

ENERGY
ENVIRONMENT
ECONOMY

MOSS INERT GAS GENERATOR SYSTEM FOR TANKERS



Wärtsilä is a market leader in the development, design, manufacture and servicing of advanced inert gas and nitrogen solutions for marine and offshore oil and gas applications.

Our leading-edge, customised solutions ensure high quality and advanced levels of safety for vessels operating in regulated areas. We are certified by ISO 9001:2000, ISO 14001:2004 and OHSAS 18001:2007.

Our strong reputation in inert gas solutions is based on over 50 years experience and unique full-scale R&D facilities located in Moss, Norway. Our references include over 2500 vessels installed with our inert gas equipment.

Performance testing of inert gas systems can be executed in the company's own test hall in Moss, the only facility tailor-made for this purpose in the world today.



Wärtsilä Moss burner/scrubber unit

Wärtsilä Moss inert gas systems are vital systems to ensure a high level of safety for vessels to prevent the atmosphere in cargo tanks or bunkers from coming into the explosive range. Consequently, high quality and reliability is always our number one priority.

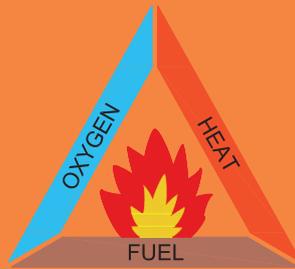
They are designed based on compact modules, offering important savings in space and installation cost both for newbuildings and for retrofit on existing vessels.

Our most recent developments include automatic regulation based on deck pressure setting. During off-loading the system optimizes the inert gas production to only produce the necessary quantum of Inert Gas to maintain the tank pressure. This system reduces oil consumption providing cost efficiency, as well as an environmental benefit.

WHAT IS INERT GAS & INERT CONDITION

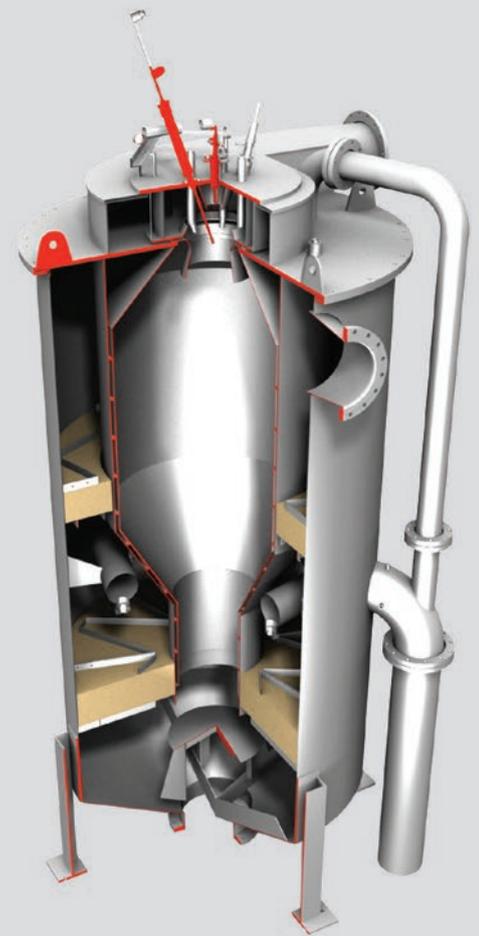
Inert Gas is a gas or a mixture of gases, such as flue gas, containing insufficient oxygen to support the combustion of hydrocarbons.

An Inert condition is a condition in which the oxygen content throughout the atmosphere of a tank has been reduced to 8% or less by volume.



USE OF INERT GAS ON A TANKER

- Inert gas on a tanker is used for cargo handling and is the most important safety systems for avoiding explosions.
- The system is used when the vessel is off-loading.
- The empty tanks are filled with inert gas.
- The system can also be used in ballast tanks to prevent corrosion.
- When inert gas is not used the consequences can be devastating as shown in the tanker explosion pictured right.



SPECIAL FEATURES OF THE WÄRTSILÄ MOSS INERT GAS GENERATOR SYSTEM

BURNER/SCRUBBER UNIT

The burner/scrubber unit requires less deck space than any other known design. This is due to the location of the combustion chamber concentrically inside the scrubber unit. Other benefits of this design are that the unit does not require any special direction of orientation inside the ship and that the inert gas quality will not be affected by the ship's rolling and pitching.

The unique Moss high turbulent burner ensures an almost complete combustion with a rugged simple design and no moving parts. Heat/corrosion resistant steel is used for all surfaces exposed to heat and/or sea water.

BLOWER UNITS

The blower units are of a single stage centrifugal type with motors and each unit is arranged on a rigid steel base frame equipped with resilient mountings.

MOSS DECK WATER SEAL

The Moss deck water seal is of displacement semi-dry type internally GRE coated. Upon loss of positive flow, the water will immediately close the seal. The mesh demister is effectively preventing carry-over of water droplets under all flow conditions.

MOSS PRESSURE/VACUUM BREAKER

The Moss pressure vacuum breaker is another device of importance for the ship's safety, releasing excessive pressure or vacuum from the cargo tanks. The unit is internally coated with epoxy.

