



INERT GAS GENERATOR

GENERATE COMBUSTION INERT GAS ↓

Vessels carrying cargo producing hydrocarbon vapour require an inerting solution to eliminate the risk of explosions and fires in the cargo tanks. This can be achieved by keeping the oxygen content below 8 %, a standard set by IMO. The Maritime Protection Inert Gas Generator (IGG) system is a combustion solution that creates inert gas containing oxygen less than 5 %. A series of Maritime Protection Inert Gas systems designed and delivered for different applications have been the key choice for the marine market since the 1980s.

FEATURES

- FLEXIBLE SOLUTIONS FROM LOOSE EQUIPMENT TO TURN-KEY DECK HOUSE MODULES
- EASY INSTALLATION - DATA COMMUNICATION BETWEEN OPERATOR PANELS
- HIGH GRADE CORROSION RESISTANT STEEL USED FOR THE COMBUSTIBLE CHAMBER AND COOLING JACKET
- EASY ACCESS TO BURNER & COMBUSTION CHAMBER FOR INSPECTION AND SERVICE
- FULLY AUTOMATIC OPERATION WITH PLC CONTROL
- MODERN OPERATOR SCREEN WITH STATE OF THE ART OPERATOR FEEDBACK
- AUTOMATIC TURN DOWN ENSURES BEST POSSIBLE FUEL ECONOMY



Maritime Protection
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Applications

In accordance with the SOLAS convention, all vessels over 8 DWT carrying hydrocarbon based cargo must supply inert gas to create a non-explosive atmosphere with oxygen below 8%, and establish positive pressure in cargo tanks & deck line. IGG must be operational during all discharges of cargo. To achieve inert gas notation for the vessel, the Inert Gas system must be 125% of cargo pump capacity.

Combustion inert gas systems are commonly used on:

- Product tankers
- Chemical/product tankers
- Offshore vessels like FPSO/FSO's
- S-Max and A-max tankers
- Shuttle tankers
- Petroleum product barges

Combustible inert gas systems are used for:

- Primary inert cargo tanks
- Prevent Oxygen from entering cargo tanks during discharge
- Purging of tanks

The IGG in fresh air mode:

- Used to gas free tanks prior to inspection
- Ventilating of tanks

System description

The main purpose of the inert gas production plant is to produce the required quantity of inert gas with the specified oxygen content.

The overall Maritime Protection IGG system consists of a combustion air blower, feeding air to the generator where the production of inert gas takes place. The generator has a design capacity as specified, and is automatically operated. In case the produced inert gas capacity is larger than the demand, the system automatically reduce its production.

The main sub-systems for an IGG are:

- Combustion air blowers
- Combustion chamber/scrubber
- Fuel system
- Control system with valves & instruments
- Deck water seal & P/V breaker

Operation & maintenance

- Graphical LCD operator terminal, all major process parameters displayed on the screen
- Combustion chamber and cooling jacket in high performance austenitic stainless steel (ASTM N08904)
- Easy access to burner and combustion chamber by hinged burner front door (no tools required)
- Easy inspection and easy replacement of scrubber components by entering man hole and removable top plate
- Easy installation
- Data communication between panels

Options

- Multiple LCD operator terminals
- System signals and operation available for ships IAS via MODBUS or ETHERNET communication
- Tailor made systems

LCD operator terminal functionality

- Start & Stop Inert Gas Generator System
- Monitor valve positions and motor running status
- Adjust O₂ set-point
- Monitor process and status indication
- Monitor alarm and adjust alarm set-points
- Adjust controller set-points and parameters

