Japan Ship Machinery and Equipment Association (JSMEA) celebrates its 50th anniversary this year. We held a commemoration ceremony and a celebration gathering in Tokyo on June 17. During the ceremony, letters of appreciation were offered to member companies and The Nippon Foundation. Also, a memorial concert was performed by a string quartet. The ceremony and gathering were both well attended. In June 1966, we began as The Ship Machinery Manufacturers' Association of Japan through a merger of three relevant organizations.

In 1991, we merged with the Japan Ship Machinery External-Trade Association and renamed ourselves Japanese Marine Equipment Association. In 2012, we again changed our name to what we are known as today.

To constantly provide customers in Japan and overseas with products of excellent quality, the Japanese ship machinery and equipment industry will deepen interchanges with other members of the Japanese maritime cluster. We will also continue to expand our global perspective, further differentiate our products from others and strive hard to cultivate new markets.

On the final note, we have come this far, celebrating our 50th anniversary, thanks to the caring advice and guidance from the Ministry of Land, Infrastructure, Transport and Tourism (MLIT), The Nippon Foundation, our member companies and relevant organizations from around the world, all of whom has given us endless support since our establishment. Here, we would like to express to them our deepest appreciation.

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CHUGOKU MARINE PAINTS, LTD.
DAIHATSU DIESEL MFG. CO., LTD.
Ebn International Corporation
Wartsila Japan Ltd.
JPCS MFG. CO., LTD.
MANABE ZOKI COMPANY LIMITED
Port Enterprise Co., Ltd.
SEIMCO LTD.
Takashina Life Preservers Co., Ltd.
VOLCANO CO., LTD.

Smart Ship Application Platform 2 Project 20

**History**

1966 The Japan Shipbuilding Related Industries Association (established in October 1956) is renamed Japan Ship Machinery and Equipment Association (JSMEA) when merged with the Japan Marine Engine Association (established in November 1948)

1991 JSMEA takes over the Japan Ship Machinery External-Trade Association.

1994 JSMEA takes over the Japan Marine Machinery Development Association.

2013 JSMEA changes its status from an incorporated foundation to a general incorporated foundation.
Japan Ship Machinery and Equipment Association (JSMEA) participated in the Offshore Technology Conference (OTC) 2016 through funding by The Nippon Foundation. In partnership with INPEX Corp., 16 member companies and others, it set up a Japan pavilion, only for the second time, after a 47-year absence from the event, which this year was held in Houston, Texas on May 2-5. This was, however, the fourth time for JSMEA to make its presence at the OTC, one of the largest international maritime exhibitions in the world.

While it had been expected that the number of visitors would decrease significantly from a year earlier due to the collapse in crude oil prices that began last year, OTC 2016 ended up welcoming 68,000 visitors. It was the 15th highest attendance in the history of the international conference, which started in 1969, according to the organizer, though admittedly it was a notable drop from the 94,700 visitors in 2015. The organizer also unveiled that the total area for exhibitions was 672,300 square feet, which was the third largest in its history, indicating that there were again many exhibitors promoting their products, services and other features, a situation that remained nearly unchanged from the previous year.

During OTC 2016, JSMEA showcased machinery and equipment for offshore development that are made in Japan by its members, making full use of the latest edition of its brochure for such products. Members ran booths to market their respective products and introduced their efforts made toward offshore projects.

JSMEA also orchestrated the following peripheral events while in Texas to attend OTC 2016.

1. April 29: Mr. Masaharu Ono and Mr. Shoichi Kitamura, vice-chairman and executive managing director of JSMEA, respectively, led a delegation to pay a courtesy call on the Houston Office of INPEX.
2. April 30: JSMEA organized a get-together with Japanese enterprises doing business in Houston, meeting with Fuji Trading Co., Ltd.; Isoda Metal Co., Ltd.; Kanematsu USA Inc., Manabezoki Co., Ltd.; Mitsui O.S.K. Bulk Shipping (USA), LLC.; Sojitsu Corp. of America and Ushio Reinetsu Co., Ltd.
3. May 1: JSMEA took a tour of museums of offshore oil development and relevant facilities. A team of 28 individuals visited the following places, inspecting so-called “subsea Christmas trees,” popping units and other rare facilities. It visited the Houston Museum of Natural Science (HMNS), the Ocean Star Offshore Drilling Rig and Museum, the Goose Creek Oil Field and the Fishers Reef Oil Field.

JSMEA takes part in OTC 2016

Japanese flags hoisted at Japan pavilion after 47-year absence from OTC

JSMEA delegation pays a courtesy call on INPEX Houston Office

JSMEA exchanges views with INPEX

INPEX General Manager Toshio Todoroki

JSMEA Vice-Chairman Masaharu Ono

JSMEA mission inspects oil development-related museums, facilities

Mr. Toshifumi Ishiya, director of the Ocean Development Strategy Office at the MLIT Maritime Bureau’s Ocean Development and Environment Policy Division

Mr. Shigeharu Oda, leader of JSMEA’s Offshore Development Strategy Review Board.
(4) May 1: JSMEA held a rally with INPEX, at which some 70 members exchanged views.

