

Hyundai-ATLAS Waste Oil Incinerators

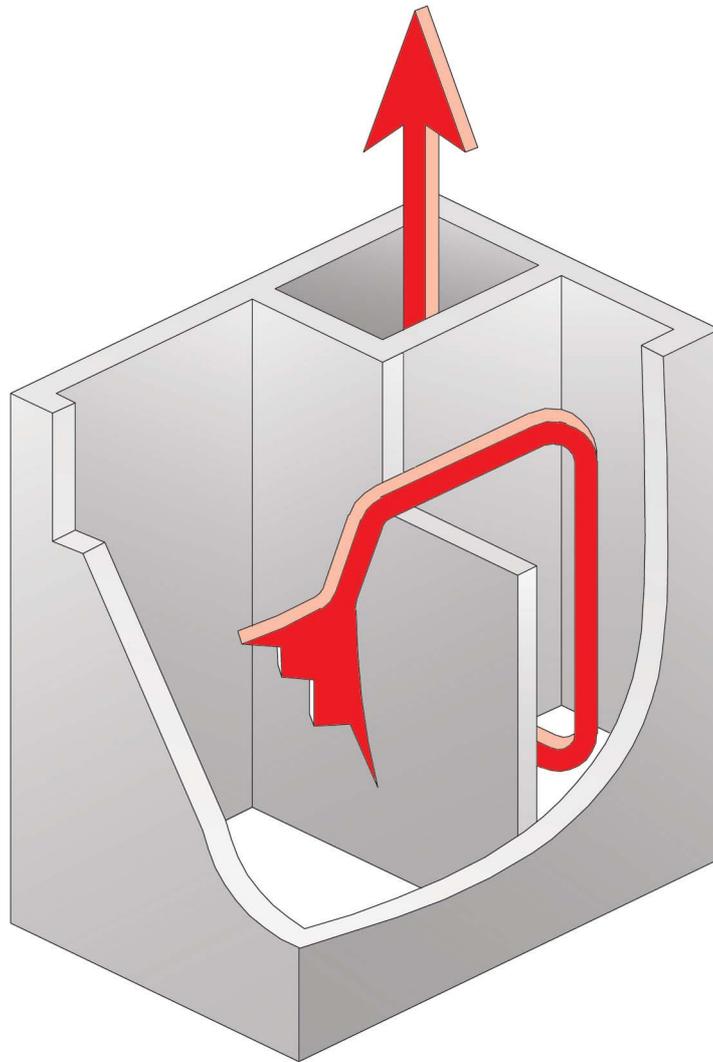


For simultaneous burning of oil sludge and solid waste

IMO Resolution MEPC 76(40) adapted on 25 september 1997
Fulfilling the guideline for the implementation of
MARPOL 73/78 Annex V and Annex VI



THREE Multi Chamber Design



Multiple Chamber Incinerators

Three chamber design is one of many reasons that Hyundai-ATLAS incinerator meet the construction regulations and tough emission rules issued by IMO.

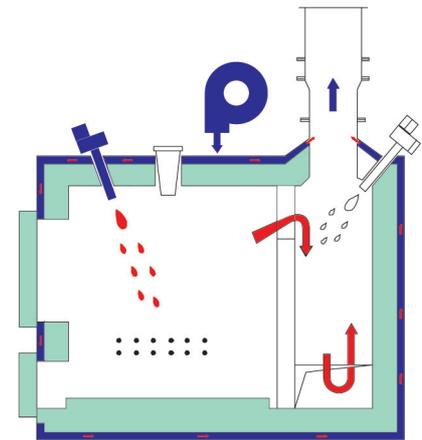
Extra combustion air is injected into the after burning chambers, igniting and there by ensuring destruction of all unburned particles. This extra flow process prevents not only unburned particles, but also flames from escaping the incinerator and entering the chimney.

All chambers are protected by high temperature castable lining backed up by fire insulation.

Exhaust Draft

Flue fans are typical trouble spots, and Hyundai-ATLAS Incinerator's unique air-flow system is one of many reasons that our incinerators require minimal maintenance and repair. The incinerator is a factory assembled unit equipped with air-cooled double casing and an induced draught air ejector for evacuating the flue gases.

