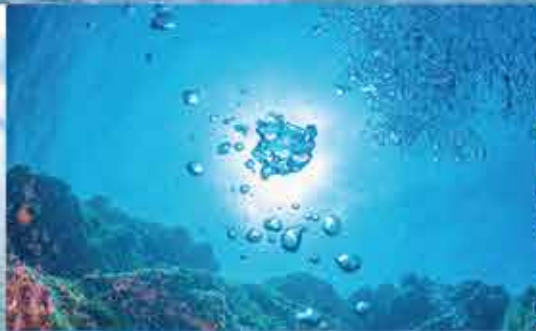


JAPANESE MARINE ECO PRODUCTS



CATEGORY	COMPANY		
A	Air Conditioners	NISSIN REFRIGERATION & ENGINEERING LTD.	2
		USHIO REINETSU CO., LTD.	2
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B	Ballast Water Inspection Equipment	MOL Techno-Trade, Ltd.	5
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	Reduction Gear	HITACHI NICO TRANSMISSION CO., LTD.	36
	Rudders	JAPAN HAMWORTHY & CO., LTD.	37
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	Switchboards, Control systems, automatic, Monitor panels, Monitoring & control systems, Starters	TERASAKI ELECTRIC CO., LTD.	42
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Air Conditioners

<http://www.nissin-ref.co.jp/english/>



NISSIN REFRIGERATION & ENGINEERING LTD.

Heat pump type Ultra compact size Water Chilling Unit



Ultra compact size Water Chilling and Heat pump Unit

Our heat pump chiller unit has various capabilities by combining each 10 HP (or 5 HP) compressor unit.

Only suitable number of compressor running, also heat pump mode contributes ecological operation.

Every compressor units are independent; hence, even if one unit fails, the operation can be continued with the remaining units.

It's hermetic type compressor benefits maintenance free.

Being lightweight, compact, and reliable, this chiller unit has been widely equipped on government and municipal ships.

INQUIRIES

1-12-30, Mikuni Hommachi, Yodogawa-ku, Osaka, 532-0005, Japan

Tel : +81-6-6394-1171 Fax : +81-6-6394-1251

E-mail : nre-webmaster@nissin-ref.co.jp

Air Conditioners

<http://www.ushioreinetsu.co.jp/english/>



USHIO USHIO REINETSU CO., LTD.

Inverter control of FAN and COMPRESSOR



Realize the reduction of CO₂ emissions, will contribute greatly to the global environment.

■ Inverter control of FAN

- Can obtain a greater energy savings by setting the rotation speed of the fan amount corresponding to each operation mode "cooling", "heating" and "blast", and improves the comfort of the accommodation space.

- Compared with the damper controlled, there are about 57% reduction of the ratio in the energy equivalent. And there is a reduction of 53.1ton CO₂ / year.

■ Inverter control of COMPRESSOR

- Control by an inverter the rotation speed of the COMPRESSOR. It is effective to keep the operation stable and to reduce power consumption by controlling the finely optimal cooling capacity.

INQUIRIES

5-3, Creative-Hills, Imabari, Ehime, 794-0069, Japan

Tel : +81-898-34-1203 Fax : +81-898-34-1204

E-mail : ushio@ushioreinetsu.co.jp

Air conditioning and refrigeration equipment for R407H

<http://www.daikin.co.jp/group/dmre/english/>

DAIKIN MR ENGINEERING CO., LTD.



Deck unit



Packaged air conditioner



Packaged air conditioner for galley



Small size condensing unit



Water chilling unit

Our new lineup of R407H equipment

Adoption of environmentally friendly refrigerants is urgently needed to address global warming and prevent ozone layer depletion. Increasingly tight regulations are also making it more difficult to procure existing refrigerants such as R22 and R404A that have a high environmental impact.

We believe that R407H is the best new refrigerant option because it can contribute to both reducing environmental impact and meeting specific maritime needs while satisfying the following 5 refrigerant requirements. As such, we are offering air conditioning and refrigeration equipment that uses R407H.

Safety

(nonflammable, equivalent to existing refrigerants R404A and R407C)

Environmental friendliness

(GWP of 1,495, less than 40% of R404A and compatible with environmental ship classification options)

High efficiency

(Demonstrated performance equivalent to R404A and R407C in air conditioning and refrigeration applications)

Availability

(Leading global refrigerant manufacturers supply R407H)

Stability

(R407H is an HFC refrigerant like R404A and R407C, and there is little negative effect on equipment from refrigerant decomposition)

Retrofitting existing systems for R407H

We have retrofitted R22 equipment for R404A, and can also retrofit R22, R404A, and R407C equipment to work with R407H.

The retrofit method used depends on the type of equipment. Please contact us for more information.

INQUIRIES

Shin-osaka Central-tower 11F, 5-5-15 Nishinakajima, Yodogawa-ku, Osaka, 532-0011, Japan

Tel : +81-6-4805-7293 Fax : +81-6-4805-7321

E-mail : marine.aircon@daikin.co.jp

Reduces Energy Consumption, Maintenance, and Overall Environmental Impact (Chemical Free)

Antifouling Device

<http://www.portenterprise.com>



Port Enterprise Co., Ltd.

Hasytec Dynamic Biofilm Protection



Bulk carrier's hull
Before installation and 6 mo. after installation

Suezmax tanker's propeller
Before installation and 6 mo. after installation

Hasytec Dynamic Biofilm Protection protects any surface coming in contact with water from marine fouling with its own chemical-free ultrasound technology at really low cost without any maintenance.

Product Specification

Control Box

Diecast aluminum alloy, EN AC-44300 DIN EN 1706
Surface: powder coated
Dimensions: 330 x 300 x 120 mm
Protection class: IP66 EN 60529
Mounting screws: M5x8
Mounting spacing: 312 x 244 mm
Certification: DNVGL, CSA, GOST
Input voltage: 85 - 264 VAC
Input frequency: 47 - 63 Hz
Input protection: TA4 / 250 V
Rated input current: max 16A
Recommended Fuse rating: 16A (characteristic B)
Certification: Bureau Veritas, CSA/UL, CB, SIQ, RoHS, Reach
Brass nickel-plated
Protection class: IP68 EN50262/EN60529
Certification: DNVGL, UL, RoHS

LCD: operating hours, power supply voltage, temperature
LED: output signal control

Transducer

Stainless steel case
Dimensions: Ø 70 mm, H = 94 mm, Weight: 1400 g
Dimensions: Ø 54 mm, H = 94 mm, Weight: 1000 g
Sealed in PU casting compound
Power consumption: 20 Watt
Number of cores and cross section: 2 x 2 x 0.75 mm³
Conductor: bare copper wires
Insulation: cross linked polyethylene (XLPE)
Screen: plain copper wire braid
Halogen free
Outer sheath: polyolefin compound, type SHF-1
Outer D Ø: 8.7 mm
Bending radius: 6 x D (min) - 53 mm
Weight: 103 g / m
Temperature: from - 35 °C to 90 °C
Certificates/Standards: DNVGL, IEC 60092-376, IEC 60092-360 class 2

The product is well proven, completely safe, consumes very little energy, needs no maintenance, and comes with 5-year warranty.

INQUIRIES

No. 2-1-28, Chikko, Minato, Osaka, 552-0021, Japan

Tel : +81-6-6573-5391 Fax : +81-6-6575-3036

E-mail : penterj@penterj.co.jp

Autopilot

<https://www.tokyokeiki.jp/e/>

TOKYO KEIKI TOKYO KEIKI INC.

PR-9000

The model PR-9000 is the latest autopilot system from TOKYO KEIKI. The PR-9000 is designed using the latest technology from a wealth of engineering and manufacturing experience of navigational instruments. Safety, accuracy, and reliability of information have been enhanced in our model lineup thereby significantly improving situational awareness and navigational safety.

An indispensable autopilot system providing effective and safe bridge resource management and energy efficient navigation.



Maintaining Safe Navigation via Guidance Screen

Steering-related monitoring information can be displayed on the monitor screen. If a warning alert is generated, the navigator can simply view the proper guidance procedures on the screen in order to carry out evasive measures.



(Avoidance operating procedures Guidance Screen)

Route Control function (ACE)

Route Control is performed only with Autopilot

Due to reduced route deviation / shorter sailing distance / reduction of wasted rudder, it ultimately contributes to safety and energy efficient navigation.



(ACE Screen)

Repeater Unit with color LCD

Color LCDs are incorporated into each system which enhances reliability of information and improves situational awareness.

INQUIRIES

Marine Systems Company

2-16-46, Minami-Kamata, Ohta-ku, Tokyo, 144-8551, Japan

Tel : +81-3-3737-8611 Fax : +81-3-3737-8663

Inquiry https://www.tokyo-keiki.co.jp/form/webform_marinee.html

Autopilot

<http://www.yokogawa.com/ydk>

YOKOGAWA DENSHIKIKI CO., LTD.

Next Generation Autopilot PT900



PT900 is the next generation autopilot, modern controlled fuel saving function (BNAAC/E-Course Pilot) is installed.

By introducing 7 inches LCD, navigation information and autopilot parameters are confirmed and changed very easily.

YOKOGAWA "GREEN" PRODUCTS



INQUIRIES

Marine Equipment Business Division

Minami Shinjuku Hoshino Bldg,5-23-13, Sendagaya, Shibuya-ku, Tokyo, 151-0051, Japan

Tel : +81-3-3225-5383 Fax : +81-3-3225-5316

E-mail : navigation_info@ydk.yokogawa.co.jp

Ballast Water Inspection Equipment

http://www.motech.co.jp/e_index.html

MOL MOL Techno-Trade, Ltd.

Creating the Future
SATAKE

Viabale Organism Analyzer



SATAKE CORPORATION, developed machinery for maritime calls “Viable Organism Analyzer” and MOL Techno-Trade, Ltd. handles to sell it in domestic and foreign market. Viable Organism Analyzer can detect the number of viable organisms in the ballast water and it can be used simply and easily on board. The analyzer can estimate the number of both viable organisms of Large size (Minimum diameter $\geq 50 \mu\text{m}$) and Small size (Minimum diameter $10 \mu\text{m} \leq x < 50 \mu\text{m}$) in one unit. It has high correlation for detecting one individual organism at 100ml, and only analyzer which is possible to analyze both zooplankton and phytoplankton in a short time. Analysis can be completed in a simple way by operating touch-screen on the analyzer that means total duration for analysis is approx. 15minutes, including stain time.

INQUIRIES

MOL Techno-Trade, Ltd. / Ship's Supplies & Machinery Dept.

Tel : +81-3-6367-5370

E-mail : s-voa@motech.co.jp

Ballast Water Management System

<https://jfe-ballast-ace.com/>

JFE JFE Engineering Corporation

JFE BallastAce



Filtration + Formulated Chemical Injection

JFE BallastAce is a BWMS using a combination of filtration followed by formulated chemical injection on ballast water intake, and controlled neutralization step before ballast discharge. The system has already delivered to more than 500 vessels, including over 100 retrofits.

■ **Feature of JFE BallastAce**

- Efficient sterilization in a wide range of water quality (turbidity / salinity / water temperature)
- Extremely low power consumption, low impact on the generators
- Flexible layout by each component in limited space

INQUIRIES

Ballast Water Management System Division

2-1, Suehiro-cho, Tsurumi-ku, Yokohama, 230-8611, Japan
Tel : +81-45-505-6538
E-mail : jfe-bwms@jfe-eng.co.jp

Ballast Water Management System

<http://www.miuraz.co.jp/en/bwts/>

MIURA MIURA CO., LTD.



[Introduction]

MIURA work towards our mission of "Helping customers all over the world in energy conservation and environmental preservation."

With fifty years of proven result of ship machinery department, utilizing our technology and trust in MIURA, we put all effort to achieve our goal.

[Miura BWMS HK-type]

We introduce "Miura Ballast water management system" that contribute to marine environment conservation all over the world.

Miura BWMS HK-type adopts filter and UV irradiation method which is environmentally friendly that does not affect natural ecosystem of sea area where water is discharged.

With its uniquely developed filter, system can surely capture organisms larger than 50µm, and multi-stage cleaning function can maintain filter clean.

In addition, operation of UV reactor is controlled to be energy saving. Control panel is operated using touch panel, which has high visibility and operability.

[Retrofit]

MIURA supervisors support retrofit engineering work from 3D scanning to installation work, and promote the installation work in accordance with the plan.

INQUIRIES

7 Horie-cho, Matsuyama, Ehime, 799-2696, Japan
Tel : +81-89-979-7060 Fax : +81-89-979-7082
E-mail : hakuyo_eka@miuraz.co.jp

Batteries

BEMAC BEMAC UZUSHIO ELECTRIC CO., LTD.

Optimizing Electric Power System by Applying Lithium-ion Batteries



Fig.1 Applications of Li-ion Batteries on Ships



Fig.2 Li-ion Battery system

BEMAC has been introducing application of Lithium-ion batteries on ship's electrical system for electrical power efficient usage.

Ship's electrical energy volumes are consumed according to running mode which also the usages of Lithium-ion batteries' applications depends on (Fig.1). For example, its application to bow thruster during entering / existing the port may be used, and during the voyage, it may be applicable for charging the batteries by surplus electric power. Depending on its running mode, system will control charging and discharging of the Lithium-ion batteries by time shifting the ship's electrical power consumption; thus, to cut down the cost of generators' fuel.

BEMAC could supply Lithium-ion Battery Charging and Discharging equipments, Monitoring system and all necessary equipments (Fig.2).