(5) May 1: Mr. Junji Kurokawa, chief executive director of the Japan External Trade Organization (JETRO) Houston, delivered a lecture to approximately 70 participants on Japanese businesses making inroads into Texas and business opportunities.

(6) May 2: A group of 21 members visited MODEC International, Inc. to learn about its latest project development and attend a question-and-answer session.

(7) May 3: JSMEA organized a networking reception, inviting offshore developers to Minute Maid Stadium. Some 180 guests were invited to the reception, although approximately 120 were present at a similar meeting JSMEA last convened. Guests represented INPEX, Japan Petroleum Exploration Co., Ltd. (JAPEX), Sakhalin Oil and Gas Development Co., Ltd. (SODECO) and other oil companies; Noble Corporation plc., MODEC International and other offshore oil and gas drilling and owning companies; and engineering companies that included Aker Solutions ASA, Baker Hughes Inc., Chiyoda Corp., JGC Corp., Schlumberger Ltd. and Toyo Engineering Corp. It also invited representatives from the American Bureau of Shipping (ABS), Nippon Kaiji Kyokai (ClassNK) and other classification societies as well as the OTC organizer. The reception helped to strengthen relations with the 16 JSMEA-affiliated companies that were also in attendance.

JSMEA plans to return to the OTC in 2017, securing a 4,000-square-foot space in the middle of the Pavilion area, which would be more spacious than the 3,400-square-goot area that it had this year. As such, the organization aims to have its Offshore Development Strategy Review Board (including its Mobile Units and Support Vessel working groups) begin holding discussions as soon as possible on how to exhibit products, services and other features as well as other relevant subjects.

**About OTC 2016**

**Official title:** Offshore Technology Conference 2016

**Dates:** Monday-Thursday, May 2-5, 2016

**Venue:** NRG Park

**Booth nos. at the Japan pavilion:** 11825 and 12125, both of which were located in the Pavilion area


**About networking reception**

**Time and date:** from 18:00 on Tuesday, May 3

**Venue:** Minute Maid Stadium

**Number of participants:** 180
Japan Ship Machinery and Equipment Association (JSMEA) attended Posidonia 2016 in Greece on June 5-10. With financial support from The Nippon Foundation, it led a delegation of 12 member companies to the international shipping exhibition.

On the first day, Mr. Masuo Nishibayashi, Japanese ambassador to Greece, and Mr. Kazuo Tsukuda, president of the Japan Ship Exporters' Association (JSEA), joined Mr. Motoyoshi Nakashima, chairman of JSMEA, in cutting the ribbon for the opening of the Japan Pavilion. Mr. Alexis Tsipras, prime minister of Greece, came to the official opening ceremony for Posidonia 2016. After the ceremony, the premier stopped by the Japan Pavilion, where he exchanged greetings with Mr. Masaharu Ono, vice-chairman of JSMEA.

On the second day, JSMEA held a seminar at the exhibition venue jointly with the Ministry of Land, Infrastructure, Transport and Tourism (MLIT); the JSEA; and Nippon Kaiji Kyokai (ClassNK). Six JSMEA-affiliated manufacturers and two Japanese shipbuilding companies introduced their respective energy-saving and/or safety products at the seminar, which saw more than 150 attendees from local ship owners as well as other companies and organizations.

On the third day, Mr. Ono visited the Union of Greek Shipowners (UGS), accompanied by representatives from four member enterprises, who met with local ship owners to provide briefings on products and other up-to-date information. The ship owners, which were represented by 15 individuals, requested facilities to be established for training.
on Japanese ship machinery and equipment. They also asked questions about after-sales services and other matters. Mr. Ono said that JSMEA would like to see more regular interchanges with Greek ship owners to develop stronger business relations, while stressing the importance of listening to the voices of customers. The UGS agreed that exchanging information and opinions with Japanese ship machinery and equipment makers is meaningful.

In preparation for participating in Posidonia 2016, JSMEA had updated its catalog of energy-saving and environmentally friendly ship machinery and equipment manufactured by its members. While in Greece, it promoted its members’ products extensively by distributing copies of the new edition at the exhibition, including the abovementioned seminar, and introducing it to local ship owners.

Posidonia 2016 welcomed more than 22,000 visitors, an attendance surpassing the previous event, according to the organizer. The Japan Pavilion was also visited by a great many people, making JSMEA delegation efforts a success in providing information on its members’ ship machinery and equipment while building better relations with Greek ship owners and other customers through interchange of ideas and opinions.

