was mounted at the MES Chiba Works and towed to the Onahama Bay in Fukushima Prefecture.

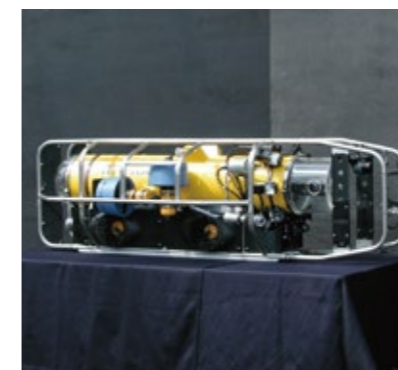
Products



Deep Sea Scientific Riser Drilling Vessel "CHIKYU"



Deep Sea Survey Vehicle



Underwater Vehicle for Inspection



Autonomous Underwater Vehicle



Offshore Floating Wind

Developing the unimaginable potential of the ocean.

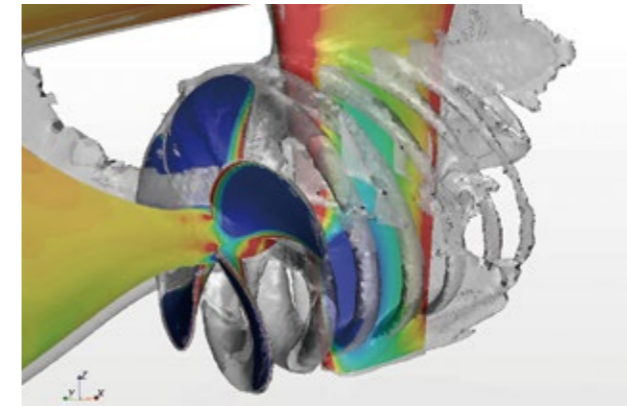


Measuring the flow fields around a ship using a towed PIV device

Business and Technology Development

CFD and other technology to support the MES competitive advantage.

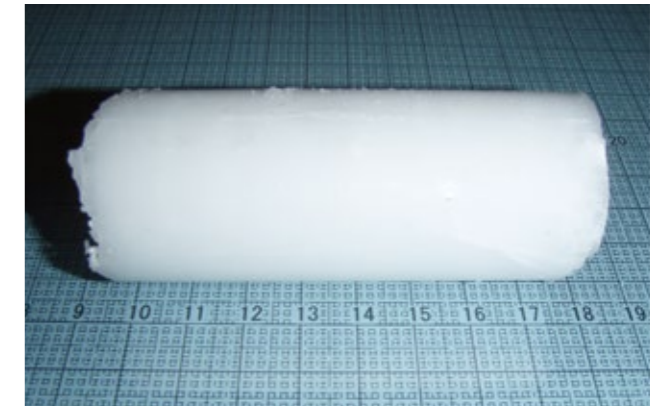
In the shipbuilding and offshore equipment segment, MES uses advanced systems fusing experimental flow dynamics (EFD) and computational flow dynamics (CFD) to not only improve propulsion and fuel efficiency and contribute to reducing CO₂ and other environmental burden, but also to support high value-added product design and manufacturing such as vibration and noise reduction. In the machinery and engineering segment, we apply structural and durability analysis technology to achieve a high level of both product performance and reliability. To ensure the safe control of complex systems, we also are working to combine system simulations and control technology.



Using CFD to analyze flow dynamics around a screw.

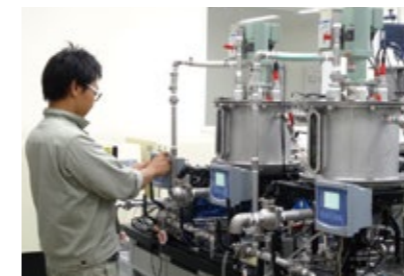
Working to reduce the environmental burden of products while developing technology to expand our ocean business.

MES is enhancing and accelerating our development of technology for use in our ocean business, which we believe will become the core of our operations. In particular, we are actively working to apply numerous years of experience in hydrate production toward innovative technology for the field of ocean methane hydrate resource development. To continue providing environment-friendly, high-performing, and highly reliable products, we will continue to develop technologies for analyzing structure, heat, and fluid dynamics. At the same time, we will look to achieve innovations in production technology as we maintain and increase our competitive edge in manufacturing.