INQUIRIES

Head Office / MIRAI Factory

105 Noma, Imabari-city, Ehime Pref., 794-8582, Japan

Tel : +81-898-25-8282 Fax : +81-898-25-3777

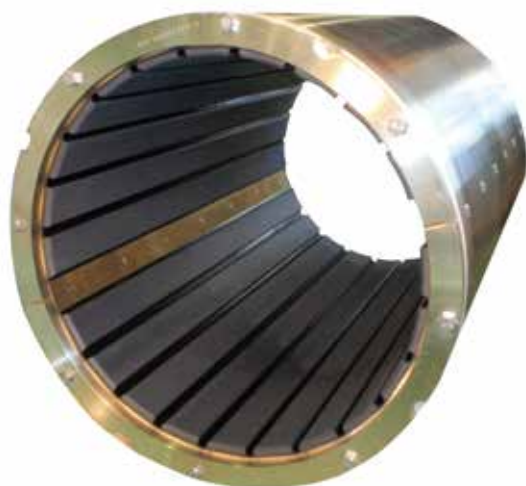
E-mail : sales@bemac-uzushio.com

Bearings, Sterntubes



MIKASA CORPORATION

Water Lubricated Bearing F.F.Bearing (Friction-Free-Bearing)



As a result of pursuing superior low friction property and heavy duty property, we developed combined bearings made of P.T.F.E. and synthetic rubber and metal shell for Water-lubricated stern tube bearing.

F.F. Bearing dramatically minimizes both shaft sleeve and bearing wear.

This is the result of using PTFE of high self-lubricating as the slide member, distributing rubber to the back as the cushion to obtain the self-alignmentability, and decreasing the load by the deflected contact.

It is available water lubricating system as an alternative system of oil lubricating system..

By changing into F.F. Bearing were resulting in:

- Reduced Fuel Consumption
- Lower Vibration
- Lower Noise Levels
- Less Maintenance Cost
- No Possibility of Sea Contamination

INQUIRIES

Mr. Noriaki Hirata

General Manager International Sales Dept., Industrial Products Div.

MIKASA CORPORATION

1, Kuchi, Asa-cho, Asakita-ku, Hiroshima, 731-3362, Japan

Tel : +81-82-810-3930 Fax : +81-82-837-3947

E-mail : hirata@mikasasports.co.jp

Bilge Water Waste oil Treatment System

<http://www.volcano.co.jp/english/index.html>

Volcano VOLCANO CO., LTD.

WASTE OIL/ BILGE CONCENTRATOR "BILCON-X"



Waste oil / Bilge Concentrator "BILCON-X" concentrates the Waste Oil mixed with water or the Bilge Water. This system can save cost and a labor. It can also help reducing the vessel's impact on the environment. Features are as followings.,

- "BILCON-X" can condense ship bilge to one-tenth in 24 hours.
- Fully automatic operation does not require labor.
- Energy saving design allows use of low temperature heat source.
(Ex. Residual steam, Engine coolant water)
- The lineup of the processing capacity of "BILCON"-X is from 1 m³ / day to 3 m³ / day.
- "Completely closed system" does not discharge any processed bilge water from the vessel.

BILCON-X is installed in Ferries and the other types of vessels because of easy waste-oil-handling.

INQUIRIES

Sales Department, Combustion Engineering Division

1-3-38 Nonaka-kita, Yodogawa-ku, Osaka, 532-0034, Japan

Tel : +81-6-6392-5541 Fax : +81-6-6396-7609

E-mail : info-m@volcano.co.jp

Boiler Burners

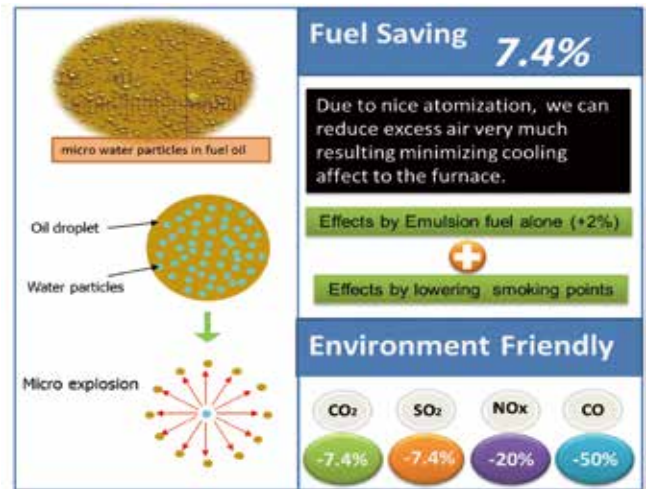
<http://www.sunflame.net/english/>

SUNFLAME CO., LTD.

Water Emulsion Combustion System



A new combustion theory from Sunflame which emulsifies fuel and water for better fuel efficiency.



※ The data from actual record of our delivery. It may vary some at different boiler / working condition.

INQUIRIES

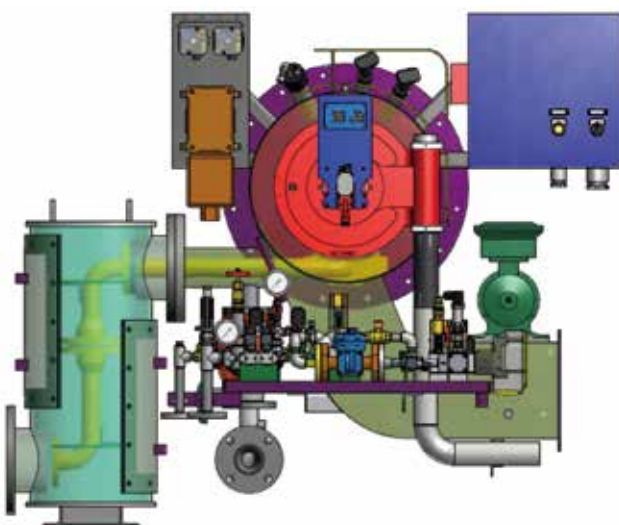
1-30, Nishinohata, Okubo-cho, Uji, Kyoto, 611-0033, Japan
Tel : +81-774-41-3310 Fax : +81-774-41-3311
E-mail : info@sunflame.net

Boiler Burners

<http://www.sunflame.net/english/>

SUNFLAME CO., LTD.

Dual Fuel Burner, LNG & HFO / MGO



A dual fuel burner for HFO / MGO and LNG combustion originally designed by Sunflame.

Features of the Dual Fuel Burner

- Low NO_x and O₂
- HFO 700cSt, MGO 1.5cSt & LNG
- Good mixture of LNG & air
- Adjustable flame shape
- Designed for boilers up to 9t.
- Turn down 10:1
- Mixed fuel combustion of gas & oil

Get ready for

- *Stricter regulation of SO_x / NO_x emission
- *Extension of ECA applications
- *Implementation of Shale Gas supply



Gas Nozzle with Rotary Cup Burner

INQUIRIES

1-30, Nishinohata, Okubo-cho, Uji, Kyoto, 611-0033, Japan
Tel : +81-774-41-3310 Fax : +81-774-41-3311
E-mail : info@sunflame.net

Boiler Burners

<http://www.volcano.co.jp/english/index.html>

Volcano VOLCANO CO., LTD.

Proportional control type oil burner "MJ II -M"



Design and development of "MJ II -M" fully automated pressure jet proportional control burner allows energy saving operation with composite boiler. Features are as followings.

- Proportional control (turn down ratio / 3:1) allows for reducing the burner ON / OFF switching and improving the boiler efficiency.
- Combustion of both HFO and MGO fuels without changing atomizers.
- Easy and quick replaceable coupler attached on fuel line allows for less maintenance time.
- "MJII-M" is applied for 1~3t/h boiler.

INQUIRIES

Sales Department, Combustion Engineering Division

1-3-38 Nonaka-kita, Yodogawa-ku, Osaka, 532-0034, Japan

Tel : +81-6-6392-5541 Fax : +81-6-6396-7609

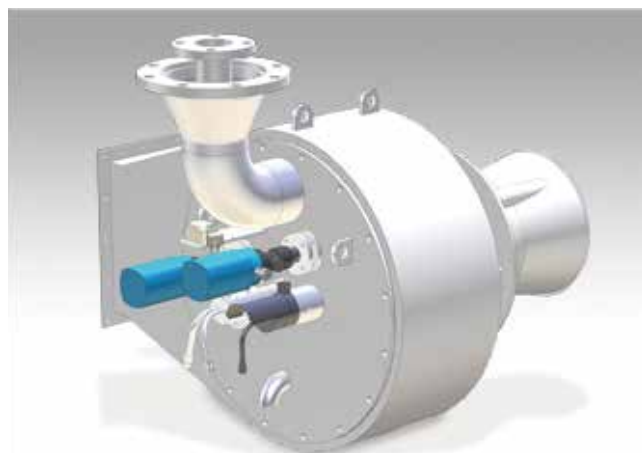
E-mail : info-m@volcano.co.jp

Boiler Burners

<http://www.volcano.co.jp/english/index.html>

Volcano VOLCANO CO., LTD.

OIL / GAS COMBINATION BURNER "Vignis"



This DF burner "Vignis" is suitable for LNG Fueled vessels which are expected to increase. Features are as followings.

- "Vignis", featuring the turndown ratio of 10:1 allows for energy-saving operation.
- Equipped with the Gas/Oil Simultaneous Mixed Combustion mode as well as the Gas/Oil Mono-fuel combustion modes, "Vignis" will allow for energy-saving operation.
- With the Gas/Oil Simultaneous Mixed Combustion mode, the Gas/Oil ratio can be freely set to allow for economical operation in accordance with each vessel's circumstances.
- "Vignis" is applied for 4~10t/h boiler.

On LNG Fueled vessels, BOG would be generated. CH₄, which is main component of BOG, is 25 times more potent than CO₂ for global warming. Gas/Oil Simultaneous Mixed Combustion makes it possible to process CH₄ without emitting into the atmosphere.

INQUIRIES

Sales Department, Combustion Engineering Division

1-3-38 Nonaka-kita, Yodogawa-ku, Osaka, 532-0034, Japan

Tel : +81-6-6392-5541 Fax : +81-6-6396-7609

E-mail : info-m@volcano.co.jp

VOLCANO has 90years History.

We have more than 37years experiences of LNG Fuel for marine use.

We have delivery records for more than 180 vessels and have a reputation as safe and secure.

Boiler Burners

<http://www.volcano.co.jp/english/index.html>

Volcano VOLCANO CO., LTD.

OIL / GAS COMBINATION BURNER "Vignis-mini"



VOLCANO has 90years History.

We have more than 37years experiences of LNG Fuel for marine use.

We have delivery records for more than 180 vessels and have a reputation as safe and secure.

This DF burner "Vignis-mini" is suitable for LNG Fueled vessels which are expected to increase. Features are as followings.

- "Vignis-mini", featuring the turndown ratio of 10:1 allows for energy-saving operation.
- Equipped with the Gas/Oil Simultaneous Mixed Combustion mode as well as the Gas/Oil Mono-fuel combustion modes, "Vignis-mini" will allow for energy-saving operation.
- With the Gas/Oil Simultaneous Mixed Combustion mode, the Gas/Oil ratio can be freely set to allow for economical operation in accordance with each vessel's circumstances.
- "Vignis-mini" is applied for 1~3t/h boiler.

On LNG Fueled vessels, BOG would be generated. CH₄, which is main component of BOG, is 25 times more potent than CO₂ for global warming. Gas/Oil Simultaneous Mixed Combustion makes it possible to process CH₄ without emitting into the atmosphere.

INQUIRIES

Sales Department, Combustion Engineering Division

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Tel : +81-6-6392-5541 Fax : +81-6-6396-7609

E-mail : info-m@volcano.co.jp

Boiler Burners

<http://www.volcano.co.jp/english/index.html>

Volcano VOLCANO CO., LTD.

SFFG II



VOLCANO has 90years History.

We have more than 37years experiences of LNG Fuel for marine use.

We have delivery records for more than 180 vessels and have a reputation as safe and secure.

This DF burner "SFFG II" was designed and developed for the main boiler on LNG carriers and is currently being used by many LNG carriers, FPSO, FSRU. "SFFG II" is also suitable for LNG Fueled Vessels.

Features are as followings.

- "SFFG II", featuring the turndown ratio of 15:1(Oil) and 7:1(Gas) allows for energy-saving operation.
- Equipped with the Gas/Oil Simultaneous Mixed Combustion mode as well as the Gas/Oil Mono-fuel combustion modes, "SFFG II" will allow for energy-saving operation.
- With the Gas/Oil Simultaneous Mixed Combustion mode, the Gas/Oil ratio can be freely set to allow for economical operation in accordance with each vessel's circumstances.
- "SFFG II" is applied for 6~70t/h boiler.

On LNG Fueled vessels, BOG would be generated. CH₄, which is main component of BOG, is 25 times more potent than CO₂ for global warming. Gas/Oil Simultaneous Mixed Combustion makes it possible to process CH₄ without emitting into the atmosphere.

INQUIRIES

Sales Department, Combustion Engineering Division

1-3-38 Nonaka-kita, Yodogawa-ku, Osaka, 532-0034, Japan

Tel : +81-6-6392-5541 Fax : +81-6-6396-7609

E-mail : info-m@volcano.co.jp

Cables & Wires, Electrical



HIEN ELECTRIC INDUSTRIES, LTD.