JSMEA runs Japan Pavilion

JSMEA visits UGS

JSMEA holds seminar

Number of exhibitors and visitors
Exhibitors: more than 1,800 (from 90 countries and regions)
Visitors: more than 22,000
JSMEA members: 12

JSMEA members exhibiting products and/or services:

JSMEA members with displays:
Japan Ship Machinery and Equipment Association (JSMEA) held a seminar in Jakarta, Indonesia on Wednesday, July 27, 2016 to introduce Japanese ship machinery and equipment products extensively among potential customers in the Southeast Asian economy.

It was JSMEA’s second seminar to be held in Indonesia; the first one was presented on March 4, 2014. From Japan, a group of some 80 individuals from 27 JSMEA-affiliated enterprises took part in the Indonesia-Japan Business Matching Forum, a project financially supported by The Nippon Foundation. The group was led by Mr. Masaaki Matsui, vice-president of JSMEA, and Mr. Jun Kohno, director of the International Affairs Office at the Shipbuilding and Ship Machinery Division of the Ministry of Land, Infrastructure, Transport and Tourism (MLIT)’s Maritime Bureau. From Indonesia, meanwhile, a total of approximately 270 locals were present. The group included a 188-strong delegation that included Dr. Ridwan Djamaluddin, deputy minister for infrastructure from the Coordinating Ministry for Maritime Affairs and Resources and other governmental officials; those representing local ship owners and shipbuilding companies; Sasakawa fellows (see Note) and others. It was one of the largest seminar events held by JSMEA worldwide.

After JSMEA’s first seminar in Indonesia, Mr. Joko Widodo assumed the nation’s presidency in October 2014. Under his leadership, initiative was pushed to grow Indonesia into a maritime nation, which included a package of policies for promoting maritime business activities. As such, possibilities are increasing that Jakarta will place orders for newbuildings—partly to clear up the issue of overage ships that it has been troubled with for some time now. To take advantage of such trends, JSMEA returned to Indonesia to help parties from the Japanese maritime industry further reinforce their relations with those from the Southeast Asian country. JSMEA offered a similar event in Japan on Feb. 29 in partnership with the MLIT, to which officials from the government of Indonesia were invited. The July seminar in Jakarta was intended to accelerate JSMEA’s efforts to deepen and strengthen its friendship with the country.

Note: “Sasakawa fellows” refer to the students who are studying at and have graduated from World Maritime University (WMU) in Indonesia, receiving scholarships from The Nippon Foundation. Its scholarship programs have contributed to producing many governmental officials, industry leaders and other influential people who are concerned with maritime affairs in developing economies.
About the Indonesia-Japan Business Matching Forum

(1) Time and date: 10:30 to 17:00 on Wednesday, July 27, 2016

(2) Venue: Hotel InterContinental Jakarta MidPlaza

(3) 27 JSMEA member companies attending the forum (alphabetical order):

(4) Program

   Morning session
   Mr. Matsui gave the opening address at the Indonesia-Japan Business Matching Forum. Afterwards, representatives from the Indonesian and Japanese governments as well as shipbuilding and ship machinery and equipment industries spoke about their respective projects, actions and other topics in the order described below.
   (a) Mr. Johnson W. Sutjipto, chairman, Board of Advisory, Indonesian National Shipowners’ Association (INSA);
   (b) Mr. Tjahjono Roesdianto, former chairman, Indonesia Shipbuilding and Offshore Industries Association (IPERINDO);
   (c) Deputy Minister for Infrastructure Djamaluddin, Coordinating Ministry for Maritime Affairs and Resources;
   (d) Director Kohno, International Affairs Office, Shipbuilding and Offshore Industries Association (IPERINDO);
   (e) Dr. Adolf R. Tambunan, head, Makassar Main Port Authority, Ministry of Transportation (MOT)

   Afternoon session
   There were so many enterprises participating in the Indonesia-Japan Business Matching Forum that presentations to introduce Japanese ship machinery and equipment products had to be given in two groups. In a new effort, desks for business negotiations were prepared in the back of the forum hall to allow local parties having interest in Japanese products to talk directly with the Japanese manufacturers. To encourage both sides to hold negotiations more smoothly, in addition, a reception was held near the desks during the lunch break. Participating JSMEA members had in advance exchanged views with each other on these programs.
   At the forum venue, copies of product catalogs for general commercial vessels, energy saving, offshore development projects and fishery ships that JSMEA had produced were distributed to promote the products and services of JSMEA-affiliated ship machinery and equipment makers.
   Mr. Reijiro Urabe, leader of JSMEA’s Overseas Market Development Working Group, gave closing remarks at the presentations, after which, another reception was held. At the reception, Mr. Shinzo Yamada, another JSMEA vice-chairman, spoke to the crowd, which led to a toast proposed by Mr. Eddy Kurniawan Logam, chairman of IPERINDO. The networking reception was also successful enough to allow attending JSMEA members to establish new and to deepen existing business relations with many local parties. Mr. Kazuhiko Kinoshita, who is also a JSMEA vice-chairman, delivered the closing speech at the pleasant reception, which also marked the end of the seminar.