This has two advantages-shock cooling of the hot flue gases thus eliminating the formation of harmful dioxins and - eliminating the need for a flue gas fan.

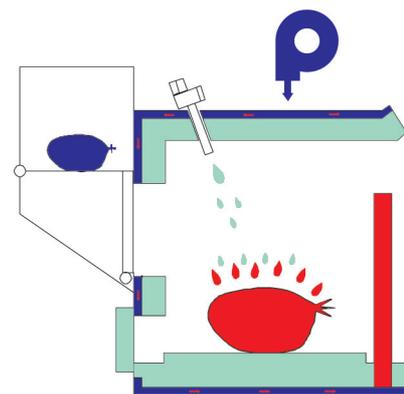


Simultaneous burning of oil sludge and solid waste

PLC or Relay are controlled for simultaneous burning of oil sludge and solid waste by automatically varying the displacement of the sludge dosing pump to match the calorific value of the sludge, without having to add expensive diesel oil.

Hot loading, continuous solid waste can be fed via a no-fireback sluice.

(Also available with manual feeding door)



Solid Waste only

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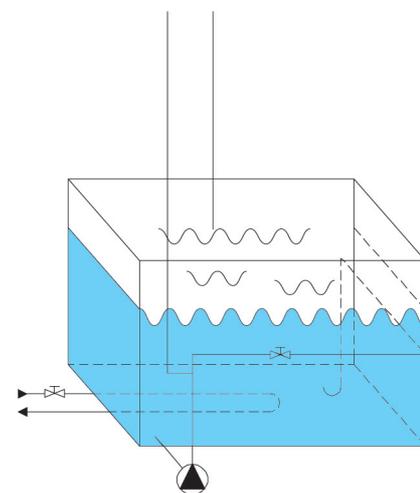
(Also available with manual feeding door)

Sludge System

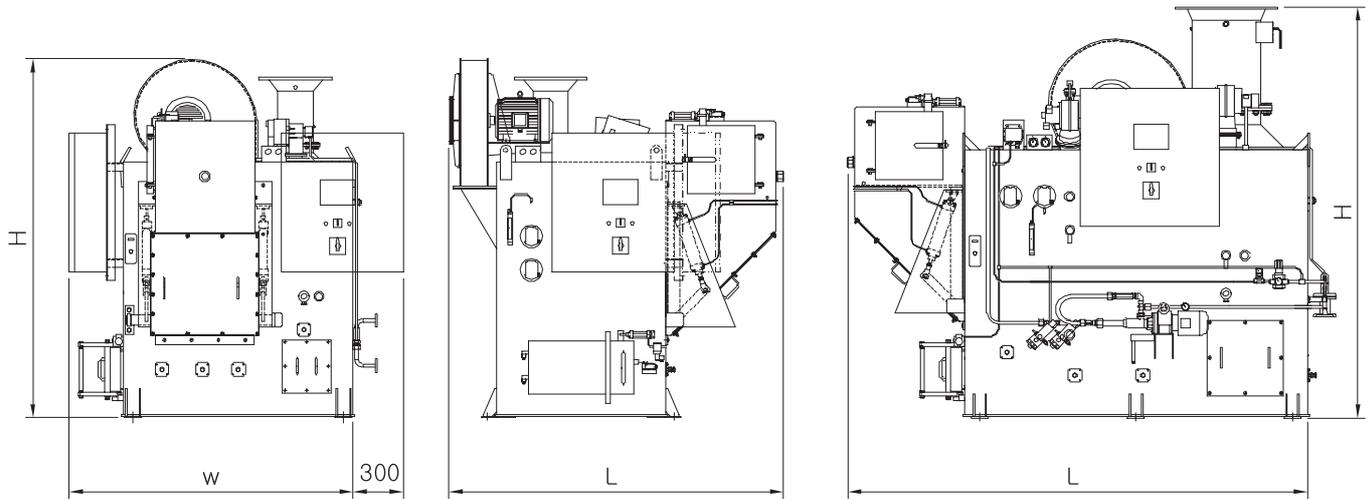
With Hyundai-ATLAS you will never need two sludge tanks. Our heated mixer tank are delivered with a transfer pump and a mill-pump for agitation and comminution of the contents of the tank making it possible to burn oil sludge with up to 50% water content, without additional diesel oil to the burners or having to drain the tank.