Halogen-free Flame-retardant cables



ClassNK
ISO 9001
ISO 14001

In compliance with the ISO9001 quality management system and the ISO14001 environmental management system

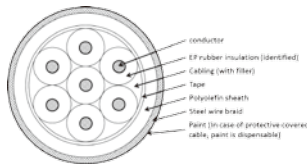
high degree of toughness

- (1) Protection against external impact
- (2) Steel wire braid against sparks during welding
- (3) Plastic coating protected against steel wire corrosion

for Control & Instrumental Multicore cable

150/250V FA-MPOC-7x1.0

(Multi core, EP rubber insulated, Polyolefin sheathed and steel wire braided cable)

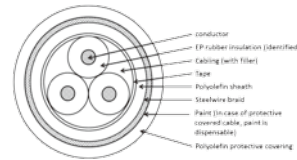


Our products are made in Kyoto, JAPAN

for Power & Lighting cable

0.6/1kV FA-TPOCO-70

(Three core, EP rubber insulated, Polyolefin sheathed and steel wire braided cable with Polyolefin protective covering)



You can add characteristic and service to the cable

- We have many custom variation, such as Cold proof, Oil resistant, Corrugated tube, and so on.
- We save your waste of cables by the HIEN cut shipping service.



Shipping view

INQUIRIES

505, Shinshibakawa Bldg., 3-4-11, Dosho-machi, Chuo-ku, Osaka, 541-0045, Japan

Tel : +81-6-6226-1501 Fax : +81-6-6226-1507

E-mail : hien-sales@hien.co.jp

Hybrid propulsion

Clutch



HITACHI NICO TRANSMISSION CO., LTD.

Large Size Hydraulic Clutch



Large Size Hydraulic Clutch Prototype model



3D model

[Outline]

Large size hydraulic clutch has been developed as the technological development aid project in 2011, 2012 by The Nippon Foundation.

- Selectable for 2kinds of clutch plate of $\phi 1100\text{mm}$ and $\phi 1500\text{mm}$.
- 6 times of transmitting capacity compared with experienced clutch plate, $\phi 810\text{mm}$ max.

[Feature]

- Appropriate for 20000kw class of large vessel such as Capesize, Handymax.
- Remote control connected with electric valve enable easy operation for Clutch On-Off.
- Can be used for various layout like Two engine-one shaft vessel, Two engine-two shaft vessel, Hybrid propulsion vessel.

INQUIRIES

405-3 Yoshinocho 1-chome, Kita-ku, Saitama, 331-0811, Japan

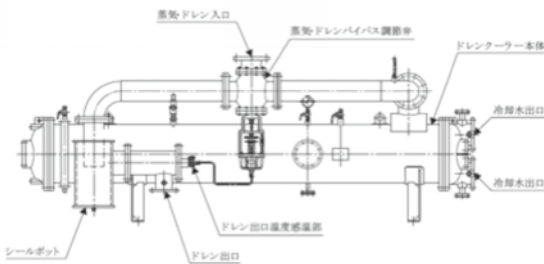
Tel : +81-48-652-6708 Fax : +81-48-652-8719

<https://www8.hitachi.co.jp/inquiry/hitachi-nico/en/form.jsp>

Condensers

yasec YAMASHINA SEIKI CO., LTD.

e-DRAIN



The boiler efficiency is improved by controlling temperatures of drain at the drain cooler exit at a constant level, instead of wasting heat of steam and drain into seawater.

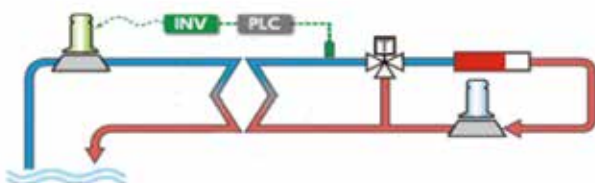
INQUIRIES

525, Higashizaka, Ritto-City, Shiga, 520-3031, Japan
Tel : +81-77-558-2311 Fax : +81-77-558-2319
E-mail : info@yasec.co.jp

Control Systems & Equipment

NSDK NISHISHIBA ELECTRIC CO., LTD.

C.S.W. Pump Motor Inverter Driven System



As the C.S.W. pump usually operates at rated constant speed, it consumes unnecessary electric power by overcooling. Therefore we propose cost-effective system which could be controlled by inverter and PLC. It can also apply this system to the ship in service (retro-fit)



INQUIRIES

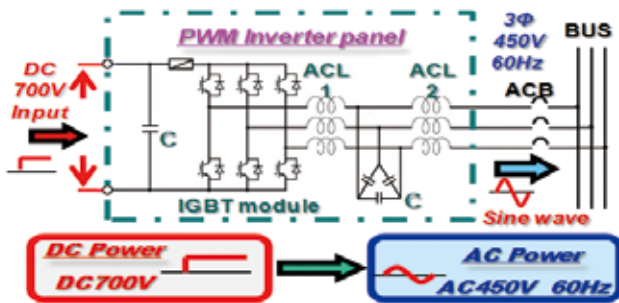
Osaka Branch
29th Fl., Umeda Sky Building West Tower, 1-30 Oyodonaka 1-chome,
Kita-ku, Osaka, 531-6129, Japan
Tel : +81-6-4797-2451 Fax : +81-6-4797-2453

Control Systems & Equipment

<http://www.taiyo-electric.co.jp/english/index.html>


TAIYO ELECTRIC CO., LTD.

Power Saupply System



1. Thyristor Inverter Type Shaft Generating System
SG mode (Generator) /SM mode (M/E boosting) /PM mode (Electric propulsion)
2. PWM Shaft Gen System
3. TC Generating System by PWM Inverter
4. DC Power System by PWM Inverter

This system supplies the stable AC power to the vessel which obtained from the various source.

This system contributes to users energy saving and maintenance cost saving.

Also, the output of this system has same electric characteristic as that of Diesel Generators (DG).

Therefore, it can be operated not only single running but also parallel running with DG.

INQUIRIES

Marine Business Division, Overseas Business Dept.
1-16-8 Uchikanda, Chiyoda-ku, Tokyo, 101-0047, Japan
Tel : +81-3-3293-3067 Fax : +81-3-3292-7012
E-mail : e-mail@taiyo-electric.co.jp

Control Systems & Equipment

<http://www.taiyo-electric.co.jp/english/index.html>


TAIYO ELECTRIC CO., LTD.

Speed Control System by Inverter



1. Electric Propulsion System
2. Cargo Oil Pump
3. Electric Deck Machinery
4. Air Lub. Blower
5. Cool SW Pump
6. Refrigerator Compressor
7. E/R Ventilation Fan

The speed of Induction motor shall be variably controlled by inverter. Energy saving can be achieved by saving consumed power which is done by controlling motor speed properly.

This system also contributes ship's operation by easy maintenance.

INQUIRIES

Marine Business Division, Overseas Business Dept.
1-16-8 Uchikanda, Chiyoda-ku, Tokyo, 101-0047, Japan
Tel : +81-3-3293-3067 Fax : +81-3-3292-7012
E-mail : e-mail@taiyo-electric.co.jp

Coolers, Oil

<http://www.ushioreinetsu.co.jp/english/>

USHIO USHIO REINETSU CO., LTD.

MGO cooling system



The low viscosity of the sulphur fuels may cause engine troubles. This MGO Cooling System is the best solution to achieve both “low sulphur” and “low viscosity”.

- SOx emission control from ships
- EU Directive / Less than 0.1% sulphur content from 1st January, 2010
- CARB(California Air Resource Board) /Less than0.1% sulphur content from 1st January, 2012
- SECA(Sulfur Emission Control Area)/Less than0.1% sulphur content from 1st January, 2015

INQUIRIES

5-3, Creative-Hills, Imabari, Ehime, 794-0069, Japan

Tel : +81-898-34-1203 Fax : +81-898-34-1204

E-mail : ushio@ushioreinetsu.co.jp

Diesel Engines, Auxiliary

<http://www.dhtd.co.jp/en/index.html>

DAIHATSU DAIHATSU DIESEL MFG. CO., LTD.

8DEL-23



A long-stroke version of the eco-friendly DE-23 debuts, saving space with greater power and low fuel consumption.

With the installation of environmental devices and the increase in electronic equipment, onboard power consumption has been rising in recent years.

In response to this trend, we have incorporated a long-stroke design in our DE-23 diesel engine for marine use, an engine which has already received wide acclaim since the first deliveries in 2011.

The superb environmental performance remains the same, while achieving space-saving and greatly increased output.

INQUIRIES

2-10, Nihonbashi-Honcho 2-chome, Chuo-ku, Tokyo, 103-0023, Japan
Tel : +81-3-3279-0821 Fax : +81-3-3245-0395
E-mail : shinsuke.okajima@dhtd.co.jp

Diesel Engine, Propulsion

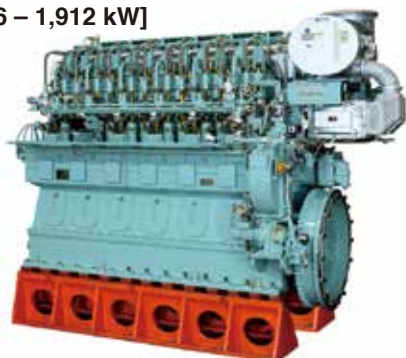
<http://www.akasaka-diesel.jp/en/>



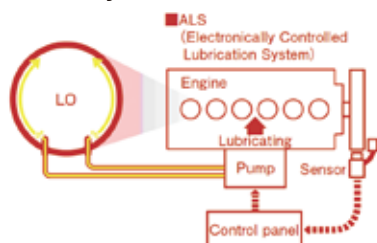
AKASAKA DIESELS LIMITED

Low running cost & Environmentally friendly diesel engine AKASAKA AX series

AX series [1,176 – 1,912 kW]



ALS (Electronically controlled lubrication system)



Akasaka Diesels Limited is one of the leading manufactures of main engine for ship propulsion in Japan. AX series is our latest model 4 stroke engine and has been developed in order to meet the environmental requirements.

• Saving fuel oil cost

AX series obtains the lowest specific fuel consumption in the same class engine. A low speed and a big torque with a large-diameter screw enhance propulsive efficiency, and realize low specific fuel consumption.

• Low lubricating oil consumption [ALS + AP ring]

ALS (Electronically controlled lubrication system) can lubricate necessary amount as it is needed, which realizes 0.5 g/kWh in cylinder lubrication rate. With AP ring which restrains carbon from adhering the piston and prevents the sliding surface of liners from polishing, it keeps the replenishment of system oil almost naught.

INQUIRIES

Tokyo head office, Oversea Sales Dept.

14th floor, south tower Yurakucho Denki Building, 1-7-1 Yurakucho, Chiyoda-Ku ,Tokyo Japan.

Tel : +81-3-6860-9085

E-mail : kaigaieigyou@akasaka.co.jp

Diesel Engines, Propulsion

<http://www.hanshin-dw.co.jp/english/product.html>



THE HANSHIN DIESEL WORKS, LTD.

Electronically controlled low speed four-stroke diesel engines



We The HANSHIN DIESEL WORKS, LTD. are the general maker of main engines and propulsion systems for ships, and have produced products by our own technology since 1918.

In order to meet the recent environmental requirements, the electronic management of engines is one of the most effective solutions. Electronically controlled two-stroke diesel engines have already been launched in the market. However such kind of Low-Speed four-stroke diesel engine has not been introduced yet.

The HANSHIN DIESEL WORKS, LTD. has newly developed electronically controlled low speed four-stroke diesel engines. One of the most typical features of this type of engine is to save fuel oil consumption by controlling electronically the fuel injection pattern in partial load. This system reduces fuel oil consumption by 3 to 5% in comparison with the conventional mechanically controlled system. This new system is adopted in the engine series of LH46LE, LH41LE, and LA32E.

INQUIRIES

Overseas Business Section

Tel : +81-78-335-6001

Email : overseas-section@hanshin-dw.co.jp

Diesel Engines, Propulsion

<http://www.yanmar.com/global/>

YANMAR YANMAR CO., LTD.

2-Stage Turbocharging System

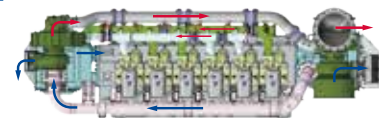


Yanmar has always pursued low fuel consumptions as its corporate creed " Fuel reward to Nation" since foundation.

This time, we developed "2-stage turbocharging system" compliant with IMO Tier2 regulations, further evolving the engine, achieving far superior to the conventional engine.

■ Top view

→ exhaust
→ Exhaust

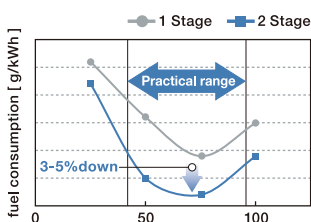


Simple system

It has simple system that 2 turbochargers and 2 air coolers are only connected by suction air pipes and exhaust pipe. It enables easy maintainance of the system.

Unchanged mountability and Good acceleration

We arranged turbocharger & air cooler unit on both sides of the engine. By this structure, we could achieve the equivalent mountability as the base engine by keeping the height of engine. This engine has good acceleration at low load by adapting dynamic pressure type exhaust manifold.



Evolution of high pressure Miller Cycle System

We aquired the air by using "2-stage turbocharging system" in spite of advanced closing timing of suction valve to compare with "1 stage turbocharging system". It enabled to achieve the low fuel consumption in wide load.

INQUIRIES

No.1 Sales Group Overseas Sales Division
Marine Products Sales and Marketing Division
Power Solution Business

1-1-1, Nagasu Higashidori, Amagasaki, Hyogo, 660-8585, Japan

Tel : +81-6-6489-8042 Fax : +81-6-6489-1082

E-mail : ichiro_fuwa@yanmar.com

Dual Fuel Engines, Auxiliary

<http://www.dhtd.co.jp/en/index.html>

DAIHATSU DAIHATSU DIESEL MFG. CO., LTD.

Dual fuel engines DE20DF / DE28DF / DE35DF



DE20DF is 205mm bore x 300mm stroke, DE28DF is 280mm bore x 390mm stroke and DE35DF is 350mm bore x 440mm stroke. They cover the output range of 0.9-4.0MWe.