(5) Others
   Taking advantage of traveling to Indonesia, JSMEA had sent a delegation to governmental and other organizations in the nation prior to the start of the Indonesia-Japan Business Matching Forum. Led by Mr. Matsui and Mr. Kinoshita, the delegation introduced JSMEA’s efforts to make and promote Japanese ship machinery and equipment products. It also exchanged opinions on the policies of the local organizations and other subjects.

   July 25:
   The JSMEA delegation visited the Ministry of Marine Affairs and Fisheries (MMAF). From Mr. Zulficar Mochtar, acting director-general of capture fisheries, it learned that Indonesia plans to support the construction of 3,450 ships in 2016 and 3,500 to 3,700 in 2017.

   July 26:
   (a) The JSMEA delegation called at the MOT, which unveiled its plan to help local shipbuilders complete 500 domestic vessels.
   (b) The delegation paid a call at the INSA to meet with Mr. Sutjipto and Ms. Siana A. Surya, general treasurer.
   (c) At IPERINDO, delegation members called on Mr. Novirwan S. Said, head of organization, membership and funds, and Mr. Ihsan Mahyudin, secretary.
Japan Ship Machinery and Equipment Association (JSMEA) was present at the 12th Sea Japan exhibition at Tokyo Big Sight on April 13-15, 2016, where it set up the Japan Pavilion.

During Sea Japan 2016, the Japan Pavilion consisted of a member zone, which was run by JSMEA members, and a thematic zone. With financial assistance from The Nippon Foundation, the thematic zone’s aim was to promote the high levels of technologies of the Japanese maritime cluster, to relay results of its studies and research, and to disseminate other information to the world.

The thematic zone was made up of seven themes—including marine resource development, energy saving and environment protection—that had been set under the initiative of the planning committee for the Japanese maritime cluster at Sea Japan 2016, for which JSMEA acts as the secretariat together with the Shipbuilding and Ship Machinery Division of the Ministry of Land, Infrastructure, Transport and Tourism (MLIT)’s Maritime Bureau. During Sea Japan 2016, exhibitions, seminars and events for students were given at the zone to make better known in Japan and abroad the world-level cutting-edge technologies and other advantages that can be offered by the Japanese maritime cluster that consists of shipping companies, shipbuilders, ship machinery and equipment manufacturers, research institutes, universities and colleges, a classification society and others.

Displayed at the thematic zone were Kaiko 7000II, an unmanned underwater probe capable of reaching a depth of 7,000 meters that was developed and operated by the Japan Agency for Marine-Earth Science and Technology (JAMSTEC), and an underwater robot called “Hobarin” that was developed and produced by the Japan Maritime Research Institute (JMRI). Also introduced were state-of-the-art technologies for exploiting marine resources, saving energy, conserving the natural environment and for carrying out other important missions. In addition, universities and colleges, research institutes and other parties unveiled the results of studies and research they had conducted. With these displays, exhibitions and activities, it was JSMEA’s largest thematic zone presented at Sea Japan to date.

On the first day of Sea Japan 2016, a message sent by Prime Minister Shinzo Abe was read. Afterward, MLIT State Minister Junzo Yamamoto and Executive Director Mitsuyuki Unno of The Nippon Foundation gave addresses, and a ribbon cutting was performed by representatives of the organizations that supported the Japan Pavilion. At an international maritime seminar organized after the opening ceremony, MLIT Parliamentary Vice-Minister Kiyoshi Ejima delivered an address, Minister in charge of Ocean Policy and Territorial Issues Aiko Shimajiri presented a special lecture and Norway’s State Secretary at the Ministry of Trade, Industry and Fisheries Dilek Ayhan gave a keynote speech. Discussions held during the seminar were appropriate enough to call Sea Japan 2016 an international exhibition.

Note: The Japanese ministry officials named in the final paragraph had held their respective Cabinet positions at the time of the event and article. Events in government since may have altered their titles.
Japan Ship Machinery and Equipment Association (JSMEA) participated in IMPA Singapore 2016 on May 17-18, 2016. It was JSMEA's second year in a row to take part in the exhibition.

Many ship owners, ship managers and other parties that procure ship machinery and equipment come from around the world to IMPA Singapore. At the venue, seminars are given to provide information, educational programs and other events for visitors.

At IMPA Singapore 2016, JSMEA was present not only at the exhibition, but also at the seminars, where it delivered presentations on both days.