Methane hydrate produced by MES

Technology



Basic research in methane fermentation



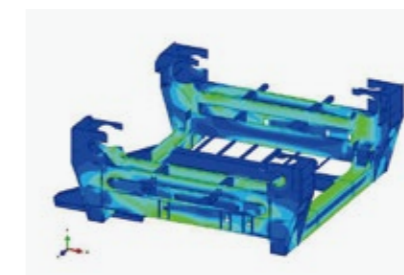
Development of diesel engine exhaust gas cleaning system



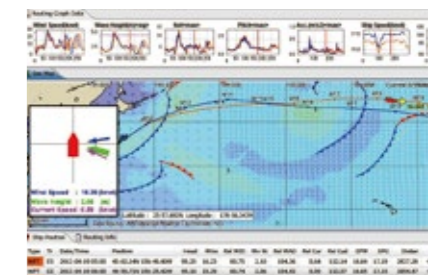
Development of technology to reduce noise levels on board ships



Durability assessments for submerged equipment structural components



Optimal designs for crane structural components



Next-generation advanced navigation support systems

Offices and Works

Tamano Works



□ Area of site 1,028,000㎡ □ Total Area of factories 373,906㎡

Major Products

- Shipbuilding □ Offshore Projects
- Marine Diesel Engine □ Ship Repairs
- Power Plant □ Machinery for Marine Use
- High-Speed Ship □ Chemical Plant
- Machinery for Land Use □ Others

Oita Works



□ Area of site 1,701,890㎡ □ Total Area of factories 86,688㎡

Major Products

- Cranes □ Steel Structures
- Others

Chiba Works



□ Area of site 859,000㎡ □ Total Area of factories 223,000㎡

Major Products

- Shipbuilding □ Ship Repairs
- Offshore Projects

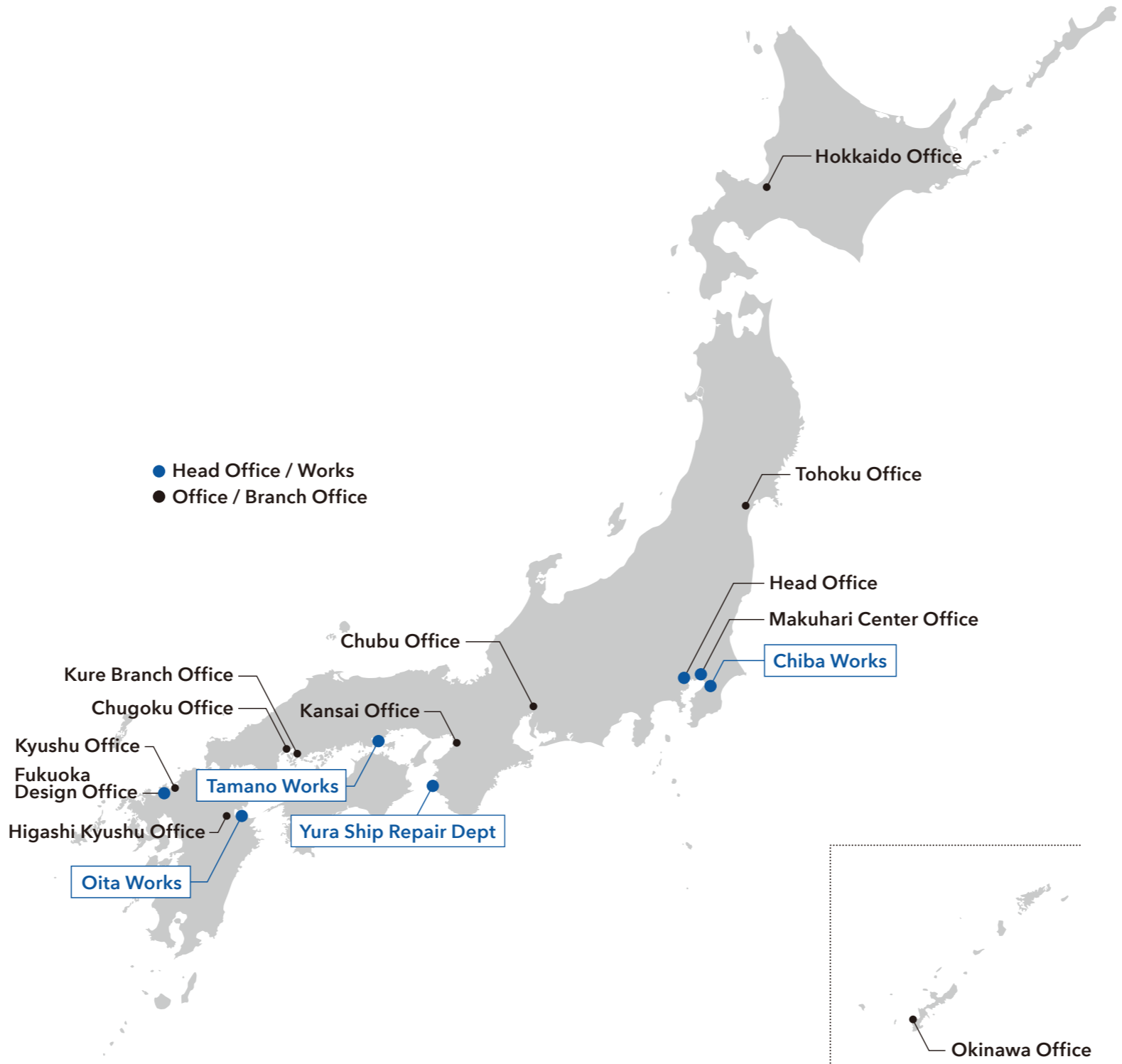
Yura Ship Repair Dept



□ Area of site 142,000㎡ □ Total Area of factories 12,153㎡
□ Repair Dock 65m × 405m