The common rail pilot injection system is applied for stable combustion, and can be used MGO, MDO, HFO and LNG as main fuel. Based on the optimization of A/F-ratio and other many parameters on gas mode operation, these engines are applicable to IMO NOx Tier III regulation without any exhaust gas after-treatment, can also reduce CO₂ of 23%, SOx/PM of over 99%.

The safety concept is in accordance with IGF code. If a gas mode trip happens, the engine switches over from gas mode to diesel mode operation immediately without any fluctuation of the engine output and revolution.

INQUIRIES

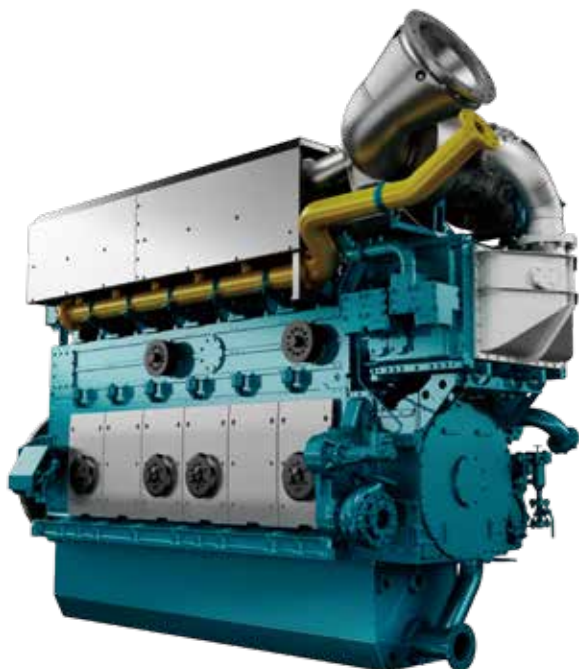
2-10, Nihonbashi-Honcho 2-chome, Chuo-ku, Tokyo, 103-0023, Japan
Tel : +81-3-3279-0821 Fax : +81-3-3245-0395
E-mail : shinsuke.okajima@dhtd.co.jp

Dual Fuel Engines, Propulsion

<http://www.niigata-power.com/english/index.html>

NIIGATA NIIGATA POWER SYSTEMS CO., LTD.

28AHX-DF



- The 28AHX-DF is an environmentally friendly engine, satisfying IMO Tier III NOx regulations. It uses clean gas combustion, making it possible to meet the new regulations without the need for an exhaust gas processing reactor.
- The 28AHX-DF offers both gas and diesel operation modes. It can be instantly switched at full load from gas to diesel operation, ensuring safe ship operation even in emergency situations.
- The 28AHX-DF is the world's first FPP directly couplable gas engine. It offers high dynamic performance equivalent to that of a diesel engine even during gas operation, as well as load pickup times, from idling to rated output, which compare favorably with diesel gas engines.

INQUIRIES

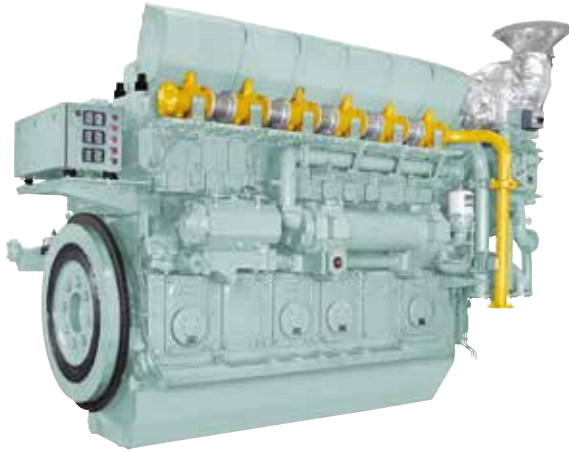
14-5, Sotokanda 2-Chome, Chiyoda-ku, Tokyo, 101-0021, Japan
Tel : +81-3-4366-1226 Fax : +81-3-4366-1310
E-mail : info1_sales1@niigata-power.com

Dual Fuel Engines, Propulsion

<http://www.yanmar.com/global/>

YANMAR YANMAR CO., LTD.

6EY26DF



The major feature of this engine is the redundancy capability due to the use of dual fuels. This engine is possible to continue operation by changing over to the diesel mode automatically, even when the gas mode operation fail.

In addition, the micro-pilot with its intense energy, ensures stable ignition capability. And the air-flow quantity control system with the bypass and waste-gate improves the engine transient response. These technologies enables adapt the engine as a ship propulsion engine.

Dual fuel engine has the following characteristics.

- Adaption IMO Tier 3 regulation.
- Redundancy by Dual Fuel (LNG and MDO / HFO).
- Stable ignition ability by Micro Pilot.

INQUIRIES

**No.1 Sales Group Overseas Sales Division
Marine Products Sales and Marketing Division
Power Solution Business**

1-1-1, Nagasu Higashidori, Amagasaki, Hyogo, 660-8585, Japan
Tel : +81-6-6489-8042 Fax : +81-6-6489-1082
E-mail : ichiro_fuwa@yanmar.com

Low pressure, Lean burn, Dual Fuel Engine, Tire III compliance

Dual Fuel Engines, propulsion (Low-Speed)

<http://www.ihigroup.co.jp/du/english/home/home.html>

DU DIESEL UNITED, LTD.

IHI GROUP
Realize your dreams



W6X72DF

Low-speed Low-pressure Dual fuel engine "X-DF"

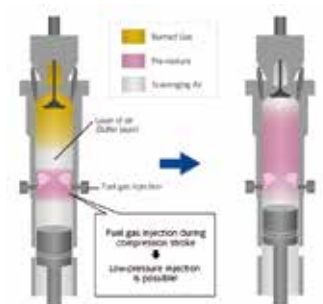
◆X-DF applies the pre-mixed lean burn technology and can meet IMO Tier III requirement without the exhaust gas after-treatment.

◆X-DF has advantages of lower Capex and Opex due to no requirement of a high pressure compressor.

◆For safety concerns, X-DF uses low-pressure LNG. (<16bar)

◆X-DF can switch from gas mode to diesel mode immediately.

◆X-DF is based on the low-speed two-stroke engine which is much proven in marine use.



DU-WinGD X-DF engine is the best eco-friendly solution!

INQUIRIES

Prime Kanda Bldg., 2-8, Kanda Suda-cho, Chiyoda-ku, Tokyo 101-0041, Japan

Tel : +81-3-3257-8222 Fax : +81-3-3257-8220

E-mail : info@du.ihigroup.co.jp

Eco-Friendly Product

http://www.motech.co.jp/e_index.html

MOL MOL Techno-Trade, Ltd.

AIR GARBAGE COMPACTOR Type AGC- II



MOL Techno-Trade, Ltd. developed air actuate Garbage Compactor AGC-II which is available to compress various waste materials such as plastic film, bottle and beverage cans by using compression air onboard. Simple design with easy operation will much effective for organizing waste materials with reduction of waste disposal cost.

INQUIRIES

MOL Techno-Trade, Ltd. / Ship's Supplies & Machinery Dept.

1-1, 1-Chome, Kyobashi, Chuo-ku, Tokyo, 104-0031, Japan

Tel : +81-3-6367-5370 Fax : +81-3-6367-5515

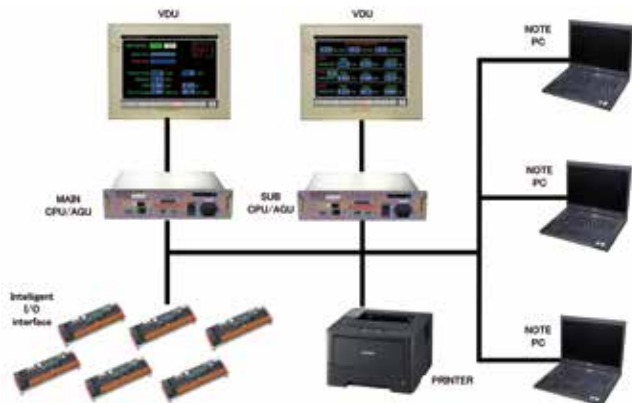
Email : ship-mach@motech.co.jp

Engine Telegraphs & Loggers

<http://www.kei-system.co.jp/indexe.html>

KEI system KEI SYSTEM CO., LTD.

Fuel consumption meter



Our data logger system is possible to display the following information by connecting with GPS by serial communication.

Confirm the fuel cost in real time inboard.

- Fuel consumption rate per day. (Tonnage)
- Distance of cruise per a ton of fuel. (Mile)
- Fuel consumption rate per hour.
- Possible to display and to record the fuel consumption rate etc. per a navigation.

INQUIRIES

1-5, 1-Chome, Ikunonishi, Ikuno-Ku, Osaka, 544-0024, Japan
 Tel : +81-6-6712-1151 Fax : +81-6-6712-1311
 E-mail : info3@kei-system.co.jp

Exhaust Gas Heat Recovery Unit

Exhaust Gas Heat Recovery Unit

<http://www.miuraz.co.jp/en/bwts/>

MIURA MIURA CO., LTD.

GK-G



The GK-G exhaust gas heat recovery unit works with a composite boiler to recover the waste heat from the G/E for use as a heat source. It can contribute significantly to saving space and reducing fuel costs. Air pollution regulations in the IMO MARPOL Convention have resulted in changes in the conditions for exhaust heat recovery and in future, it is anticipated that the amount of steam produced will be insufficient.

The GK-G makes effective use of the normally unused exhaust heat from auxiliary generators, enabling it to be used as a heat source.

INQUIRIES

7 Horie-cho, Matsuyama, Ehime, 799-2696, Japan
 Tel : +81-89-979-7060 Fax : +81-89-979-7082
 E-mail : hakuyo_eka@miuraz.co.jp

Fire Fighting System

<http://www.portenterprise.com>



Port Enterprise Co., Ltd.

100% Pure Electric Ferry



European Union Horizon 2020

4.3MW Largest Marine Lithium Battery Energy Storage System



PCC for TESLA Electric Vehicles



MSC 96/25/Add.1 Annex 2, Page 3, Ch. 17 Helicopter Facility Foam Fire Fighting Appliances for All New Builds from 2020!!!



100% Natural and Biodegradable
Non-Corrosive/Toxic
Expansion Foam Based

FIFI4MARINE

Marine Certified Fire Fighting System



INQUIRIES

No. 2-1-28, Chikko, Minato, Osaka, 552-0021, Japan
Tel : +81-6-6573-5391 Fax : +81-6-6575-3036
E-mail : penterj@penterj.co.jp

Fresh Water Generating Plant

<http://www.sasakura.co.jp/e/index.html>

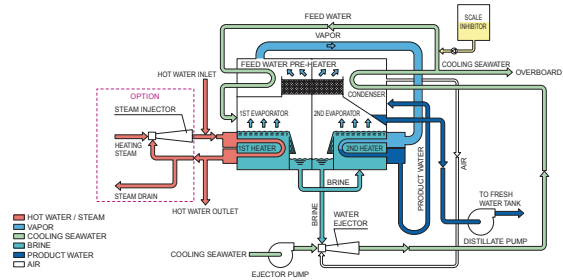


Multi-Effect Submerged Tube Type Fresh Water Generator



The Double-Effect plant is a compact, highly heat efficient seawater distilling plant with two chambers of 1st and 2nd effect in a single shell. The Triple-Effect plant contains three chambers of 1st, 2nd and 3rd effect, and is an even more highly efficient plant. As a heat source, either the waste heat from a diesel engine jacket cooling water or steam can be used. 40~200 tons per day type of capacity can be provided.

V-DE (DOUBLE EFFEC)



INQUIRIES

7-32, 4-chome, Takejima, Nishiyodogawa-ku, Osaka, 555-0011, Japan
 Tel : +81-6-6473-2134
 E-mail : marine@skm.sasakura.co.jp

Fresh Water Generating Plant

<http://www.sasakura.co.jp/e/index.html>



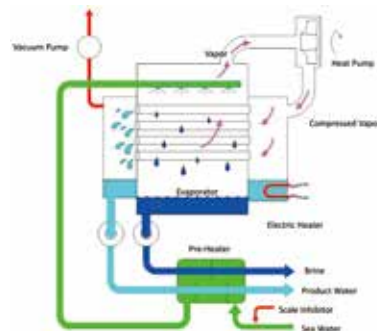
Vacuum Vapor Compression Shell & Tube Evaporation Type Fresh water generator



The VVC distiller system has four main components; a horizontal-tube, thin-film evaporator; a rotary blower and a back-up heater. Vacuum in the unit is maintained by a small vacuum pump.

Features:

- Scale-free horizontal tubular evaporator
- Maintenance-free & compact type heat-pump
- Evaporation can be operated by only electricity.



INQUIRIES

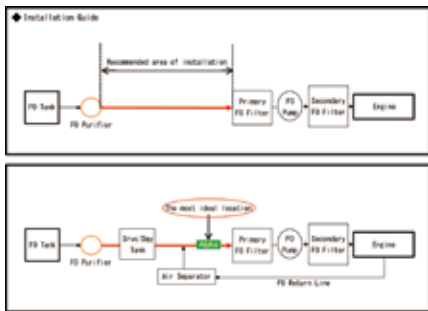
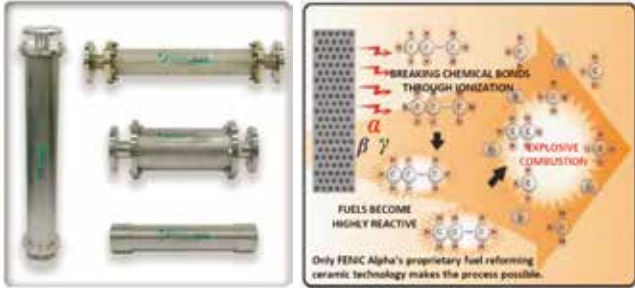
7-32, 4-chome, Takejima, Nishiyodogawa-ku, Osaka, 555-0011, Japan
 Tel : +81-6-6473-2134
 E-mail : marine@skm.sasakura.co.jp

Fuel Reformer

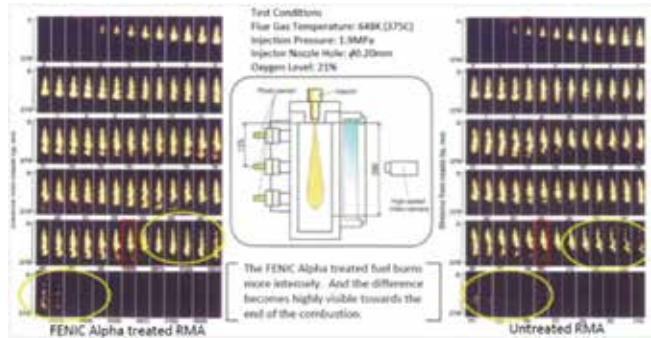


Port Enterprise Co., Ltd.