On May 17 at its first seminar, JSMEA-affiliated manufacturers gave presentations on the association's efforts against non-genuine products. JSMEA joined forces with the five member companies in strongly urging customers to choose and use genuine products. They also introduced the actions that JSMEA takes against counterfeit ship machinery and equipment, such as creation and promotion of its genuine-product label, the seminars it organizes in Japan and overseas to encourage customers to use genuine products and the projects it advances against bogus products.

Attendees showed great interest in the JSMEA genuine-product label, which helps customers who may experience accidents and breakdowns because of the use of non-genuine ship machinery and equipment to easily tell genuine from non-genuine products.

Outline of IMPA Singapore 2016
Dates: May 17-18, 2016
Venue: Grand Copthorne Waterfront Hotel

Seminar 1
Time and date: 9:30 to 11:00 on May 17
Title: Genuine versus Non-Genuine Spare Parts

Seminar 2
Time and date: 9:30 to 11:00 on May 18
Title: Introduction to Japan's New Technologies and High-Quality Products
Presenters: Hien Electric Industries, Ltd.; Nabtesco Corporation and Yanmar Co., Ltd.
A new antifouling patented by CMP is including a unique biocidal agent; Selektobe® from I-TECH AB, is proving to be spectacularly effective in prevention of barnacle attachment and is confirming itself to be capable of delivering unsurpassed antifouling performance even when a ship has a long layup at anchorage or a long static period during trading i.e. for a few months. Hence the new antifouling is ideal to meet today’s demands and challenges from a market suffering from ship’s frequent off hire time or very low activity.

Ongoing monitoring and evaluation of antifouling performing on ships with the new products:

(*) SEAFLO NEO CF Z includes a new biocide technology in the product ECONEA® (by Janssen PMP).
Environmentally Friendly Engine
DE-33SERIES

We have developed the environmentally friendly economical engines for energy saving, low maintenance cost and have a high potential for meeting stricter exhaust gas regulations in the future, of course IMO Tier II compliant.
These engines realized the environmental harmony and high performance by long-held technologies of DAIHATSU DIESEL.

The valve timing is controlled optimally by D-VVT system to achieve;
- Low fuel oil consumption
- Low load performance
- A balance of low NOx emission – high efficiency

Principal Particulars

<table>
<thead>
<tr>
<th>Engine Model</th>
<th>6DE-33</th>
<th>8DE-33</th>
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<td>No. of cylinders</td>
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<td>Engine Output kW</td>
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<td>Generator Output kW</td>
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<tr>
<td>Mean Piston Speed m/s</td>
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<tr>
<td>BMEP MPa</td>
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</tbody>
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*1: Gen. Efficiency is 94.5% basis.
Deluxe Evac Harness
P/N: AC01-010-01

Deluxe Evac Harness is the improved version of Evac Harness that was originally used by Canadian and American rescue party. The following three improvements make the harness useful in wide range of rescue situation. This harness has been developed and designed by Eon International Corporation (Japan).

1) **Buoyant Supporting Pad to hold the head and neck**: make the sea rescue operation smoothly as the harness itself can be floated on the water. Pad will hold the neck and head of the rescuee and will make the rescuee relieved. Size of Pad: 56 x 10 x 3 cm

2) **Mesh Material on the Hip Area**: makes the water go through from the harness during lifting. This will prevent water flood in the helicopter cabin. (Size of Mesh Area: 31 x 10 cm)

3) **Five Handles Installed**: Two handles are for the rescuee to grab, which will give a sense of security to rescue. All of the handles can be useful for the rescuers to pull the harness into the helicopter quickly.

Special merit of Evac Harness, Easy and Quick installation and Comfort in Wearing, is inherited to the Deluxe Evac Harness.

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**Approved by Japan Coast Guard, Nicknamed “Japan Coast Guard, Model III”**

<table>
<thead>
<tr>
<th>Main Material</th>
<th>1000 Denier Cordura Nylon</th>
<th>Color:</th>
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<td>Webbing:</td>
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<td>Webbing Strength (Minimum Strength):</td>
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<td>D Ring</td>
<td>Stainless Steel</td>
<td>D-Ring Strength (Minimum Strength):</td>
<td>3,600 kg</td>
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<tr>
<td>Size Packed:</td>
<td>35 X 27 X 13 cm (Packed in the Pouch)</td>
<td>Maximum Load</td>
<td>270 kg</td>
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</tbody>
</table>

(Main User)
Japan Coast Guard, Aviation Unit of Fire and Rescue Dept., Aviation Unit of Police Dept., Ground Support Team of Fire Rescue Dept.

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_Eon International Corporation_
Shin Aoyama Bldg., West 23rd FL, 1-1, Minami-Aoyama 1-Chome, Minato-ku, Tokyo, 107-0062, Japan
Tel.: +81-3-3470-1755  Fax: +81-3-3470-2207  E-MAIL: eon@tkg.att.ne.jp
Upgrading work to Wärtsilä AIRGUARD Seal

Wärtsilä Japan Ltd. offer AIRGUARD seal upgrades for customers to comply with the existing VGP requirement.

