



# NITROGEN SYSTEM

RE-ENGINEERED MEMBRANE TYPE ↓

Survitec is proud to present the re-engineered Maritime Protection Membrane Nitrogen system, first introduced in 1984. The complete new design has fully automated operation, new membranes, easy-to-exchange filters and more easy access for maintenance. Nitrogen systems are needed for ships to stay compliant with regulations and to protect transportation of flammable and sensitive cargo. As an inert gas medium, nitrogen is the purest, and thereby the preferred solution for applications where cargo contamination could be an issue.

## FEATURES

- UNIQUE DESIGN FOR FLEXIBLE INSTALLATION
- EASY AND RELIABLE OPERATION
- "STATE OF THE ART", FULLY AUTOMATED SYSTEM THAT PROTECTS THE EQUIPMENT FROM DAMAGE AND COSTLY REPAIRS



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## Unique design for flexible installation

The Maritime Protection Membrane Nitrogen system has one of the smallest footprints in the market. Furthermore, it can easily be placed in a corner as it only requires service access and pipe installation from two sides. Together, this allows for flexible and space saving installation.

The systems are produced as standardised cabinets and skids. This ensures predictable delivery time and time saving installation. A special cabinet solution is available for vessels with small nitrogen requirements and very limited space.

## Easy and reliable operation

The Maritime Protection Membrane Nitrogen system is designed with high temperature resistant and long lasting membranes for the maritime environment. This enables the ship to operate in ambient temperatures up to 55 °C. A high quality filter package protects the membranes, making the system extremely reliable.

The standardised system is available in product ranges up to 5300 Nm<sup>3</sup>/h and purities from 95 % to 99.9 % for protection of various cargos. Cabinets cover capacities below 1000 Nm<sup>3</sup>/h, while skids are used for larger capacities. Systems above 5300 Nm<sup>3</sup>/h can be designed on request to meet special needs.

## Applications

Systems available for all ship types and offshore installations:

- Gas carriers
- Chemical tankers
- Product/Chemical tankers
- Offshore supply vessels
- Vessels with gas fuelled engines
- Floating and fixed offshore installations

Systems available for all ship and offshore applications:

- Inerting
- Gas freeing
- Padding
- Purging
- Supporting oil fields exploration processes
- LNG bunkering station

## Servicing and maintenance

The Maritime Protection Membrane Nitrogen system has a fully automated, "state of the art" control and monitoring system that protects the system from damage and costly repairs. Furthermore, a warning functionality for maintenance cycles and critical conditions allows for easy maintenance planning. For servicing purposes, the Maritime Protection Nitrogen System's unique generator design only requires access from two sides.

To ensure optimal system performance at all time and reduce risk of failure, Survitec offer you a full range of services, comprising various packages to cater to your needs.

### Preventive inspections

Planned, regular inspections based on run hours and operational conditions. With cost effective and predictable price options, this service will ensure optimised operations at all time and prolong the system lifetime.

### Local on demand service

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.

### Global remote service

You will have a single point of contact for service assistance and remote troubleshooting.

### Global emergency response

In a crisis, we offer on site service assistance, flying squads, remote troubleshooting or riding crews with an agreed response time to avoid or reduce risk of delay caused by system failure.

### Training and consultancy

We understand the importance of operating the system correctly to optimise performance and reduce risk of system failure caused by lack of knowledge. In order to train the crew, you can receive training sessions in our facilities, in your facilities or on board the ship. In addition, e-tutorials are available for quick guidance.

### Replacements and consumables

A full range of standard spare part kits are available to ensure efficient maintenance and operation and reduce risk of system failure caused by poor maintenance.

## Safe operation

Rapid system start-up enables the system to reach purity and dew point quickly and improve operational efficiency. The system has a unique pressure and flow control function that automatically adjust the capacity based on the cargo operation.

A manual override setting makes it possible to operate the system in emergencies, making it compliant with various class requirements.

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## System description

Nitrogen systems typically consist of three major sections – compressor(s), generator and storage and distribution system.

Depending on your application, the nitrogen can be delivered directly to the cargo or void space, or stored in a receiver for later use. A booster compressor can be included to provide nitrogen at higher pressures, filling Survitec 200 or 300 bar nitrogen cylinders. Optionally the system can be designed to operate with two different purities simultaneously.