FENIC Alpha Fuel Reformer



FENIC Alpha upgrades a variety of fuels by breaking chemical bonds of complex hydrocarbons through ionization using our own proprietary ceramic technology.



It is well proven, completely safe, extremely easy to install, and requires absolutely no power source.

INQUIRIES

No. 2-1-28, Chikko, Minato, Osaka, 552-0021, Japan
 Tel : +81-6-6573-5391 Fax : +81-6-6575-3036
 E-mail : penterj@penterj.co.jp

Gas Combustion Unit

<http://www.volcano.co.jp/english/index.html>

***Volcano* VOLCANO CO., LTD.**

Gas Combustion Unit for LNG Fueled vessel
"MECS-GCU"



VOLCANO has 90years History.

We have more than 37years experiences of LNG Fuel for marine use.

We have delivery records for more than 180 vessels and have a reputation as safe and secure.

This system "MECS-GCU" can process Boil Off Gas(BOG) in the range from 250kW to 2400kW for LNG Fueled vessels which are expected to increase.

This system safely incinerates and processes BOG or Gas vaporized when bunkering on LNG Fueled vessels. When docking a LNG Fueled vessel, combustible gas in the fuel tank should be incinerated and replaced to inert gas. This system can incinerate various BOG consisting of CH₄ or inert gas.

On LNG Fueled vessels, BOG would be generated. CH₄, which is main component of BOG, is 25 times more potent than CO₂ for global warming. "MECS-GCU" makes it possible to process CH₄ without emitting into the atmosphere.

INQUIRIES

Sales Department, Combustion Engineering Division

1-3-38 Nonaka-kita, Yodogawa-ku, Osaka, 532-0034, Japan

Tel : +81-6-6392-5541 Fax : +81-6-6396-7609

E-mail : info-m@volcano.co.jp

Gas Engine

<http://global.kawasaki.com/en/mobility/marine/machinery/mge.html>

 Kawasaki
Powering your potential

KAWASAKI HEAVY INDUSTRIES, LTD.

Green Gas Engine (L30KG)



In April 2014, Kawasaki Heavy Industries, Ltd. obtained the type approval certificate from DNV-GL for Green Gas Engine L30KG — the main engine for large vessels fueled solely by gas with an output capacity of over 2 MW.

Green Gas Engine L30KG can reduce emissions far below the level set by IMO NOx Tier III regulations without relying on special equipment such as an SCR (Selective Catalytic Reduction) system. Its superior environmental performance also allows significant reduction of CO₂ and SOx emissions compared to diesel engines, thus helping marine vessels comply with various environmental regulations.

INQUIRIES

Marine Machinery Sales Department

1-14-5, Kaigan, Minato-ku, Tokyo, 105-8315, Japan

Tel : +81-3-3435-2374 Fax : +81-3-3435-2022

E-mail : marine-machinery-sales-e@khi.co.jp

Hydraulic Control Valve

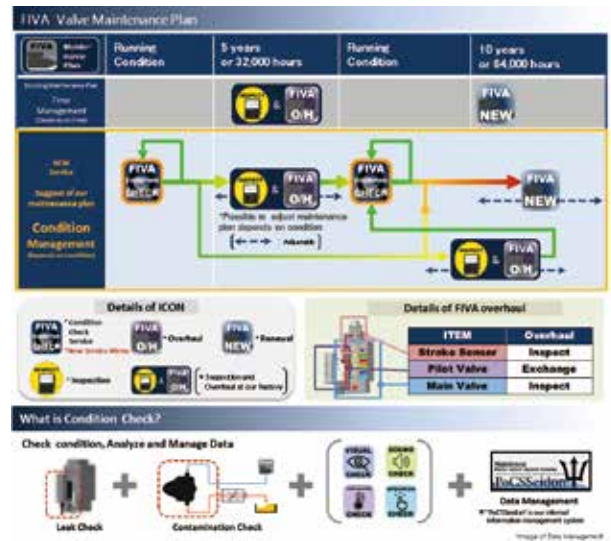
Nabtesco Nabtesco Corporation

FIVA(Fuel Injection and Valve Actuation) Valve



FIVA valve is an electro-hydraulic servo valve which controls fuel oil injection timing, quantity and exhaust valve actuation timing in order to optimize combustion condition at any load. This is applied to MAN Diesel and Turbo ME (electric controlled) two-stroke engine and installed on each cylinder. This contributes to eco-friendly engine actuation with fuel-efficient and low-emission.

We, Nabtesco, developed our own a high-precision pilot valve and a feedback sensor that bring high-quality and high-reliability. Furthermore, we offer its condition check and overhaul services as part of maintenance through our world-wide service network for your safety voyage.



INQUIRIES

Marketing & Sales Department, Marine Control System Company
 1617-1, Fukuyoshidai 1-chome, Nishi-ku, Kobe, Hyogo, 651-2413, Japan
 Tel : +81-78-967-5361 Fax : +81-78-967-5362
 E-mail : newbuilding@nabtesco.com

LNG Pump

<http://www.shinkohir.co.jp/en/>

SHINKO IND. LTD.

LNG Pump



In anticipation of the growing need for safe and clean energies, our company began developing low-temperature liquefied gas pumps in the 1970's.

In 1992, we supplied our first marine LNG pumps to a LNG carrier. Since then, our global market share has increased and now reached over 85%. These LNG pumps have become one of our main products that supports our company, much like our cargo oil pumps. Our LNG pump specifications can adapt to the shale gas energy revolution and other new demands, allowing us to receive a high reputation from customers worldwide.

INQUIRIES

Department : Business Dept. 1
5-7-21 Ohzu, Minami-ku, Hiroshima, 732-0802, Japan
Tel : +81-82-508-1000
E-mail : master@shinkohir.co.jp

Marine Solar Power

<http://www.ecomarinepower.com/>



ECO MARINE POWER CO., LTD.

Aquarius Marine Solar Power



Aquarius Marine Solar Power is an integrated renewable energy system for ships that includes a computer system, energy storage solution & marine solar power array.

The energy collected via the marine solar panel array or string of photovoltaic (PV) panels can be used to power a DC load, provide back-up power or be connected to an AC load via an inverter. Thus any ship can tap into the clean and renewable energy provided by the sun.

Equipment performance, system management, alarm monitoring and data logging functions are performed by the Aquarius MAS. This reliable marine computer system can also calculate vessel emissions and monitor fuel consumption.

INQUIRIES

Aqua Hakata 5F, 5-3-8, Nakasu, Hakata-ku, Fukuoka, 810-0801, Japan
Tel : +81-92-287-9677 Fax : +81-92-287-9501
E-mail : enquiries@ecomarinepower.com

Navigation Lights

<http://www.nippon sento.co.jp/>



LED Navigation Lights Type NL series



Type Approval
JG NL series

Highly reliable design of LED light sources

Conditions of the LED are always monitored. If a problem occurs in the LED, the inner circuit detects it, turns off the LED immediately, and sends an error signal to the control panel.

Both the LED light source and frame are highly-reliable and made in Japan.

Vibration-proof characteristics

Incandescent lamps burn out when vibrations are applied to them. LED lamps will not burn out.

Projection-free lamp windows

Lamp windows need no projections, such as Fresnel lenses, owing to superior LED light distribution characteristics of LED light sources.

These characteristics reduce possibility of ice coating and snow accretion and prevent adhesion of dust and stain.

Power saving and long life

The LED light source reduces power consumption down to 1/6 in comparison with the traditional incandescent lamps and allows remarkable power saving.

The rated life of the LED light source is as long as 50000 hours.

Replaceable light source unit

The LED light source and power supply are unitized and can be replaced easily. Three types have common units, allowing immediate replacement and recovery from problems with the minimum stocks.

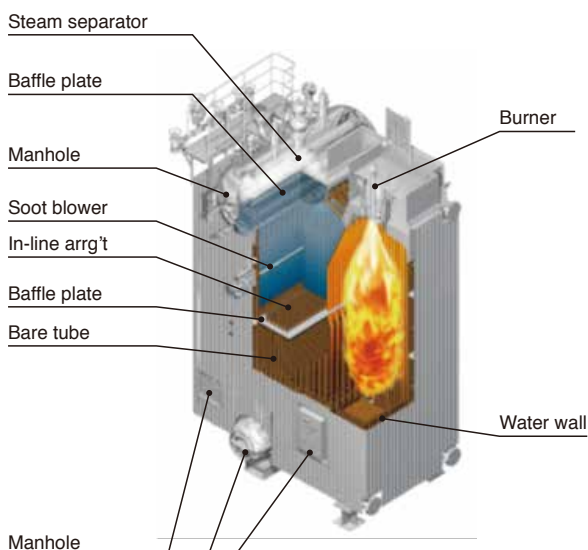
INQUIRIES

555, Takahisa, Yoshikawa, Saitama, 342-0035, Japan
Tel : +81-48-981-2661 Fax : +81-48-981-2664
E-mail : nissen@nippon sento.co.jp

Energy Saving

New Generation Auxiliary Boiler MAC-HB

<https://www.mhi-mme.com/>



Design features

1. Design on basis of MAC-B boiler well proven by thousands of delivery
2. Two-drum water tube boiler
3. Steam atomizing burner
4. Easy inspection and maintenance with In-line tube arrangement and manholes
5. Easy soot cleaning with bare tube
6. Improving boiler efficiency by increasing heating surface and heat transfer rate.

Design data

Model	: MAC-H35B~H60B
Steam capacity	: 35~60t/h
Working pressure	: 1.6~2.0MPa
Steam temperature	: Saturated
Fuel	: Oil(HFO&MGO)
Boiler efficiency	: 86.5%

INQUIRIES

Tokyo Branch Office

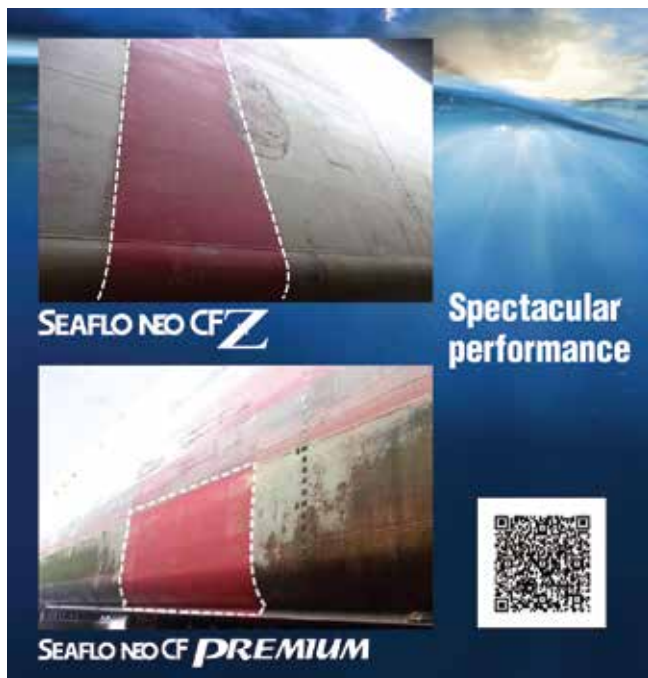
Tel : +81-3-6716-5331 E-mail: info_meet@mhi-mme.com

Paints

<http://www.cmp.co.jp/global.html>

CMP CHUGOKU MARINE PAINTS, LTD.

SEAFLO NEO CF Z / SEAFLO NEO CF PREMIUM



PREMIUM ANTIFOULING PERFORMANCE FROM PREMIUM ANTIFOULING TECHNOLOGIES

Premium antifouling, SEAFLO NEO CF Z and SEAFLO NEO CF PREMIUM have already been applied to hundreds of vessels since its launching into the industry.

CF (Cuprous oxide Free) formulation of these products contributes to environmental protection.

Further, newly introduced biocidal agents (ECONEA® for SEAFLO NEO CF Z, Selektope® for SEAFLO NEO CF PREMIUM) enhance the products' spectacular antifouling performance, together with CMP's cross linking zinc acrylate technology.

These products have been designed as a premium solution for vessels trading at a wide range of speed and activity, where the main focuses are long term hull performance, reducing hull resistance and fuel saving by maintaining very thin leached layer.

INQUIRIES

Chugoku Marine Paints, Ltd.

Headquarter

Tel : +81-3-3506-3951

Contact URL : https://www.cmp.co.jp/global/contact_global.html

Paints

<http://www.cmp.co.jp/global.html>

CMP CHUGOKU MARINE PAINTS, LTD.

CMP BIOCLEAN PLUS



Foul-release coating (FRC) is one of the environmental choices of antifouling and has proven application records since 2003.

"CMP BIOCLEAN" is in the CMP's silicone FRC product range. Its ultra-smooth surface which is regulated by the rheology control technology provides foul-release performance and fuel efficiency.