The sludge oil mixing tanks are available the with steam, electric or thermal oil heating.

Diesel Oil Tanks are also available.



New Generation Incinerator Dimension



MAXI NG25

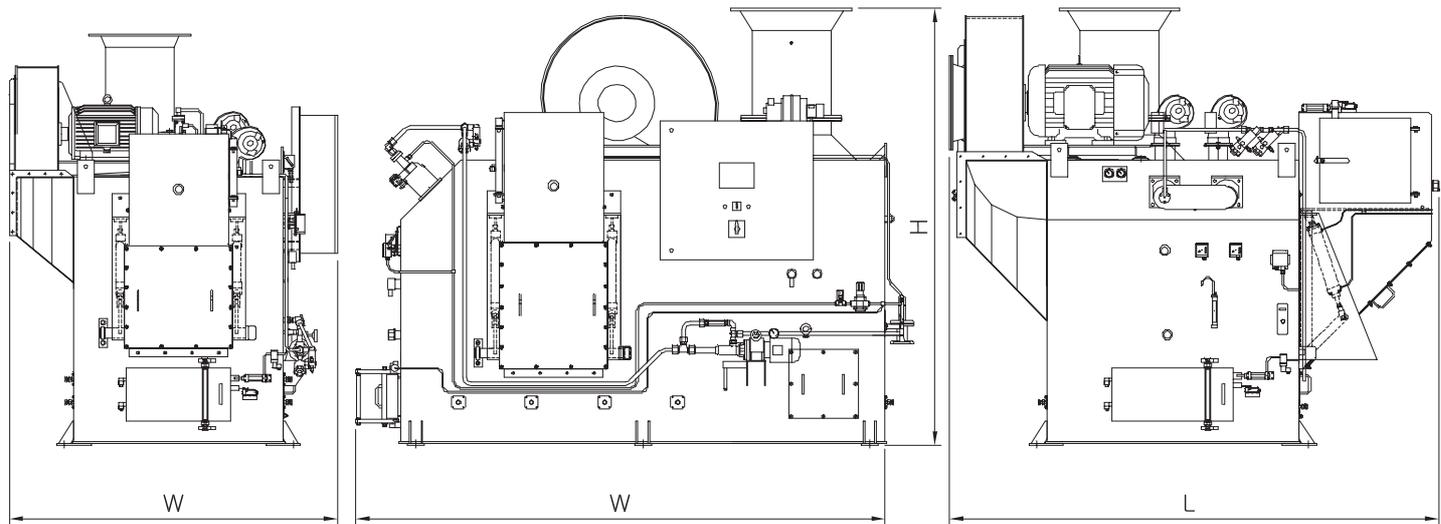
MAXI NG50~NG150 an

Incinerator Type	MAXI NG25	MAXI NG50	MAXI NG100	MAXI NG150
Combustion Capacity (kW)	209	372	581	792
Combustion Capacity (kcal/h)	180,000	320,000	500,000	680,000
Combustion capacity Solid waste IMO spec. kg/h (Liter/charge) Caloric value : 2,400 kcal/kg	40	80	100	150
Combustion capacity Sludge Oil IMO spec. kg/h (Caloric value : 8,600 kcal/kg) (Liter/h at water content approx. 20~30%)	21(25)	38(43)	58(67)	87(100)
Dimension W x H x L (mm) with Standard Waste sluice Charging door opening : W350xH350xL550)	1690x2320x1920	2035x2455x2340	2035x2555x2440	2035x2655x2540
Dimension W x H x L (mm) with Big Waste sluice Charging door opening : W600xH550xL550)		2035x2455x2640	2035x2555x2740	2035x2655x2840
Outlet from incinerator	D350	D400	D450	D500
Weight approx.(Kg)	3,500	4,800	5,000	6,000