In December 2013, The United States EPA (Environmental Protection Agency) issued new VGP (Vessel General Permit) guidelines, that all vessels over 24 meters in length entering the United States 3-nautical miles limit, must use EAL (Environmentally Acceptable Lubricants) in all Oil-to-Sea interfaces unless technically infeasible.

**EPA's position summarized**

Continued use of mineral oil with “Air space seal” is allowed if:
1. An oil-to-sea interface does not exist in normal operation in seal design.
2. There is no reasonable possibility of oil leakage to the sea in the case of system failure.

Wärtsilä AIRGUARD seal meets the EPA criteria and allows continued use of mineral oil in U.S. waters.

**What is an AIRGUARD seal?**

- Separation between seawater and Oil / Air chambers achieves no Oil-to-Sea interfaces
- Automatic drain collection to an inboard drain collection unit. (No oil contamination into sea)
- Automatic pressure control Keep minimum/constant load on seal rings all the time.

The Wärtsilä AIRGUARD seal was originally developed in 1988 and to date no lube oil leakage into the sea. There have been in excess of 200 upgrades to the Wärtsilä AIRGUARD without any lube oil leakage into the sea.

Most conventional lip seal types can be upgraded to a Wärtsilä AIRGUARD seal solution. The AIRGUARD is flexible in terms of installation regarding space, piping arrangements, docking periods, location and competitive pricing.

Further product enhancements are being introduced which include the followings:

- Simplified compact 3 seal arrangement
- Integrated Auxiliaries control unit

Wärtsilä Airguard and Wärtsilä Oceanguard seals meet the defined regulatory prerequisites and that owners and operators of commercial vessels of over 79ft (24 metres), sailing within U.S. waters with either of these Wärtsilä systems installed, are not required to change to an Environmentally Acceptable Lubricant (EAL). With the Wärtsilä Airguard and Wärtsilä Oceanguard propeller shaft sealing systems there is no oil-to-sea interface.

AIRGUARD AFT SEAL DESIGN

AIRGUARD PIPE DIAGRAM

See more at:
http://www.wartsila.com/services/services-parts/seals-and-bearings-services
Our ever-evolving Smart Series is focused on three key concepts: (1) increasing energy efficiency, (2) increasing crew performance, and (3) increasing onboard safety. Every JRCS Smart Series product was specifically designed to help the customer solve a unique problem. We will continue to develop new products in the series as part of our ongoing effort to provide the perfect solution for every customer. All we need to know is: how can we help you?

1. **Increase energy efficiency**
   - **J-S/Eco**
   - Energy-saving Variable Frequency Drive for Pumps and Fans
   - Reduce running costs with a more efficient system!
   - Guaranteed to return your investment, and more!

2. **Increase crew performance**
   - **J-S/Net**
   - Onboard LAN System
   - Improve your vessel's efficiency with wireless onboard communication and monitoring

3. **Increase onboard safety**
   - **J-S/Eye**
   - Industrial Television System
   - 24/7 Engine Room monitoring via webcam! Protect your vessel and crew by detecting early-warning signs of fire

**Company Profile**

Since our founding in 1948, JRCS’s mission has been to develop, design, produce, and service the highest-quality products for the global marine market. Our motto, “Just Right Customer Solution,” represents our constant drive to find the perfect solution for our customers by combining our marine automation and power management products into a single total package.

In addition to high-quality crew training, we offer support over a vessel’s entire lifetime, from regular maintenance and inspection to retrofitting and upgrades.

**See more at** [http://www.jrcs.co.jp/en/](http://www.jrcs.co.jp/en/)

**Contact Toyoura Plant**

2155 Kawatana, Toyoura-cho, Shimonoseki, Yamaguchi, 759-6301 Japan

Tel.: +81 0 83-775-2030  Fax: +81 0 83-775-2022

E-MAIL: jrcs@jrcs.co.jp
MANABE ZOKI COMPANY LIMITED

OUTLINE

MANABE ZOKI COMPANY LIMITED is one of the most authentic Japanese manufacturers which has been specializing in producing high quality DECK CRANE and DECK MACHINERY for more than 50 years in Japan. We are capable of designing and producing DECK CRANE (SINGLE / TWIN), HOSE HANDLING CRANE, WINDLASS, MOORING WINCH, RAMP WINCH, CAPSTAN and ANCHOR HANDLING & TOWING WINCH. We have many experiences to deal with not only domestic market but also many foreign countries to export our products all over the world, which have been giving customers full satisfaction. In 2000, we acquired ISO9001. We also fabricate specialized big size winch for offshore vessels, and our product lines give satisfaction to customers in the world. For more detailed information, please access our web site. http://www.manabezoki.co.jp/en/index.html

Deck crane (Twin type)

Windlass (Hydraulic type)
FENIC Alpha Fuel Reformer

This revolutionary fuel reformer is specifically developed for onboard use with efficiency and safety in mind. The device requires absolutely no energy input because it uses our specially formulated fuel reforming ceramic which releases totally safe yet just enough levels of ionizing radiation to break chemical bonds of complex hydrocarbons to propagate free radical formations and effectively upgrades fuel components. The material's concentrated radioactivity is about 40% of the international limit for low-level radioactive waste, which is disposable without any processing or conditioning.