"CMP BIOCLEAN HB" is silicone finish coating. Single coat system of silicone finish is the CMP's unique technique.

"CMP BIOCLEAN PLUS", the latest version in the CMP BIOCLEAN series, has been newly developed based on CMP BIOCLEAN HB. It's added "PLUS Technology" induces resisting and releasing slime.

INQUIRIES

Chugoku Marine Paints, Ltd.

Headquarter

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Contact URL : https://www.cmp.co.jp/global/contact_global.html

Paints

<http://www.nipponpaint-marine.com>



NIPPON PAINT MARINE COATINGS CO., LTD.

A-LF-Sea – Ultra Low Friction Underwater Coating System -



A-LF-Sea is an advanced version of our low-friction coating “LF-Sea” delivering further propulsion benefits.

A biomimetic ultra-low-friction antifouling that works using a patented water trapping function to lower the hydrodynamic footprint of the hull.

Stable and long term antifouling is guaranteed by the use of a low friction copper-silyl-acrylate copolymer.

Used in conjunction with Nippon Paint Marine's 'Rheo' anticorrosive systems, fuel-savings can be further enhanced.

A-LF-Sea provides 10% fuel-saving effect in case of new building or full-blasting at M&R and 7~8% fuel-saving effect in case of spot blasting at M&R to be applied A-LF-Sea only without Rheological anti-corrosive coatings. Over 780 ships has already been applied with A-LF-Sea in the world as of December 2016. And the number of track record including LF-Sea (1st generation of A-LF-Sea) has reached 2100.

INQUIRIES

NIPPON PAINT MARINE COATING CO., LTD.

Tel : +81-78-735-5301

Contact URL : <http://www.nipponpaint-marine.com/en/inquire/index.php>

Paints

<http://www.nipponpaint-marine.com>



NIPPON PAINT MARINE COATINGS CO., LTD.

SI paint NOA – Protective Coating System with SI (Self-Indication) technology



NOA is Nippon's unique technology providing users for the first time with the ability to judge the correct thickness of the paint. NOA's unique patented technology reduces the need for complicated thickness checking by thickness gauge. NOA contributes to reduce workload for (1) coating inspection, (2) physical thickness measurement & marking and (3) post painting repair & touch-up. Furthermore, NOA contributes to secure (a) uniform coating, (b) specified thickness, (c) minimal excessive thickness and (d) corrosion protection for ship's life.

Especially for WBT, NOA has been applied over 1100 new buildings since 1998. And its 10 year corrosion protection records are recently confirmed on large LNG carriers.

INQUIRIES

NIPPON PAINT MARINE COATING CO., LTD.

Tel : +81-78-735-5301

Contact URL : <http://www.nipponpaint-marine.com/en/inquire/index.php>

PBCF

<http://www.pbcf.jp>

MOL MOL Techno-Trade, Ltd.

PBCF (Propeller Boss Cap Fins)



PBCF is an energy saving device installed on a propeller to improve propulsive efficiency by eliminating hub-vortex and by reducing torque loss. In consequence, vessel fuel consumption is reduced up to 5%. PBCF is originally developed by Mitsui O.S.K. Lines in 1987, and advanced PBCF has launched since May 2017. Total number of installation is now over 3,200 vessels in all over the world.

Principal Benefits of PBCF

- Saving fuel up to 5%, corresponding reduction of NO_x and CO₂ emissions.
- Reduces propeller-induced underwater-noise and vibrations.
- Reduces propeller-induced underwater-noise and vibrations.
- Simple and quick installation, just the replacement of the existing propeller boss cap.
- Suitable to both new buildings and retrofit applications.
- Pay-back time is less than 1 year, even at low fuel prices.

INQUIRIES

MOL Techno-Trade, Ltd. / PBCF Dept.

1-1, 1-Chome, Kyobashi, Chuo-ku, Tokyo, 104-0031, Japan

Tel : +81-3-6367-5380 Fax : +81-3-6367-5516

E-mail : pbcf@motech.co.jp

Propellers, Controllable

<http://www.kamome-propeller.co.jp/en>



KAMOME PROPELLER CO., LTD.

CP Propeller



As the torque-rich of main engine caused by the fouling of the hull or the effect of waves and wind can be avoidable by adjusting CPP pitch angle and speed properly through ALC or combination control, when building the vessel, the main engine output can be minimized compared with FPP without considering margin to reduce fuel consumption.

The advantage of CPP for large energy saving is exercised by the shaft generator system driven by main engine with constant speed or the hybrid propulsion system where diesel main engine and electric motor/generator are combined as a propulsion prime mover.

INQUIRIES

Business Operation Division, International Department

690 Kamiyabe-cho, Totsuka-ku, Yokohama, 245-8542, Japan

Tel : +81-45-811-2461 Fax : +81-45-811-9444

E-mail : info@kamome-propeller.co.jp

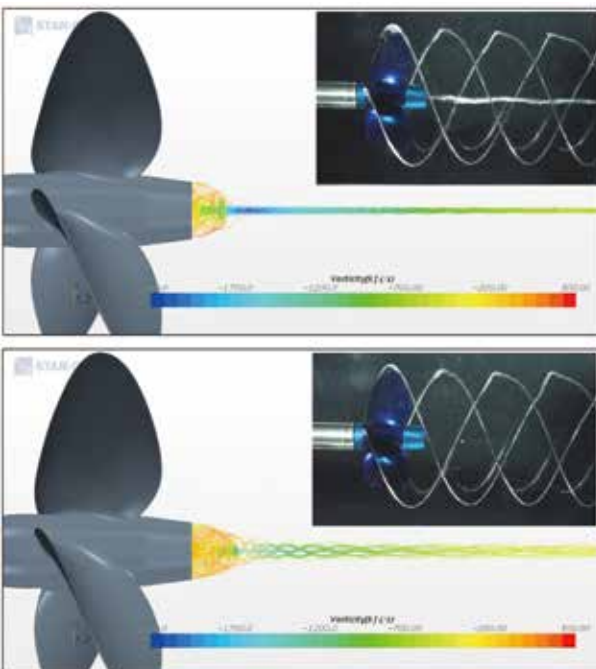
Propellers, fixed pitch

<http://www.kamome-propeller.co.jp/en>



KAMOME PROPELLER CO., LTD.

SG Propeller



The SG propeller applies the reducing technology of the hub vortex strength and the optimization technology of the blade loading distribution and the numerical calculations including the cavitation simulation, the propeller exciting force estimation, etc. are introduced in its design. The reduced hub vortex strength improves the lower pressure region behind the hub which causes the thrust deterioration. The optimized blade loading distribution increases the propeller open water efficiency without deteriorating the cavitation performance.

Accordingly the SG propeller improves the efficiency about 3% than the conventional propeller and has been installed in over 350 vessels.

INQUIRIES

Business Operation Division, International Department

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E-mail : info@kamome-propeller.co.jp

Propellers, fixed pitch

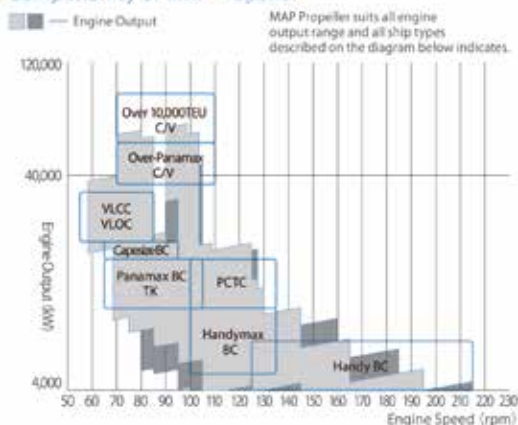
<https://www.mhi-mme.com/>



MAP (Mitsubishi Advanced Propeller) Mark-W Propeller



Compatibility of MAP Propeller



Improvement of the tip shape enhanced the efficiency of MAP Mark-W propellers while keeping cavitation performance levels virtually unaffected. These propellers can be tailored so suit slow-steaming needs and are also ideal for retrofitting existing propulsion systems.

(Features)

- Economical
 - High propulsion efficiency
- Highly reliable
 - Maintains excellent propeller strength
- Excellent cavitation performance with streamlined tips and reduced blade area
- Compact design
 - Lower propeller mass and inertia moment

INQUIRIES

Business Development Division

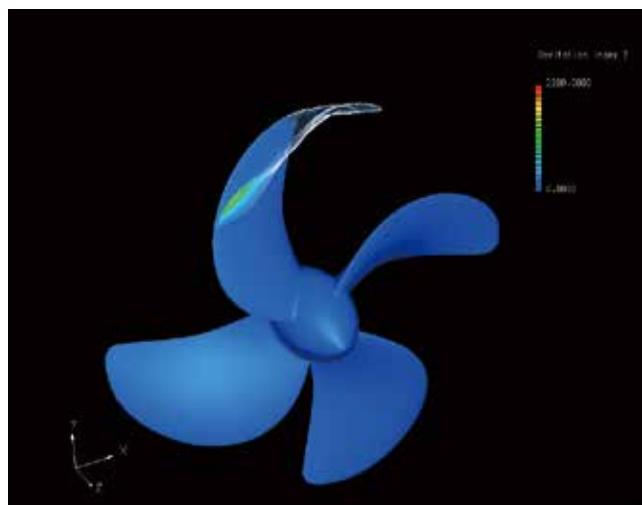
Tel : +81-3-6716-5330 E-mail : info_meet@mhi-mme.com

Propellers, fixed pitch

<https://www.nakashima.co.jp/eng/>



GPX PROPELLER



GPX PROPELLER is the latest fixed pitch propeller which integrates several design technologies including Non-Hub Vortex, Small blade area, Coordination of Wake distribution and Tip rake.

- Non-Hub Vortex technology can recover energy loss which is caused by hub vortex.
- Small blade area can reduce friction resistance and use CFD analysis.
- Though Wake distribution is different by each vessel, GPX propeller is coordinated based on each wake pattern.
- Tip rake is also developed throughout many model tests and calculations, and now Tip rake can stabilize cavitation and reduce Pressure amplitude.

GPX propeller is optimized by considering balance of those technologies and can achieve higher efficiency.

INQUIRIES

Sales & Marketing Department

688-1, Joto-Kitagata, Higashi-Ku, Okayama, 709-0625, Japan

Tel : +81-86-279-5111 Fax : +81-86-279-3107

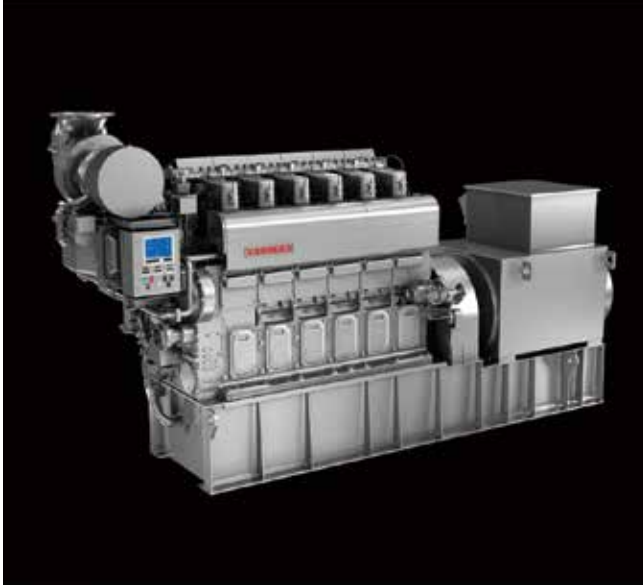
E-mail : npcwebmaster@nakashima.co.jp

Propulsion Systems (electric)

<http://www.yanmar.com/global/>

YANMAR YANMAR CO., LTD.

6EYG26L



Marine gas engine EYG26L has 25% reduction of the CO2 emission from the base diesel engine by adopting new technology against fluctuation of propulsion load and fuel calorie.

This engine has won both of type approval certificate of Engine type and Engine Safety, Control and Alarm System by DNV.

~ Features ~

- NOx emission adapts to IMO/Tier 3 regulation, by applying lean-burn system.
- 6EYG26 engine accomplishes the prescribed performance against the fuel of methane number 65 or more.
- 6EYG26 engine also maintains the performance against the fuel calorie variation.
- 6EYG26 equips knocking detection and avoidance system.

INQUIRIES

**No.1 Sales Group Overseas Sales Division
Marine Products Sales and Marketing Division
Power Solution Business**

2-1-1, Yaesu, Chuo-ku, Tokyo, 104-8486, Japan

Tel : +81-3-3275-4909 Fax : +81-3-3275-4969

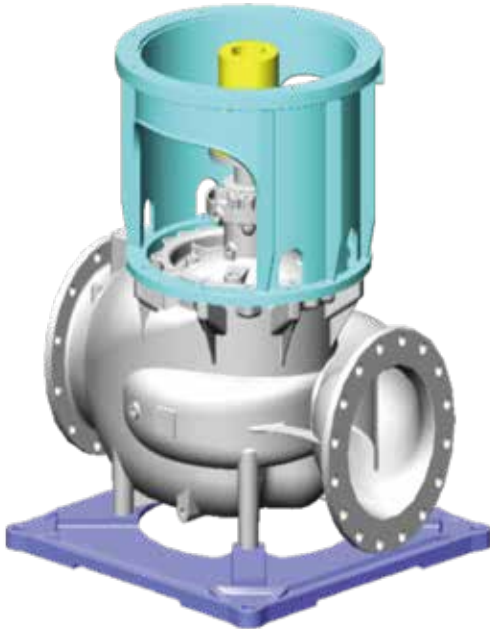
E-mail : ichiro_fuwa@yanmar.com

Pump



NANIWA PUMP MFG. CO., LTD.