Major Products

- Ship Repairs
- Shipbuilding Blocks



Domestic major group companies

Ship & Ocean Project Headquarters

- MODEC, Inc.
- Niigata Shipbuilding & Repair, Inc.
- Shikoku Dockyard Co., Ltd.
- Akishima Laboratories (Mitsui Zosen) Inc.
- M.E.S Tokki Co., Ltd.
- MES Shipping Co., Ltd.
- MES-KHI Yura Dock Co., Ltd.
- Mitsui Zosen Chiba Kiko Engineering Inc.

Machinery & Systems Headquarters

- Mitsui Zosen Machinery & Service. Inc.
- MES Technoservice Co., Ltd.
- Mitsui Meehanite Metal Co., Ltd.
- Sanzo Manufacturing & Construction Co., Ltd.
- MES Power-Electronics Industry Co., Ltd.
- Mitsui Zosen Steel Structures Engineering Co., Ltd.
- MES Testing & Research Center Co., Ltd.
- DPS Bridge Works Co., Ltd.
- Kaji Technology Corporation
- AZUMA Machinery Co., Ltd.

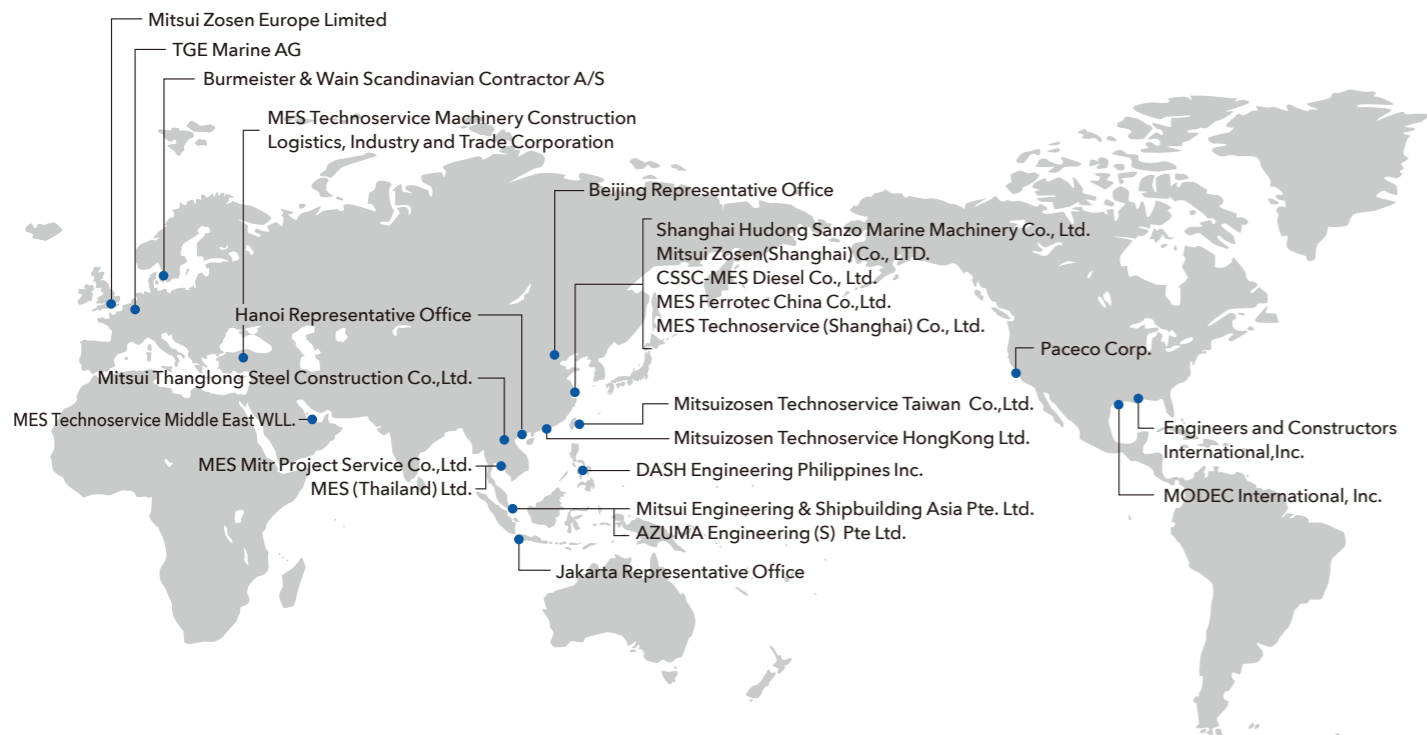
Engineering Headquarters

- Mitsui Zosen Plant Engineering Inc.
- Mitsui Zosen Environment Engineering Corporation
- Sanzo Yuki Recycle K.K.
- Hamamatsu Green Wave Co., Ltd.
- Green Power Ichihara Co., Ltd.
- Betsukai Biogas Power Co., Ltd.