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TECHNICAL DATA

| Type | Inert gas capacity [m ³ /h] | Seawater consumption [m ³ /h] | Fuel consumption [kg/h] | Power consumption [kW] | Dimension L x W x H [mm] | Weight [kg] |
|-----------|--|--|-------------------------|------------------------|--------------------------|-------------|
| MPG-400 | 500 | 30 | 37.5 | 7.5 | 1830 x 800 x 2225 | 1150 |
| MPG-700 | 500 - 2200 | 30 - 132 | 37.5 - 165 | 7.5 - 33 | 3000 x 1000 x 2800 | 1500 |
| MPG-800 | 2200 - 3200 | 132 - 192 | 165 - 240 | 33 - 48 | 3300 x 1100 x 2800 | 1900 |
| MPG-900 | 3200 - 4500 | 192 - 270 | 240 - 337 | 48 - 67.5 | 3600 x 1200 x 4000 | 2200 |
| MPG-1000 | 4500 - 5700 | 270 - 342 | 337 - 427 | 67.5 - 85 | 4000 x 1400 x 4500 | 2500 |
| MPG-1100 | 5700 - 6800 | 342 - 408 | 427 - 510 | 85 - 102 | 4500 x 1400 x 4500 | 3000 |
| MPG-1300 | 6800 - 10500 | 408 - 630 | 510 - 787 | 102 - 157 | 5400 x 1800 x 4800 | 5000 |
| MPG-1600 | 10500 - 16000 | 630 - 960 | 787 - 1200 | 157 - 240 | 6000 x 2100 x 5025 | 7000 |
| MPG-1600L | 16000 - 17500 | 960 - 1050 | 1200 - 1312 | 240 - 262 | 7000 x 2100 x 5025 | 9000 |

Table based on 3 % O₂ content by volume, pressure 400 mm WC and temperature 25 °C.

GAS COMPOSITION WITH MARINE GAS OIL (MGO)

| | | | |
|---------------------------------------|------------------------------|--------------------------|---|
| CO < 100 ppm | NO _x < 100 ppm | N ₂ = Balance | Normal discharge pressure to cargo tank: 400 mm WC |
| SO ₂ < 1 ppm | CO ₂ approx. 14 % | | Gas outlet temperature: Max. 8 °C above seawater temperature |
| Oxygen content adjustable down to 1 % | | | Gas outlet humidity: 100 % saturated Fuel: MDO/ HFO/ GASOIL/ GAS |



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Maritime Protection Inert Gas systems

Including the systems based on Inert Gas Generator system and Flue Gas system system

| Product name | Product type | Product details |
|---|--------------------------------------|--|
| Maritime Protection IGG | Inert Gas Generator system | HFO/MGO/MDO/Gas fueled generator for inerting tankers |
| Maritime Protection DIGG | Dry Inert Gas Generator system | IGG + Cooler and Dryer unit (a two-stage dehumidification system including a cooling and adsorption process) |
| Maritime Protection DFIGG | Dual Fuel Inert Gas Generator system | IGG, dual fuel-capable to use natural gas or MGO/MDO/HFO as fuel for inerting FPSO's/FSU's. |
| Maritime Protection Flex-Inert | Flex Inert system | IGG system in combination with exhaust gas from main engine or auxiliary engines for fuel saving. |
| Maritime Protection Flue-Gen | Flue-Generator system | Normal generator + flexinert venturi. Can be operated in two modes: 1. Generator mode; 2. Flue gas mode with suction of flue gas from boilers through flex venturi and scrubbing in generator. |
| Maritime Protection IG-Deck House modules | Inert Gas Deck House Modules | Applications are tankers, FPSO's and oil barges. All systems and capacities available. |
| Maritime Protection FG | Flue Gas system | Produce inert gas on board by cooling and cleaning the flue gas from the ship's boilers. |

Servicing and repairs

Our service technicians are available worldwide to carry out your service and repair requirements. If needed they can work within tight time frames to accommodate your operational requirements.

Aftersales

When spare parts or consumables are needed, our aftersales department is at your service 24 hours a day.

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Approvals

The Maritime Protection Inert Gas systems are built in accordance with 1974 SOLAS Convention with latest amendments, and are fulfilling all of Class, IMO's guidelines and the demanding conditions of shipboard operation..



Inert Gas Solutions

Inert Gas Systems

- Flue Gas system
- Inert Gas Generator system
- Dry Inert Gas Generator system
- Dual Fuel Inert Gas Generator system
- Flue-Generator system
- Flex Inert system
- Inert Gas Deck House Modules

Nitrogen Systems

- Nitrogen Membrane system
- Nitrogen Cylinder Central system
- Nitrogen Membrane Controlled and Modified Atmosphere system



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