CONTROL SYSTEM

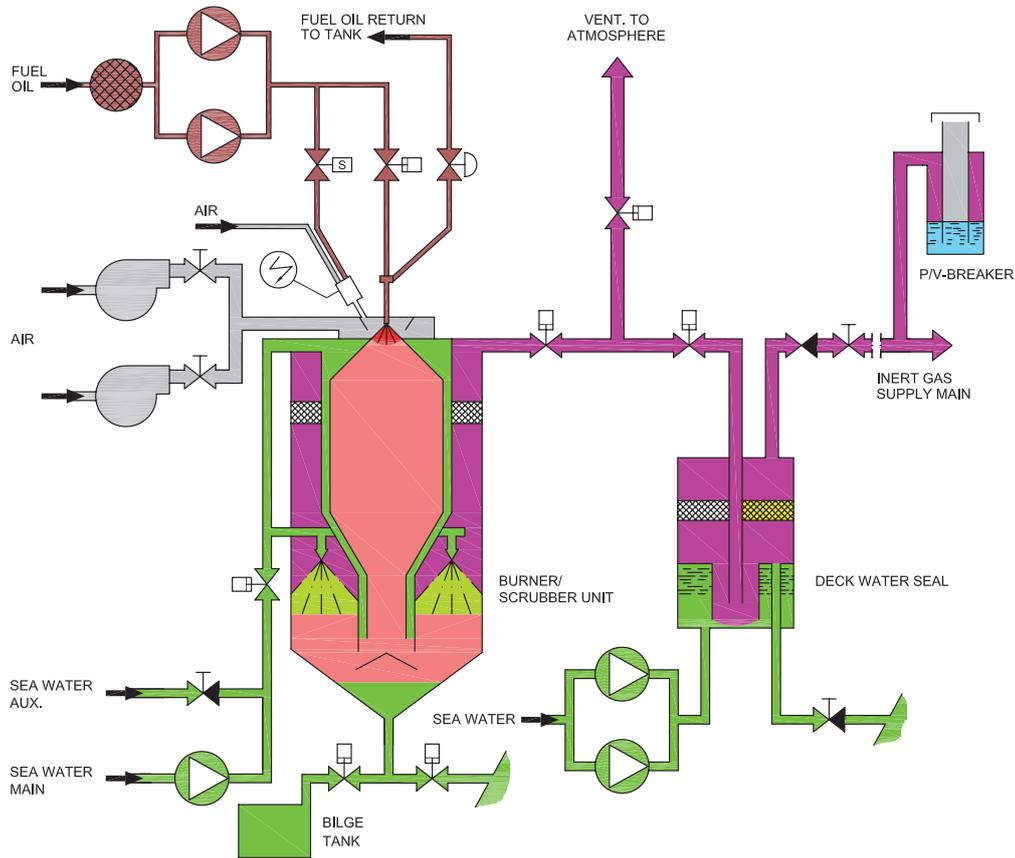
The control system is based on a Programmable Logical Control (PLC). The control panel is of the touch screen type. Several mimic flow diagrams are implemented as well as the controls required for safe and easy operation with a minimum of operator supervision. Additional functions like user manuals and condition monitoring can also be included. The capacity is remotely controlled from a panel in the cargo control room.



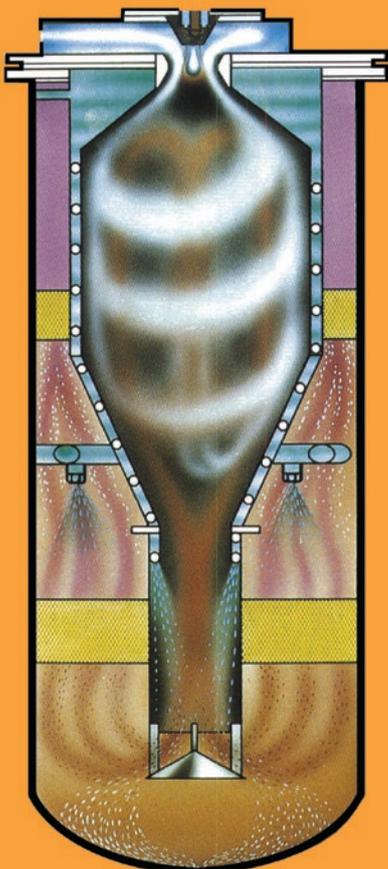
The chemical/oil tanker 'Alhena' is installed with a Wärtsilä Moss inert gas generator system



The shuttle tanker 'Dan Cisne' is installed with a Wärtsilä Moss inert gas generator system



PERFORMANCE DATA



Capacity: up to 20.000 Nm³/h.

Normal discharge pressure:
0,12 bar g. Other pressures upon request.

Inert gas composition at 3% by volume of oxygen: (based on marine distillate fuel).

CO = Max. 100 ppm
NO_x = Max. 150 ppm
SO₂ = Max. 10 ppm
CO₂ = Approx. 14%
N₂ + Ar = Balance

Oxygen content adjustable down to approx. 1%.