Incinerator combustion possibilities

- S** = Solid waste
 - L** = Liquid
 - WS** = Waste Sluice (Hot loading sluice)
 - T** = Tubulator
 - M** = Integrated mixer tank
- All incinerator type is PLC control

and Capacity



T50~T150

MAXI 1500

NG150	MAXI 1200	MAXI 1500	MAXI T50	MAXI T100	MAXI T150
14	1,163	1,500	465	768	988
,000	1,000,000	1,290,000	400,000	660,000	850,000
00	230	230	100	100	150
(95)	116(135)	150(174)	47(54)	76(89)	99(115)
340x2830	2035x2640x3200	3290x2640x2880	2035x2455x2440	1975x2595x2830	1975x2740x3290
340x3130	2035x2640x3590	3290x2640x3000	2035x2455x2740	1975x2595x3130	1975x2740x3590
550	D600	D650	D400	D500	D550
300	7,000	8,000	5,075	5,700	6,700

How to order : Hyundai-Atlas Incinerators

MAXI XX XXXX XX XX X

- ➔ M = Mixer tank
- ➔ WS : Waste Sluice
- ➔ L : Liquied (sludge oil)
S : Solide waste
- ➔ Approx Capacity symbol
- ➔ NG : New generation
T : Tubulator

Hyundai - ATLAS Incinerator offers many unique advantages

Easy Installation

- **Flue gas fan is not required.** A fan is both inconvenient and expensive since it requires extra installation and frequent maintenance. The Hyundai-ATLAS Incinerators exhaust draft air ejector principle eliminates the need for a flue gas fan and is a simple and efficient solution that reduces operation shutdowns and maintenance costs.
- **Only one sludge oil service tank** is required, a separate water setting tank is not necessary.
- **Compact complete unit** comprising all parts such as pumps, fans and etc.
- **Can be delivered skid-mounted or containerised** in order to ease installation of the equipment at shipyards or on board vessels. Our solutions include incinerators with tanks and all interconnection piping and cabling supplied on a common base frame or in a container.

Efficient Operation

- **24-hour operation.**
- **Burning oil with up to 50% water content.** The sludge treatment tank with its emulsification and comminution system makes it possible to burn sludge oil with a water content of up to 50% without pilot fuel and repeated flame failures. Cutting knives ensure that any solid particles will be comminuted and burned with the sludge oil.
- **Co-incineration of oil sludge and solid waste.** Hyundai-ATLAS Incinerators can co-incinerate solid waste and oil sludge. Prompt waste incineration is hygienic and eliminates the need for waste storage on board.
- **Non-backfiring sluices are available in three sizes,** holding waste sacks of 30, 70 and 120 l, respectively.
- **Draining the sludge oil tank is not required.**
- **Sludge burner with no moving parts** reduces maintenance work.
- **Self cleaning strainer** in the sludge line.
- **No maintenance work required on flue gas fan.**
- **Long lasting castable refractory lining.**

Special Design of Hyundai - ATLAS Incinerator

Sludge Burner with Turbulator

Hyundai-ATLAS's own designed compressed air atomizing type sludge burner.

DISTINGUISHED SLUDGE ATOMIZATION

The turbulator helps get the best sludge atomizing condition. Even the sludge contained approx. 50% of water can be burnt without flame failure.

There is no moving or rotating part.

Therefore, the evaporating in sludge tank is not required.

The sludge tank comes to be simple and its cost is low.

NON-BLOCKING

Nozzle hole size is diameter 8mm, bigger than the strainer's hole size.

There is no blocking of sludge burner.

Self-Cleaning Strainer For Sludge Oil

The pressurized sludge oil supplied from mill pump go through diameter 6mm strainer for burning and oversize particles are returned to sludge tank for shattering by mill pump.

No maintenance and cleaning work is required since the strainer does not block.

Sluice

Continuous and safety solid waste feeding system while incinerator is burning.

Two pneumatic air cylinder are automatically operated by a push button switch.