Although results vary depending on many variables, such as fuel type, weather, operational profile, and etc., the data collected by end users suggest, the device provides respectable 3 to 5% of average fuel savings. The device works particularly well with distillates like MGO and MDO, and also relatively lighter residual fuels like RMA and RMB to some extent. Vessels spend more time operating their engines at low load seem to enjoy more savings than those spend much of their time steaming at MCR because increased lighter components of the upgraded fuel improve combustion efficiency more profoundly at lower load where the fuel efficiency is particularly low due to relatively high specific fuel consumption.

The product is widely used not only for maritime applications but also automotive, heavy machinery, railroad, power generation, and etc. As its effectiveness is tested and certified by all the relevant ministries of Japan, potential interest parties from public sectors of eligible nations may also apply for the Official Development Assistance from Japan to cover the procurement cost.

Installation Guide

(1) Please install FENIC Alpha in the FO supply line, somewhere between the FO purifier and the primary FO filter.
(2) Ideally, please install as closely as possible to the engine inlet after the air separator, but before the primary FO filter and not closer.

Remarks
Please install before the primary FO filter as well as the FO pump.
Please check and confirm the following parameters:
• Nominal/Maximum Flow Rate
• Fuel Temperature (Maximum 150°C)
• Inlet Pressure (Maximum 1.0MPa)
If possible, please install after the air separator in order to increase the chance of exposing the fuel in circulation to the ionizing radiation.
*If you have any questions, please feel free to contact us at anytime as always.
Smart Sounding Scale Honesty

Overview
Smart Sounding Scale Honesty has been developed by SEMCO LTD., Nippon Yusen Kabushiki kaisha (NYK) and the Monohakobi Technology Institute (MTI) for the purpose of increasing the efficiency of liquid level measurement.

With the sensor installed at the end of measuring tape, the device improves the accuracy and reduce the measuring time of liquid level.

Features
- Reading of ullage upon landing of the sensor on any liquid.
- Sensing the actual liquid surface, no the floating bubbles.
- Requires only a 9-volt battery.
- Approved by Class NK.

Benefits
- Saves the measuring time significantly
- Measures accurately as the sensor does not reflect the “cappuccino bunker” (bubbles on the liquid surface) during bunkering.
- Can measure not only fuel oil but also colorless liquid such as ballas water and bilge.
- Portable and easy to handle.

Specifications

<table>
<thead>
<tr>
<th></th>
<th>Sounding Scale Honesty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tape length</td>
<td>30m</td>
</tr>
<tr>
<td>Battery</td>
<td>9 volts</td>
</tr>
<tr>
<td>Tape resolution</td>
<td>2mm (JIS First Class)</td>
</tr>
<tr>
<td>Smart Sounding Scale Honesty Standard model.</td>
<td>Smart Sounding Scale Honesty With brass cover</td>
</tr>
<tr>
<td>Sensor Material : SUS</td>
<td>Sensor Material : SUS With brass cover</td>
</tr>
<tr>
<td>Sensor dimensions</td>
<td>Sensor dimensions</td>
</tr>
<tr>
<td>Φ 31.8 × 176mm</td>
<td>Φ 29 × 176mm</td>
</tr>
</tbody>
</table>

*“Please be aware that this product is not explosion-proof, and cannot be used in hazardous area.
*“This product may not be used in bent pipes.
### Introduction
Takashina Life Preservers has been a leading manufacturer of lifesaving equipment and personal protection equipment for over 80 years. All of our products are manufactured at Takashina factories to the highest international standards.

### Chemical Protection
With growing global demand for transportation of chemical and dangerous goods, Takashina has obtained approvals from Bureau Veritas for range of DuPont Chemical suits. The Tychem suits are suitable for handling of dangerous goods, tank cleaning, or any other work activity to protect the workers.

Designed for disposable single or limited use. The suit protects for liquids, sprays, solid particles and fibers tight.

Light weight, high mobility and comfortable than general rubber protective clothing.


