



DRY INERT GAS GENERATOR

DRIVEN BY INNOVATION ↓

The Maritime Protection Dry Inert Gas Generator system (DIGG) for liquefied gas carriers is a combination of two systems. A traditional inert gas generator system based on combustion and a two-stage dehumidification system include a cooling and adsorption process. The two-bed adsorption dryer has been replaced with a compact rotating adsorption dryer. This innovative system is proven by the market for 15 years.

FEATURES

- EASY INSTALLATION AND MAINTENANCE
- 100% AUTOMATIC CONTROL, NO MANUAL ADJUSTMENTS REQUIRED BY OPERATOR
- DRYER ROTOR WILL RETAIN MORE THAN 90% CAPACITY AFTER 10 YEARS OF CONTINUOUS OPERATION
- STABLE DEW POINT DURING OPERATION, BELOW -45°C REACHED 20-40 MINUTES AFTER START
- HIGH GRADE CORROSION RESISTANT STEEL USED FOR THE COMBUSTION CHAMBER
- MECHANICALLY SIMPLE AND RELIABLE CERTRIFUGAL BLOWERS
- UP TO 50% REDUCTION IN WEIGHT AND FOOT-PRINT COMPARED TO COVENTIONAL SYSTEMS
- LOW PRESSURE DROP IN SYSTEM
- MODBUS, TCP/IP COMMUNICATION WITH IAS
- MODULAR DESIGN, DRYER, COOLER AND HEATER CAN BE SEPARATED



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Applications

The dry Inert gas generator system is commonly used on:

- LNG carriers
- LPG carriers
- FSRU (Floating Storage and Regasification vessel)
- FLNG (Floating Liquefied Natural Gas vessel)

Vessels carrying liquefied gas need an inerting solution to prevent explosions on a sea-voyage just before and after dry-docking. This can be achieved by keeping the oxygen level below 1 % in the cargo area.

Classification societies require that all tank inspections are carried out within a safe atmosphere. This is achieved by an aeration operation where the oxygen level is increased up to 21 %.

Combustible Inert gas is used for:

- Inerting and drying of cargo tanks, cargo piping and machinery
- Purging of tanks
- The dry inert gas generator in fresh air mode:
 - Used for aeration of cargo tanks before inspection
 - Drying and aeration of hold space

System description

The complete Dry Inert Gas Generator is made up of three sub systems

- The inert gas generator, utilising Maritime Protection's well proven technology.
- Cooler and dryer unit consist of a fin type cooler, a demister, a unique Maritime Protection rotating adsorption dryer, a heater and a wet gas fan
- Refrigeration plant, closed loop type, with no refrigerant transported into the cooler unit

Inert gas is produced by the burning oil and air in the combustion chamber of inert gas generator. The gas oil is supplied by the fuel oil pump, and air is provided by blowers. The inert gas existing the scrubber is 100% saturated with moisture and is dried in a two stage process:

Wet inert gas firstly passes through the cooler. The gas temperature drops down to 5 °C, part of the moisture condenses to mist and is absorbed by the demister. Cooling is provided by a separate cooling compressor with a water/glycol mixture.

Finally, drying is achieved by a continuously rotating adsorption dryer, dew point below minus 45 °C. The greater flow is dried as it passes through the dehumidifier in 180° sector. A smaller flow is used as regeneration gas passing a 90° sector and lead to a heater. Gas is getting hot when blowing back to another 90° sector of rotor. It is used to heat the rotor material to drive the adsorbed moisture vapour from the desiccant, so that the dehumidifier can be used continuously. The moisture vapour is blowing out from wet gas fan. And the regeneration gas will return to the inlet of the dryer and cooler unit. With repeating this continuous dehumidification with internal energy recovery, the gas can reach very low dew point constantly and uniformly.

Operation & maintenance

- Fully automatic, for unattended operation, no manual adjustments required
- All process parameters displayed on operator panel
- Modes of operation can be selected on the operator panel
- Easy maintenance through hinged burner door allowing easy access
- Filters, dryer rotor and other major components can be easily checked through inspection hatches