Mill Pump

Hyundai-ATLAS's own centrifugal pump is designed with cutting impeller. It works for comminuting of particles contained in sludge oil and effective agitation of sludge oil.



Self-Cleaning strainer in the sludge long



Mill pump ensuring comminution of any solid particles

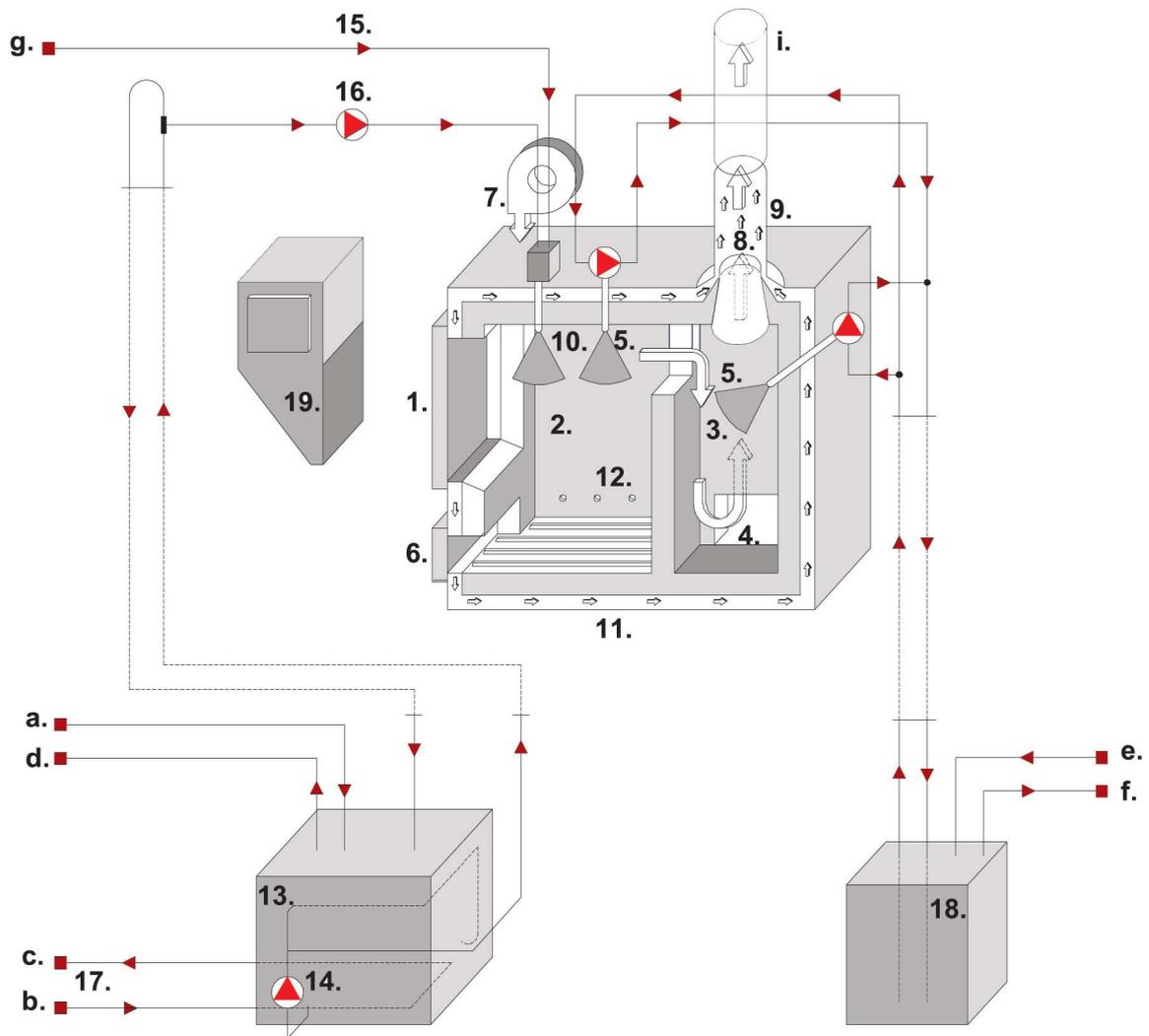


PLC display(panel view) facilitating the monitoring operation condition.