Gas outlet temperature:
Max. 5°C above sea water temperature.

Relative humidity: 100%

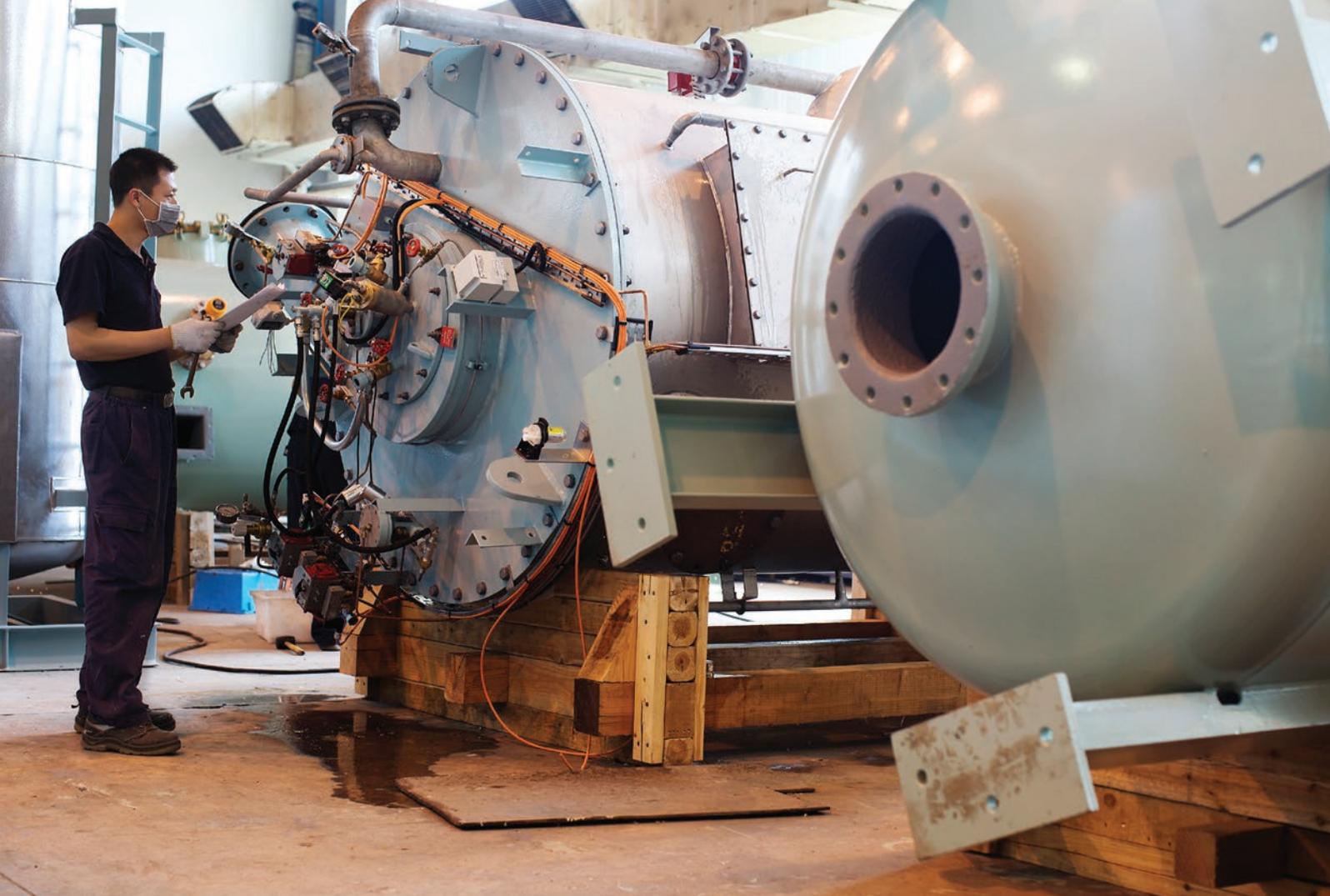
Carry over of water droplets:
Less than 1 g/kg dry gas.

Fuel:
Marine distillate according to ISO 8217 or marine residual fuels pre-heated to max. 20 cSt.

Nominal fuel consumption:
0,075 kg/Nm³ gas.

Nominal sea water consumption:
0,06 m³/Nm³ gas (sea water temp. 32°C).

Nominal el. power consumption:
0,015 (0,01 - 0,02) kW/Nm³/h gas (excluding sea water pumps).



AFTERSALES SERVICE AND SUPPORT

Wärtsilä supports its customers throughout the lifecycle of their installations by optimizing efficiency and performance. We offer expertise, proximity and responsiveness for all customers in the most environmentally sound way and to secure uninterrupted operation.

Our Services & Support solutions range from basic support, installation and commissioning, performance optimization, upgrades, conversions and environmental

solutions to service projects, agreements and product training focusing on overall equipment performance and asset management. Our service department in Moss will also provide anticipated spares on short notice for our full range of inert gas solutions.

We deliver our services through our service stations, workshops and ship repair centres that form our service network in 70 countries worldwide.

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