SOx / Nox Scrubber Water Circ. Pump



Water Circulating Pump which is designed for NOx & SOx Scrubber System has been developed.

Its features are as follows:

- Specially designed for SOx/NOx Scrubber System.
- All wetted parts are made of stainless steel enduring a wide range of pH value (pH3~11).
- Newly designed diaphragm type mechanical seals in order to resist smoke dust which contaminates the pumping water.

INQUIRIES

Tel : +81-6-6541-6231

E-mail : info@naniwa-pump.co.jp

Inverter Control Main Cooling S.W. Pump

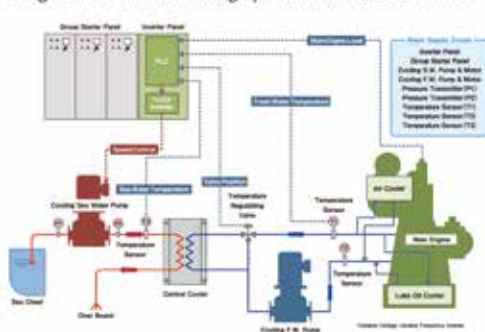
Pump, Inverter Control



NANIWA PUMP MFG. CO., LTD.

NEO-ME

Diagram for Central Cooling System with NEO-ME series



How does NEO-ME affect fuel consumption?

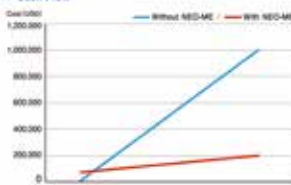
■ Fuel Consumption of Generator Engine

334.8ton/year

88% Less

44.0ton/year

■ Cash Flow



Basic Technical Data
 a) Ship type: Bulk Carrier
 b) Inverter Drive Motor: 2000 kW, 3000 rpm
 c) 2 set x 1.02MW = 2.04MW = 2.75MW
 d) Shaft Horse Power at specific Q: 11000 HP
 e) Average Rotational Speed of the pump: 870rpm
 f) 20% of rated speed assumption
 g) Shaft Horse Power at 80% of rated speed: 10700HP
 h) Design Data of Aux. Engine
 i) Rate of fuel consumption: 180g/kWh
 j) Efficiency of generator: 94%
 k) Operation time: Maximum: 7.200 hours per year
 l) Efficiency of inverter: 95%
 m) Electric Motor
 n) Rating: 10200kW
 o) Efficiency: 97%
 p) Approx. Price: USD 800,000

Naniwa Pump supports customer expectation for “greener ships”, paying close attention to the following parameters.

- Environmental Protection
- Safety of Operation
- Saving Energy

NEO-ME series control rotational speed of Main Cooling Sea Water Pump according to following information.

- Main Engine Load
- Sea Water Temperature
- Temperature Regulation Valve Position
- Fresh Water Temperature

NEO-ME series operate Main Cooling Sea Water Pumps with economy and safety. Its standard features are as following:

- High response performance to main engine load
- 0% Speed at 100% F.W. Circulation
- Adaptive to sea water temperature change
- Based on those features NEO-ME series realizes:
- Full time minimum fuel consumption
- Optimized operation for vessel speed reduction

For safety operation:

- Flushing alert system is incorporated.

INQUIRIES

Tel : +81-6-6541-6231

E-mail : info@naniwa-pump.co.jp

Pumps, Bilge



Heishin PC Pump



Heishin PC Pump is capable of handling high-viscosity fluids, high-concentration slurries and fluids containing solids. As conveyed materials move through pipes, practically no unpleasant odors are produced. Also, it is a quiet pump that makes no drive noise aside from the motor. Heishin PC Pump with these features is best suited for conveyance of bilge water.

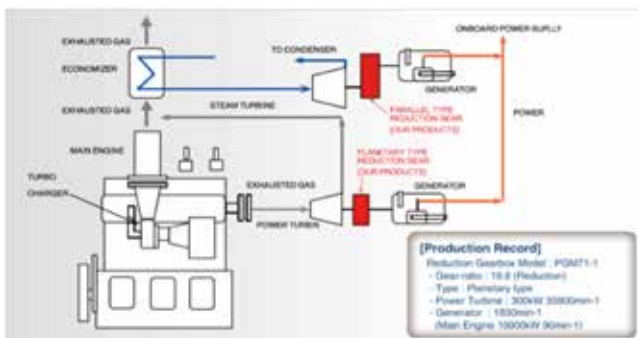
INQUIRIES

Nihombashi Kato Bldg. 8F, 2-1-14, Nihombashi, Chuoh-ku, Tokyo 103-0027, Japan
 Tel : +81-3-5204-6380 Fax : +81-3-5204-6377
 E-mail : info@mohno-pump.co.jp

Reduction Gear



Reduction Gearbox for Exhaust Power Recovery System



Exhausted gas from marine diesel engine remains much energy to be recovered.

Our reduction gearbox is used in the exhaust power recovery system with power turbine and steam turbine.

- Light weight and compact design.
- High reliability on many production experience for continuous use high speed turbine.
- Two kinds of type are selectable as parallel-type and planetary-type, depend on turbine speed.



Reduction Gearbox (Model : PGM71)

INQUIRIES

405-3 Yoshinocho 1-chome, Kita-ku, Saitama, 331-0811, Japan
 Tel : +81-48-652-6708 Fax : +81-48-652-8719
<https://www8.hitachi.co.jp/inquiry/hitachi-nico/en/form.jsp>

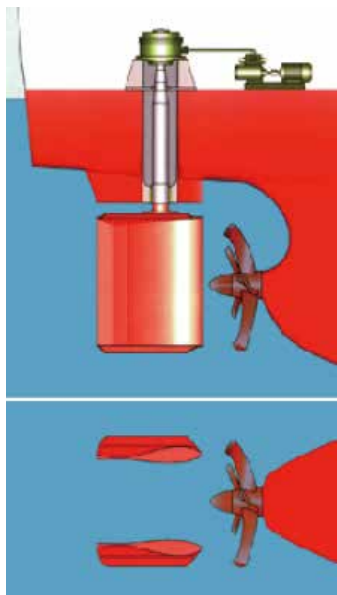
Rudders

<http://www.japanham.com/en>

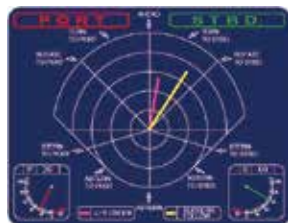


JAPAN HAMWORTHY & CO., LTD.

Super VecTwin System



Outline of VecTwin Rudder



Joystick panel



Example of thrust vector

- Excellent maneuvering system with a pair of high lift rudders fixed behind a propeller.
- Safe navigation maneuverability having any operation mode including going-astern with turning capability, hovering, extra dead slow forwarding, and turning port and starboard, with forward direction propeller revolution, which develop thrust in all directions.
- Improved propulsive efficiency with reaction fins and propeller boss cap fins (PBCF) which removes propeller hub vortex.
- Function of easy and short-time approaching to and departing from berth reduces mental and physical hardships of crew, which brings an excellent economical effect.
- An emergency stop which reduces the stopping distance to about a half of that of a conventional ship.

INQUIRIES

Omodaka Bldg., 1-15-1, Shigino-nishi, Joto-ku, Osaka, 536-0014, Japan
 Tel : +81-6-6962-8877 Fax : +81-6-6962-8899
 E-mail : jhc@japanham.co.jp

Rudders, High Lift

<http://www.kamome-propeller.co.jp/en>



KAMOME PROPELLER CO., LTD.

K-7 Rudder



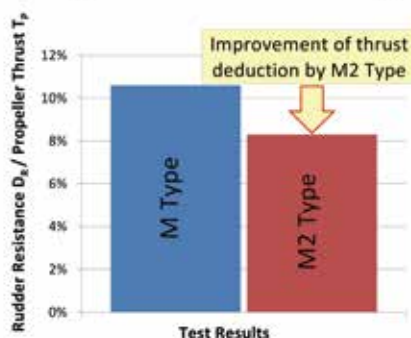
M Type



M2 Type

The K-7 Rudder consists of the main rudder and the flap fitted to the rudder with hinge. As the flap turns more than 2 times of the main rudder angle during steering, the lift generated in the propeller slip stream is higher than the conventional rudder by the effect of the camber composed by the main rudder and the flap.

As the K-7 rudder area required to attain the same turning performance becomes smaller than the conventional rudder required for the same ship, K-7 rudder makes the rudder resistance reduced and contributes to the energy saving.



INQUIRIES

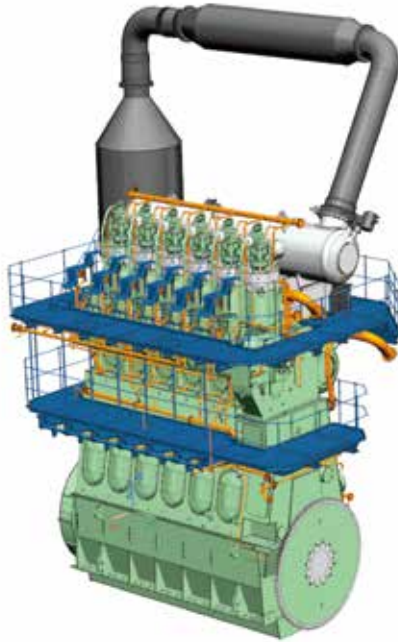
Business Operation Division, International Department
 690 Kamiyabe-cho, Totsuka-ku, Yokohama, 245-8542, Japan
 Tel : +81-45-811-2461 Fax : +81-45-811-9444
 E-mail : info@kamome-propeller.co.jp

Selective Catalytic Reduction System

<http://www.hitachizosen.co.jp/english/index.html>

Hitz HITACHI ZOSEN CORPORATION
Hitachi Zosen

**Hitz Green SCR (Selective Catalytic Reduction)
for 2 stroke engines**



Hitachi Zosen developed an Hitz Green SCR (jointly developed with MAN Diesel & Turbo) for marine vessels by adopting NOx removal catalysts for industrial plants in order to comply with TIER III NOx emission standards (The TIER III standards regulate 80% reduction of NOx from 2016 compared with the TIER I standards in 2005). This system is a Marine HP SCR for low speed Main Engine which is compliant with TIER III and enables Engines not to emit extra CO₂ and has the feature of compacting, too.

INQUIRIES

**Sales Department Marine Machinery & SCR System Business Unit
Machinery Business Headquarters**

Tel : +81-3-6404-0143 Fax : +81-3-6404-0149

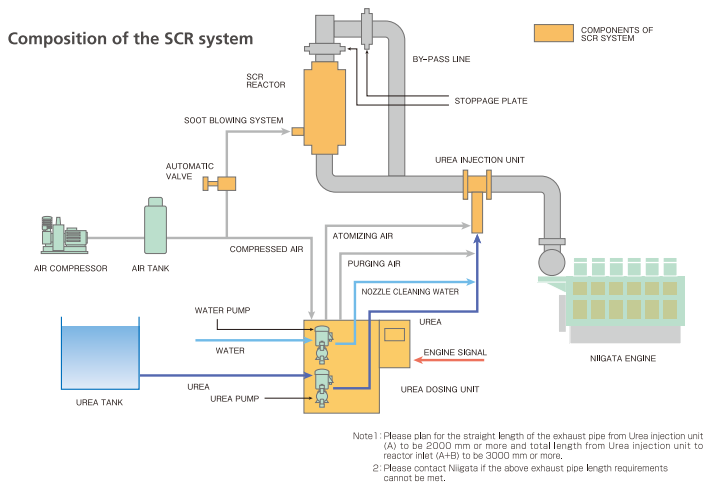
E-mail : scr-maritime@hitachizosen.co.jp

Selective Catalytic Reduction System

<http://www.niigata-power.com/english/index.html>

NIIGATA POWER SYSTEMS CO., LTD.

Selective Catalytic Reduction System



- Niigata has developed marine SCR compliant with the NOx Tier III enforced by the IMO, and prepared SCR for each engine (550 to 6600kW) as the line-up.
- Niigata has delivered the first SCR system for the marine propulsion engine in 1995, nearly 20 years ago, which is still working. Based on such experiences, Niigata started to supply SCR which can be apply to not only new building ships but also existing ships.
- Development of this SCR system utilizes the part of technologies and findings for compact design in the research undertaken by Niigata for "Super-clean Marine Diesel" Project of the JSMEA.

INQUIRIES

14-5, Sotokanda 2-Chome, Chiyoda-ku, Tokyo, 101-0021, Japan
 Tel : +81-3-4366-1226 Fax : +81-3-4366-1310
 E-mail : info1_sales1@niigata-power.com

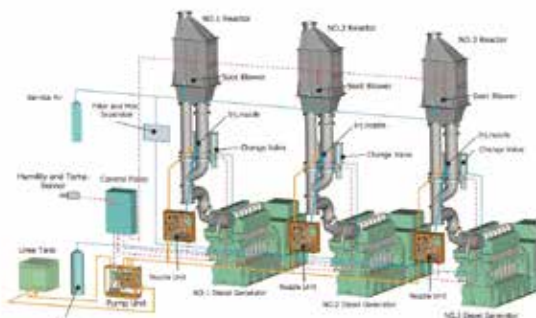
Environmental Technologies

Selective Catalytic Reduction System

<http://www.yanmar.com/global/>

YANMAR CO., LTD.

Selective Catalytic Reduction System



The SCR System with Three Unit Engine Installations



YANMAR developed SCR System that meets to IMO Tier3 regulations.

Making use of our original technology and wealth of experience, we have created a system whose design and functionality are optimized for marine vessels, and which is perfectly matched for use with diesel engines, both in ECA and non-ECA waters. In addition, repeated verification tests have been conducted on ocean-going vessels (equipped with SCR systems for 3 auxiliary engines) to further improve the system.