Maintenance free sludge burner of own design without any moving parts

WORKING DIAGRAM



COMPONENTS

- | | |
|------------------------------------|-----------------------------|
| 1. Charging Door | 11. Double Air-cooling Wall |
| 2. Combustion chamber | 12. Combustion Air Inlets |
| 3. After-burning chamber | 13. Oil Sludge Mixing Tank |
| 4. Secondary After-burning Chamber | 14. Mill Pump |
| 5. Oil Burner with Built-in Pump | 15. Compressed Air |
| 6. Ash Cleaning Door | 16. Sludge Dosing Pump |
| 7. Primary Blower | 17. Heating Element |
| 8. Induced Draught Air Ejector | 18. Diesel Oil Tank |
| 9. Damper | 19. Sluice for Solid Waste |
| 10. Sludge Burner | |

CONNECTIONS

- | |
|----------------------------------|
| a) Sludge Oil Inlet |
| b) Steam Inlet |
| c) Steam Outlet |
| d) Sludge Oil Ventilation Outlet |
| e) Diesel Oil Inlet |
| f) Diesel Oil Ventilation Outlet |
| g) Compressed Air Inlet |
| h) Electrical Power Supply |
| i) Flue Gas Outlet |

APPROVAL

IMO & MED type certificate for Marine Incinerators and certificates from leading Classification Societies

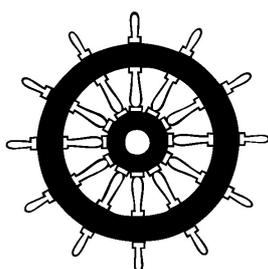
Hyundai Incinerators have been examined and tested in accordance with IMO's Resolution MEPC. 76(40) Adapted on September 25, 1997 (Tested according to standard specification for shipboard incinerators adapted on September 26, 1997), Guidelines for the Implementation of Annex V of MARPOL 73/78 and MARPOL 73/78 Annex VI.

With the assurance of the IMO type certificate and all the other leading types certificates, our customers are assured of approved materials, components and design and a clean ship of land installation for operation anywhere in the world.

TYPE APPROVAL CERTIFICATES



MED type certificate by BV



WORKS APPROVAL
DIRECTIVE 96/98 CE
SMS.W.I.CE.D/3144

Hyundai - ATLAS INCINERATOR



MAXI 1500SL WS
(1,290,000 Kcal/h)

MAXI NG 150SL WS
(700,000 Kcal/h)



Save Space and Installation Costs



Hyundai - Atlas Skid-Mounted Incinerators

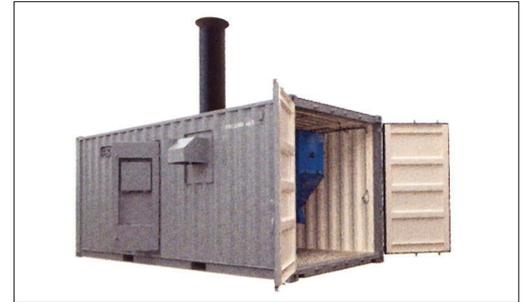
If a plant is to be installed below a deck, a skid-mounted solution from Hyundai-ATLAS Incinerators is a rational, easy-to-install choice. It saves installation time and ensures correct mounting and function. On delivery the plant has been tested and is ready for use on site.

Standard Equipment on Skid-Mounted Solutions

- Incinerator
- Sludge oil service tank
- Diesel oil tank or Diesel oil trans pump unit

Supplied with all interconnecting piping, electric cabling and necessary components mounted on a common base frame.

Hyundai - ATLAS Containerised Incinerators



If a new ship has not been designed with an incineration plant, Atlas Incinerators can supply a simple containerised solution.

The container is placed on deck and just needs connecting to the ship's installations. On delivery the container is complete with all installations. It has been tested and is ready for operation and use on site.

Depending on the size of the plant, incinerators will be delivered in a 10' or 20' ISO container, or in dimensions matching the space available.