Corporate Management Divisions etc.

- Showa Aircraft Industry Co., Ltd.
- Mitsui Zosen Systems Research Inc.
- MES Facilities Co., Ltd.

Overseas network



Chronology

1917 Established as the Shipbuilding Division of Mitsui & Co., Ltd. in Tamano City (Presently), Okayama Pref.

1926 Entered the technical licensing agreement with Burmeister & Wain A/S of Denmark for marine diesel engine production.

1937 Separated from Mitsui & Co., Ltd. to become Tama Shipyard Co., Ltd.

1942 Changed company name to Mitsui Shipbuilding & Engineering Co., Ltd.

1948 Completed the first export steel whaler KNURR built in Japan since the end of the war.

1952 Moved head office functions to Tokyo.

Organized the department for research and development at Tamano Shipyard.

1961 Launched the world's first large-size automated vessel, KINKASAN MARU.

Entered the technical license agreement with PACECO, Inc. concerning the PACECO type container cranes.

1962 Chiba Works commenced operation.

1962 Concluded an export contract of sulfuric acid production plant (largest of its kind in Japan) for Taiwan Fertilizer Co., Ltd.

1966 Exported the first Japanese-made hovercraft to Thailand.

Delivered the world's largest capacity axial flow blower for the blast furnace for Nippon Kokan. (Presently JFE Steel Corporation)

1967 Completed Japan's first shore-side container crane.

Opened Chiba Laboratory at Chiba Works.

1968 Completed the 500,000 dwt building dock at Chiba Works.

Completed an 8,000 kW capacity gas turbine for land use for export to East Pakistan, as the first of its kind built by the company.

1971 Completed Mitsuminesan Maru, Japan's first super automated tanker qualified for the unmanned operation in the engine room.

1973 Ship repair yard, Yura Dockyard, commenced operation.

1975 Completed Berge Emperor, a 400,000 dwt class oil tanker, the largest of its kind ever built by the company.

1976 Changed company name in English to Mitsui Engineering & Shipbuilding Co., Ltd.

1978 Opened the Akishima Laboratory.

1981 Oita Works commenced operation.

1984 Completed our first MOSS type LNG carrier SENSU MARU (of 125,000 m³ capacity)

1988 Acquired PACECO's crane trading rights and shares.

1990 Bought out Burmeister & Wain Scandinavian Contractor A/S, a power generation engineering firm of Denmark.

1995 Completed 10,000 m-class deep sea unmanned ROV KAIKO.

1999 Changed the former Yura Dockyard into a subsidiary company, MES Yura Inc.

2002 Launched deep-sea scientific riser drilling vessel CHIKYU for Japan Marine Science and Technology Center.

Completed MES's first membrane type LNG carrier Puteri Delima Satu with the loading capacity of 147,100 m³.

2003 Established Niigata Shipbuilding & Repair, Inc., buying out shipbuilding related business from Niigata Engineering Co. Ltd.

MODEC Inc. listed on the Tokyo Stock Exchange Market for the first time as a subsidiary company of MES.

2005 Established new company philosophy, management policy and standards of conduct.

2006 Completed installation of 1000-ton goliath crane at Chiba Works.

2007 Opened a Technology Succession Center in Tamano Works and Chiba Works.

Opened a Safety Training Center in Tamano Works.

Completed world's largest class ore carrier 320,000 dwt BRASIL MARU.

2008 Achieved accumulated production of 700 units in PC hybrid pontoon.

2009 Accumulated orders of reciprocating compressor reaches 1,000.

2010 Deliveries of Mitsui's 56, a big hit 56,000 dwt bulk carrier series by MES reaches 100.

2011 Our joint venture company in China MES FERROTEC CHINA CO., LTD. starts production of induction heater equipment.

2011 Accomplished accumulated shipment of 1,000 rubber tyred gantry cranes, Transtainer.

2013 Delivered neo Supramax 66BC, a next-generation environment-friendly, fuel-efficient eco-ship.

2014 Showa Aircraft Industry Co., Ltd. is consolidated as a subsidiary.

2014 Shipped 300th Portainer, a quayside gantry crane.

2015 Achieved the world record in accumulated production of 90 million bhp with a single brand of Mitsui-MAN B&W diesel engine.





<http://www.mes.co.jp/>