- The by-pass branching section and catalytic reactor have been integrated into a single unit, achieving high-performance NOx reduction. Engines equipped with our SCR system is obtained NOx certification (Scheme A), whilst maintaining performance onboard.
- Control unit integrates all devices including catalytic reactors mounted to each individual engine. A single pump unit and control panel can manage system for multiple engines, allowing the system to remain compact.

INQUIRIES

No.1 Sales Group Overseas Sales Division
Marine Products Sales and Marketing Division
Power Solution Business
 1-1-1, Nagasu Higashidori, Amagasaki, Hyogo, 660-8585, Japan
 Tel : +81-6-6489-8042 Fax : +81-6-6489-1082
 E-mail : ichiro_fuwa@yanmar.com

Sewage Treatment Equipment

<http://www.sasakura.co.jp/e/index.html>

SASAKURA ENGINEERING CO., LTD.

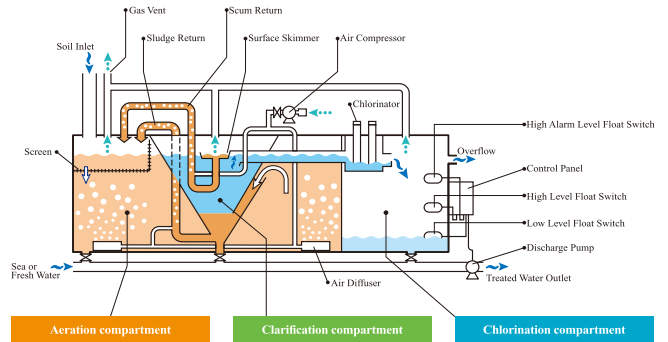
Biological type Sewage Treatment Plant



The vessel discharge restrictions of the International Convention for the Prevention of Pollution from Ships are not limited to oil, but rather control sewage as well.

Sasakura's Sewage Treatment Plant has met to IMO(International Maritime Organization) regulation, MEPC. 227(64).

◆Flow Diagram



INQUIRIES

7-32, 4-chome, Takejima, Nishiyodogawa-ku, Osaka, 555-0011, Japan

Tel : +81-6-6473-2134

E-mail : marine@skm.sasakura.co.jp

Shaft Driven Generating System

<http://www.nishishiba.co.jp/nsdk/index.htm>

NISHISHIBA ELECTRIC CO., LTD.

Shaft Driven Generating System



The shaft generating system driven by a high-efficiency main engine enables energy saving.

Operation of the shaft generating system reduces the operation time of the diesel generator engine, resulting in maintenance work saving.

INQUIRIES

NISHISHIBA ELECTRIC CO., LTD. Osaka Branch

29th Fl., Umeda Sky Building West Tower, 1-30 Oyodonaka 1-chome, Kita-ku, Osaka, 531-6129, Japan

Tel : +81-6-4797-2451 Fax : +81-6-4797-2453

SOx Scrubber

<http://www.portenterprise.com>



Port Enterprise Co., Ltd.

ME Production SOx Scrubber



DFDS 391teu RORO
Main Engine x 1
Open Loop



ME Production SOx scrubber is 100% order made in order to ensure its efficacy as well as easy installation. Both the size and shape can tailored to match any vessel without compromising its performance.

In addition to that, this award-winning system offers options of Na₂CO₃ and MgO for alkaline chemical along with conventional NaOH. Both Na₂CO₃ and MgO can be carried in powder instead of liquid. They are totally safe, easy to handle, and less expensive than NaOH.



ME Production SOx scrubber can also be catered for special needs, such as "Open Loop Plus" with optional active alkaline chemical dosing function to operate in freshwater/low salinity water areas or where strict pH discharge limit applies, containerization of wash water processing system for retrofit projects or vessels with rather limited space, and many more, limited only by your imagination.



TORM L-Class MR2
Main Engine x 1
Aux Engine x 4
Boiler x 2
Open Loop
(Hybrid Ready)



INQUIRIES

No. 2-1-28, Chikko, Minato, Osaka, 552-0021, Japan
Tel : +81-6-6573-5391 Fax : +81-6-6575-3036
E-mail: penterj@penterj.co.jp

EGCS, The world smallest SOx scrubber

SOx Scrubber (EGCS)

<http://www.fujielectric.com>

Fuji Electric FUJI ELECTRIC CO., LTD.

Marine Exhaust Gas Cleaning System / SAVEBLUE



◇ Compact Design

Fuji's SOx Scrubber is the world's smallest. It can be installed with ease in both new builds and retrofits with high performance of 98% Sox removal

◇ Minimal pressure loss

Our patented cyclone system reduces the loss of pressure that usually attends scrubber use, which keeps more power for the engine.

INQUIRIES

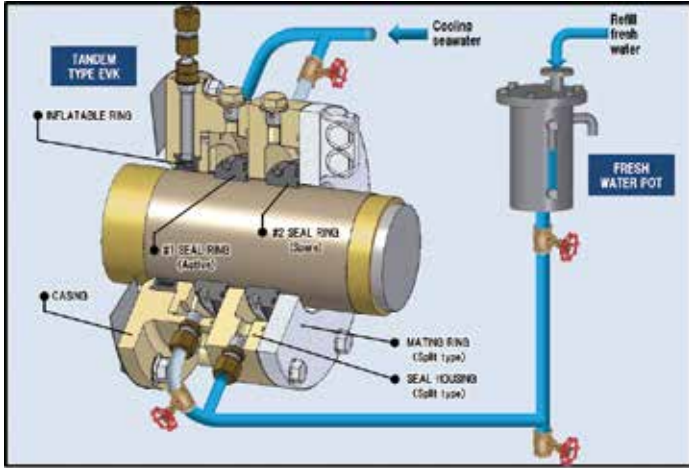
Gate City Ohsaki, East Tower 11-2, Osaki 1-chome, Shinagawa-ku, Tokyo 141-0032, Japan
Tel : +81-3-5435-7066 Fax : +81-3-5435-7475
E-mail : mita-itsuro@fujielectric.com

Stern Tube Seal

<https://http://www.kemel.com/>

KEMEL EAGLE INDUSTRY CO., LTD.

Tandem Type EVK Seal



Utilizing our expertise and know-how built over the years, and as the world leader in innovation, KEMEL has recently launched a new water lubricated stern tube seal called "Tandem Type EVK Seal". This new product greatly contributes to safe navigation and environmental conservation.

FEATURES

- **Improved Wear Resistance**

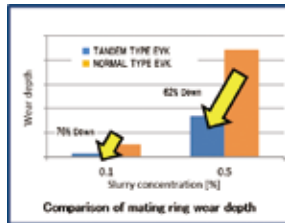
The active #1 seal ring is always lubricated by self-controlled clean fresh water. This results in a significant reduction in wear of the mating ring, seal housing and seal ring.

- **High Operability**

The spare #2 seal ring can be easily activated only by closing the valves without disassembling the seal unit.

- **Easy Upgrade from Existing EVK**

Converting an existing EVK seal into a Tandem type can be easily done just by adding another seal housing. (Ask KEMEL for more details.)



INQUIRIES

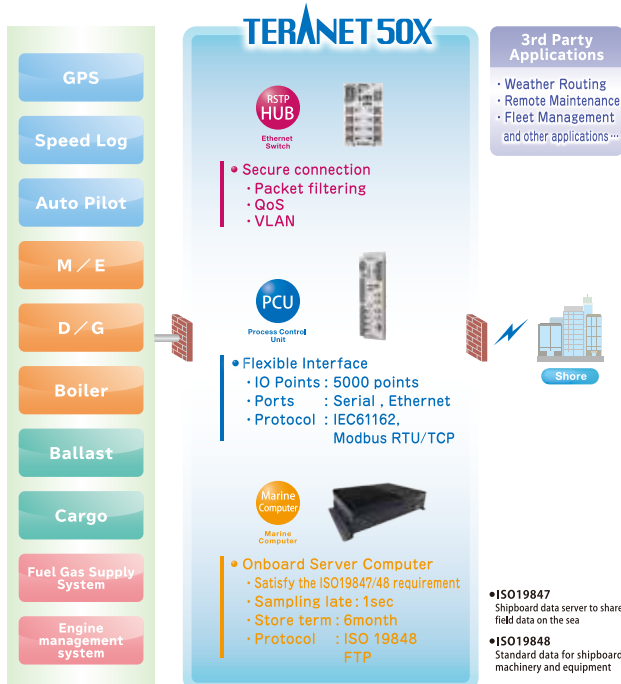
Eagle Industry Co., Ltd. KEMEL Tokyo Branch
 Tel : +81-3-3436-4830
 E-mail : sales.tokyo@kemel.com

Switchboards, Control systems, automatic, Monitor panels, Monitoring & control systems, Starters

<http://www.terasaki.co.jp/english/>

TERASAKI TERASAKI ELECTRIC CO., LTD.

TERANET50X



TERANET 50X system integrates interchangeable and standard components over a dual loop Ethernet network, which effectively minimizes the impact of equipment. Then, the ship-to shore information sharing platform enable ships and land- based offices to share data with wide range of applications through communication and storage features designed for utilizing " Big Data" base. In addition, the system is put on energy-saving ship and contributes to global environmental protection by increasing the optimum operating efficiency of the plant.

INQUIRIES

6-13-47 Kamihigashi, Hirano-ku, Osaka, 547-0002, Japan
 Tel : +81-6-6791-2790 Fax : +81-6-6791-2773
 E-mail: hakuei-osaka@terasaki.co.jp

Turbochargers

<https://www.mhi-mme.com/>



MET Turbochargers are the standard worldwide exhaust gas turbochargers used in large marine and stationary engines.



Hybrid Turbochargers

As well as supplying supercharged air to the engine, our hybrid turbochargers generate electric power from the turbocharger's rotational energy.



Variable Turbine Inlet (VTI) Turbochargers

Turbochargers improve engine performance at low load operation by maintaining high scavenging pressure by changing the nozzle area.



Integral EGB Turbochargers

Ordinary, exhaust bypass line has been installed between exhaust gas receiver and exhaust gas duct of the engine. Integrated EGB enables to bypass the exhaust gas by integrating the bypass pipe and open/close valve on turbocharger in between gas inlet casing and outlet gas casing.

Integrated EGB is also available by retrofitting from standard MET turbocharger by just changing several parts. Also, this system could be applicable to temperature increment procedure at 2-stroke engine with Low Pressure SCR system.

INQUIRIES

Tokyo Branch Office

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WHRS(Waste Heat Recovery System)

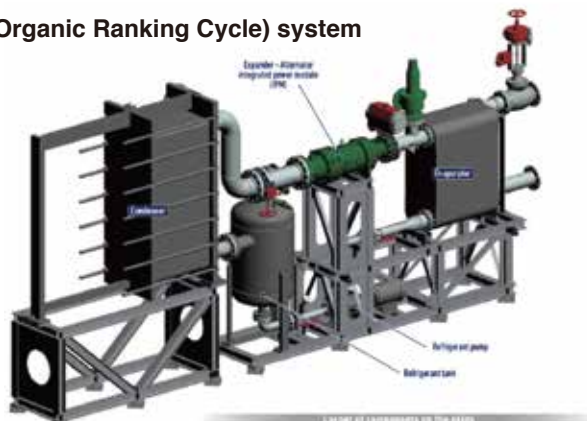
<https://www.mhi-mme.com/>



WHRS



ORC (Organic Ranking Cycle) system



WHRS

WHRS is a marine waste heat recovery system that carries out high efficient power generation onboard ships through effective utilization of energy from the marine engines' exhaust gas. Exhaust gas energy is effectively recovered through the optimal control of the combination of exhaust gas and steam turbines lowering a ship's fuel costs.

ORC (Organic Ranking Cycle) system

ORC is compact power generation systems that enable electrical power recovery and power generation using a heat transfer medium with a boiling point lower than that of water, like those used in air conditioners.

Net output power (kW)	115
Output voltage (V)	300 to 480
Frequency (Hz)	50/60
Width x length x height (m)	1.3 x 2.5 x 2.5
Dry weight (kg)	8,000
Cooling water	Sea water or fresh water
Working fluid (Refrigerant)	R245fa
Hot water temperature (°C)	75 to 95
Hot water amount (t/h)	150 to 200
Cooling water temperature (°C)	5 to 20
Cooling water amount (t/h)	150 to 250
Rated alternator speed (rpm)	2k/3000
Beating type	Active controlled magnetic
Alternator type	Permanent magnet synchronous
Expander type	Single stage radial

INQUIRIES

Business Development Division

Tel : +81-3-6716-5330 E-mail : info_meet@mhi-mme.com

Winches, mooring, electric & hydraulic

<http://manabezoki.co.jp/>



MANABE ZOKI CO., LTD.

Electric deck machinery driven by Inverter



Our electric deck machinery is driven by inverter system which enables you to operate Windlass and Mooring winch very smoothly and easily. In addition to eco-friendly owing to no use of working oil, by adopting our own sampling-controlled AUTO TENSION system, ship can keep the mooring position in stable condition even though changing marine tide or loading quantity on board. Sampling-controlled AUTO TENSION controls each winch group independently and each winch group works in interval during AUTO TENSION mode. You can also easily adjust output torque from 20% to 100% by torque volume knob according to mooring condition.

INQUIRIES

2F Ichigo Mita Building 5-13-18 Shiba, Minato-Ku, Tokyo, 108-004, Japan
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E-mail : eigyou_2@manabezoki.co.jp



JAPANESE MARIN ECO PRODUCTS

August.2018.Revision

<http://www.jsmea.or.jp/eco-products>



JAPAN

JSMEA

Japan Ship Machinery and Equipment Association