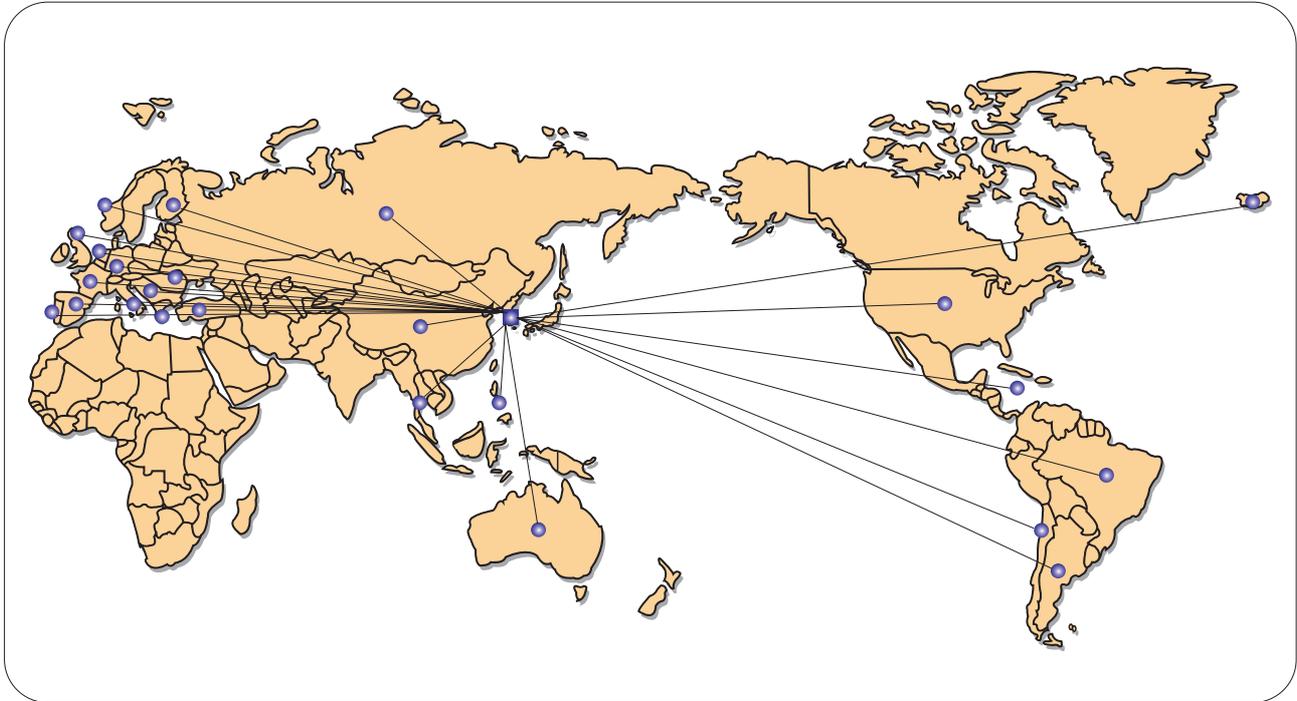
Standard Equipment on Containerised Solutions

- Incinerator
- Sludge oil mixing tank
- Diesel oil tank
- Lighting system
- CO₂ or water mist fire fighting equipment
- Ventilation
- Chimney
- External emergency switch
- Manifolds for external piping connections and brattberg calbe penetration

Options for Containerised Solutions

- Air compressor
- Emergency escape door
- Generator
- Separate funnel (onshore installations only)

WORLD WIDE SERVICE NET WORK



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For further information contact us to our representative:



HYUNDAI MARINE MACHINERY CO., LTD.

Head Office & Factory

602-15, GAJWA-DONG, SEO-GU, INCHEON CITY, KOREA.
Tel : +82-032-583-0671 Fax : +82-032-583-0674 Http://www.hmmco.co.kr

Seals & Marketing Team

Tel : +82-032-583-0671 Fax : +82-032-571-3061 E-mail : info@hmmco.co.kr