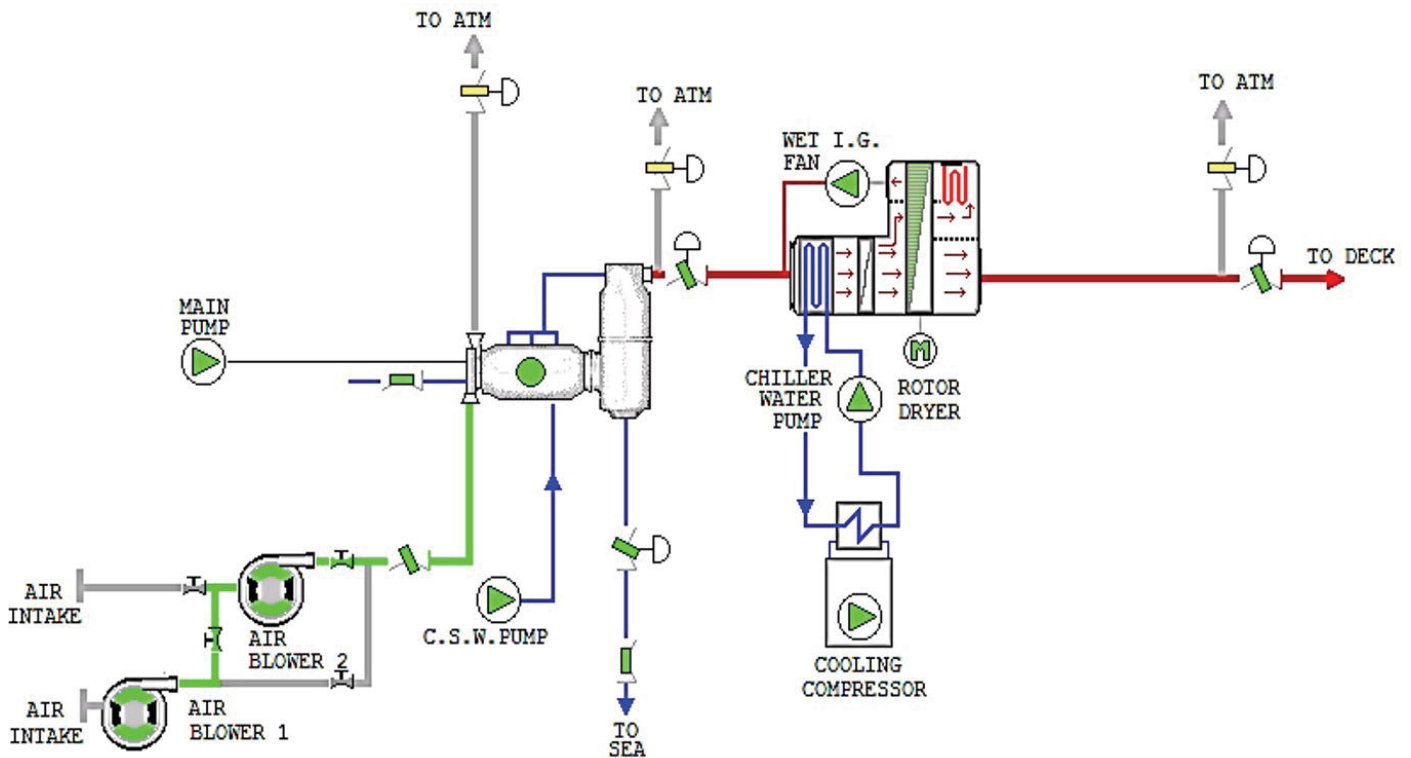
Options

- Multiple operator terminals
- Ethernet communication with IAS (modbus is standard)
- Electric or steam regeneration heater

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Standard configuration



System configuration with compact cooler and rotating adsorption dryer

Rotating adsorption dryer:

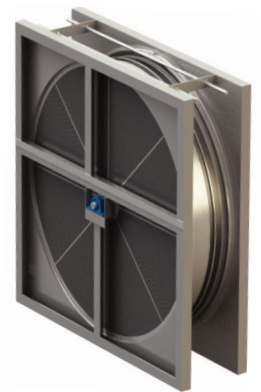
- Far more efficient, more compact and require less maintenance than any previous old dual bed dryer.
- Constant regeneration (regenerating saturated desiccant in same rotational cycle)
- 80 % less weight compared to "old conventional two bed" dryer

Utilising the more maintenance friendly centrifugal blowers:

- Virtually no maintenance
- Less noise and vibration

Closed loop cooling system provided through a glycol/water circuit from a separate water chiller unit:

- Reduced the chance of leaks of Freon
- Requires less Freon/refrigerant



Rotating adsorption dryer-compact design



Centrifugal blowers

Inert gas generator

Water chiller unit

Cooler and Dryer unit

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TECHNICAL DATA					
DIGG model	Capacity [Nm ³ /h]	Seawater consumption [m ³ /h]	Fuel consumption [kg/h]	Power consumption [kW] (with el. reg heater)	Overall system weight [kg]
MPG - 700 - 084	900 - 2,000	45 - 180	42 - 170	38 - 181	7,100
MPG - 800 - 104	2,000 - 3,200	180 - 290	185 - 269	181 - 238	8,400
MPG - 900 - 124	3,200 - 4,500	290 - 405	269 - 379	246 - 330	9,600
MPG - 1000 - 154	4,500 - 5,700	405 - 510	379 - 479	335 - 387	11,200
MPG - 1100 - 154	5,700 - 6,800	510 - 615	479 - 572	387 - 456	12,600
MPG - 1300 - 174	6,800 - 9,500	615 - 855	572 - 800	456 - 656	14,800
MPG - 1300 - 194	9,500 - 10,500	855 - 945	800 - 883	656 - 692	16,500
MPG - 1600 - 194	10,500 - 12,000	945 - 1,080	883 - 1,010	692 - 746	21,000
MPG - 1600L - 224	12,000 - 16,000	1,080 - 1,395	1,010 - 1,295	746 - 932	23,500
MPG - 1800 - 244	16,000 - 18,500	1,395 - 1,665	1,295 - 1,556	932 - 1,131	26,600
MPG - 1800 - 264	18,500 - 21,000	1,665 - 1,890	1,556 - 1,766	1,131 - 1,365	28,200

Table based on 1 % O₂ content by volume, discharge pressure 2500 mm WG and dew point -45 °C.

GAS COMPOSITION WITH MARINE GAS OIL (MGO)						
CO < 100 ppmv	NO _x < 100 ppmv	N ₂ = Balance	SO ₂ < 1 ppmv	CO ₂ approx. 14 %	O ₂ : 0.5 - 1 %	Soot content (bacherac): 0

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.

Servicing sfs.mp.service@survitecgroup.com
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Sales sfs.mp.sales@survitecgroup.com
General sfs.maritimeprotection@survitecgroup.com

Approvals

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



GET IN TOUCH

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