EU Category: Type 3

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<table>
<thead>
<tr>
<th>Model</th>
<th>DuPont™Tychem®C</th>
<th>DuPont™Tychem®F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>Protection against numerous inorganic chemicals.</td>
<td>Protection against numerous organic and highly concentrated inorganic chemicals.</td>
</tr>
<tr>
<td>Resistance</td>
<td>Resists liquid splashes up to 2 bar.</td>
<td>Resists liquid splashes up to 5 bar.</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx 450g (without gloves and boots)</td>
<td>Approx 650g (without gloves and boots)</td>
</tr>
</tbody>
</table>

***DuPont™, Tyvek®, Tychem® are trademarks or registered trademarks of E.I. du Pont de Nemours and Company***

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**Takashina Life Preservers Co., Ltd.**
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Tel.: +81-6-6568-3512 Fax: +81-6-6568-7528
http://www.tlpc.co.jp
Overview
Since 1928, the year the Company founded, VOLCANO has been playing an important role throughout the industry with our combustion technology and related engineering services for 88 years. VOLCANO has had installed base of more than 15,000 units. These products cover a full range of marine boiler burners, including LNG carrier main boilers as well as various types of auxiliary boilers, waste-oil/bilge concentrators and shipboard incinerators. The company’s Marine Use Products Lineup have played an important role in powering, heating as well as in preventing marine pollution from ship waste in every aspect of the seagoing operation.

In 2016, VOLCANO launches two new products for LNG Fueled vessel and is proposing solution for environmental preservation.

Products for LNG Fueled Vessel

1. Oil/Gas combination burner for auxiliary boiler “Vignis-mini”

This burner was designed and developed for the auxiliary boilers on LNG Fueled vessels and supports both oil and gas. We developed this burner based on our experience with SFFG II burners used for the main boilers on LNG carriers and with MJ burners as all automatic mini-jet burners used for composite boilers/auxiliary boilers. Not only can this burner be configured for single-fuel combustion in both oil and gas applications, but it can also be used for mixed combustion to help saving energy and reduce the impact on the environment.

Evaporation rate: For 1.0 to 3.0 t/h
Oil combustion capacity: 90 to 250 kg/h   Gas combustion capacity: 74 to 206 kg/h
Combustion configuration: Oil / Gas mixed, single-fuel gas, single-fuel oil
Compatible fuel: HFO, MGO and LNG   Fuel viscosity: Supports 700 cSt

2. Gas Combustion Unit “MECS-GCU”

This system safely incinerates and processes Boil Off Gas/BOG or Gas vaporized when bunkering on LNG Fueled vessels. On LNG Fueled vessels, redundant BOG should be processed by incineration or reliquefaction. Gas vaporized when bunkering should be processed for keeping safety. When docking a LNG Fueled vessel, combustible gas in the fuel tank should be incinerated and replaced to inert gas.

Capacity: 250 to 2,400 kW
Combustion Rate: 18 to 173 kg/h
Gas Pressure: less than or at 0.7 Mpa   Trip Temp. (High) of Exhaust Gas: 500°C
Exhaust Gas Temp.(Planned): 450°C

Solution for Environmental preservation

Waste-Oil/Bilge Concentrator “BILCON-X”

This system concentrates the bilge water efficiently using humidification and evaporation (low temperature humidification). It significantly reduces the unloading costs and hassles related to bilge water processing, making it a labor saving system. In addition, the humidification and evaporation method uses a completely closed system and does not discharge any processed bilge water from the vessel, also helping reduce the vessel’s impact on the environment.

Processing capacity: 1,000 to 3,000 kg/day
Heat source: Water temperature: 80°C Vapor (0.5 MPa sat “C) Heat-transfer oil (140°C)
1. Overview and purpose of SSAP2 Project

- Onboard and ashore IoT application services, which relies on ship onboard equipment data, have become prevalent.
- The concept of Smart Ship is to utilize IoT application services to achieve optimum ship operation in terms of safety and energy efficiency.

Coming IoT applications in marine industry

<table>
<thead>
<tr>
<th>Target</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevent unpredicted downtime</td>
<td>Condition monitoring</td>
</tr>
<tr>
<td>Reduce maintenance cost</td>
<td>Big data analysis</td>
</tr>
<tr>
<td>Energy efficiency in operation</td>
<td>Support service engineer</td>
</tr>
<tr>
<td></td>
<td>Intelligent machinery</td>
</tr>
<tr>
<td></td>
<td>-Self diagnostics-</td>
</tr>
</tbody>
</table>

Working style will be changed!

The target of SSAP2 project is to support these IoT application services to access ship equipment data easily and enhance more application services development.

2. Standardization

- Armed with following two new international standards, we aim at business development in marine information field using real ship operation data.
  - ISO/CD 19847: Shipboard data servers to share field data on the sea
  - ISO/CD 19848: Standard data for shipboard machinery and equipment

- These two standards will realize transparent data access between IoT application services and shipboard equipment.
- Standardization is scheduled for 2018.
- For more information visit IMO/IALA e-Navigation portal.