

# INERT GAS GENERATOR



# SAFE TRANSPORTATION OF DANGEROUS CARGO

Vessels carrying cargos that produce hydrocarbon vapors 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 the International Maritime Organisation (IMO).

**THE MARITIME PROTECTION INERT GAS GENERATOR SYSTEM** is a combustion solution that creates inert gas out of burning process. The gas contains less than 5% oxygen and ensures a non-explosive atmosphere in the cargo tanks and their piping arrangement. Maritime Protection inert gas systems, part of the Wilhelmsen Technical Solutions total inert gas range, are based on conventional technology that is well proven. It has been used in the marine market used since the early 70's.

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



## Vessel application

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 following applications:

- Primary inert cargo tanks
- Prevent Oxygen from entering cargo tanks during discharge
- Purging of tanks
- The Inert gas generator in fresh air mode:
  - Used to gas free tanks prior to inspection
  - Ventilating of tanks

## Solution benefits

Advantages of the Maritime Protection Inert Gas Generator system include:

- Fully automatic operation
- A horizontal and recessed combustion chamber that prevents fuel oil spill through SW drain line in case of misfire or dripping from fuel nozzle when not in operation
- Automatic turn down ensures best possible fuel economy
- PLC control logic with specially designed burner ignition sequence that will ensure a flawless ignition of the unit every time
- Smart & solid design ensure reliable operation performance & easy maintenance

## Product types

Product name	Product type	Product details
Maritime Protection IGG	Inert Gas Generator system	<ul style="list-style-type: none"> <li>HFO/MGO/MDO/Gas fueled generator for inerting tankers</li> </ul>
Maritime Protection DFIGG	Dual Fuel Inert Gas Generator system	<ul style="list-style-type: none"> <li>IGG, dual fuel-capable to use natural gas or MGO/MDO/HFO as fuel for inerting FPSO's/FSU's.</li> </ul>
Maritime Protection Flex-Inert	Flex Inert System	<ul style="list-style-type: none"> <li>Inert gas generator system in combination with exhaust gas from main engine or auxiliary engines for fuel saving.</li> </ul>
Maritime Protection Flue-Gen	Flue-Generator System	<ul style="list-style-type: none"> <li>Normal generator + flexinert venturi. Can be operated in two modes:               <ol style="list-style-type: none"> <li>Generator mode;</li> <li>Fluegas mode with suction of flue gas from boilers through flex venturi and scrubbing in generator.</li> </ol> </li> </ul>
Maritime Protection IG-Deck House modules	Inert Gas Deck House Modules	<ul style="list-style-type: none"> <li>Applications are tankers, FPSO's and oil barges.</li> <li>All systems and capacities available.</li> </ul>

## 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 Inert Gas 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 it's 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 IG generator system
- Monitor valve positions and motor running status
- Adjust O<sub>2</sub> set-point
- Monitor process and status indication
- Monitor alarm and adjust alarm set-points
- Adjust controller set-points and parameters

## Technical specifications

Table based on 3% O<sub>2</sub> content by volume, pressure 400 mm WC and temperature 25°C.

Type	Inert gas capacity [m <sup>3</sup> /h]	Seawater consumption [m <sup>3</sup> /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

Gas composition with marine gas oil (MGO)

CO < 100 ppm	NO <sub>x</sub> < 100 ppm	N <sub>2</sub> = Balance	Normal discharge pressure to cargo tank: 400 mm WC	
SO <sub>2</sub> < 1 ppm	CO <sub>2</sub> 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

## Service

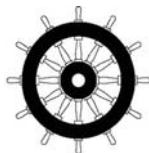
Service and/or repairs can be carried out in a short notice, worldwide.

## Aftersales

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

## Contact us

E-mail: [wts.safety@wilhelmsen.com](mailto:wts.safety@wilhelmsen.com)  
[wts.spares.IG@wilhelmsen.com](mailto:wts.spares.IG@wilhelmsen.com)  
[wts.service.IG@wilhelmsen.com](mailto:wts.service.IG@wilhelmsen.com)



## MARITIME PROTECTION INERT GAS SOLUTIONS

### COMBUSTIBLE SOLUTIONS

- Flue gas system
- Inert gas generator
- Flex-inert system
- Dry inert gas generator
- Dual fuel inert gas generator
- Flue-generator system
- Inert gas deck house modules

### NITROGEN SOLUTIONS

- Nitrogen system
- Nitrogen cylinder central system
- Nitrogen membrane controlled and modified atmosphere system