The Maritime Protection Membrane Nitrogen system uses maritime quality rotary screw compressors to achieve the optimal amount of feed air supply. A choice of compressors are available, based on your preferences and requirements.

The nitrogen generator has an advanced feed air treatment system. Combined with unique functionalities this ensures high quality air, prolonging the lifetime of the membranes. The nitrogen generator separates air into its component gases by passing low pressure compressed air through hollow fibre semi-permeable membranes. By this the air is divided into two streams: nitrogen which holds purity level between 95 % and 99,9 % and remaining oxygen enriched air which is vented to a safe area.

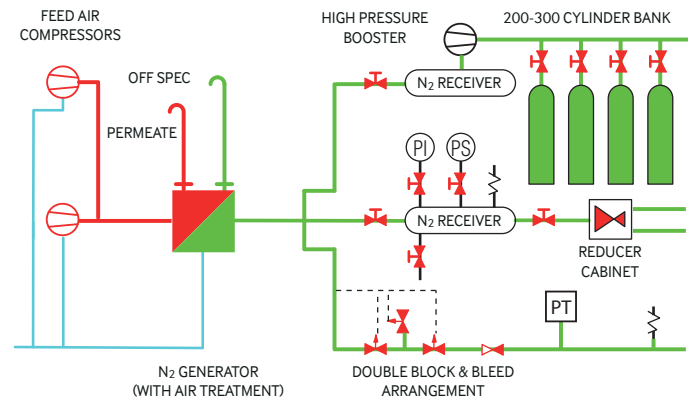
## Your inert gas partner

Survitec takes full responsibility for your complete nitrogen solution including:

- Initial consultancy
- Design
- System delivery
- Installation supervision
- Commissioning
- Training
- Maintenance routines and follow up
- Servicing

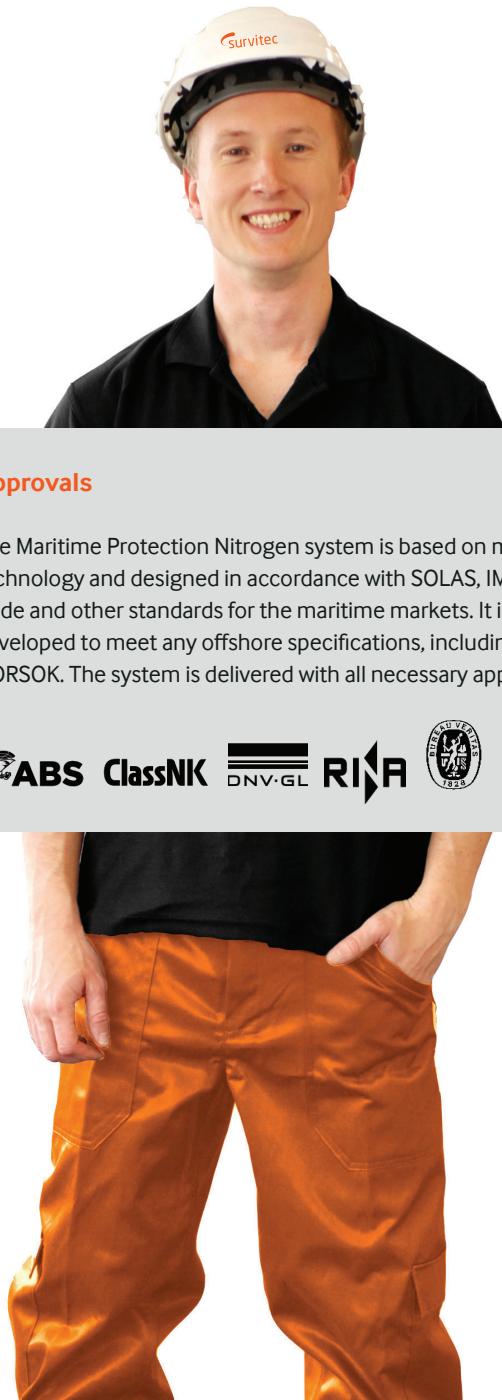
As experts on inert gas systems, we deliver complete nitrogen and combustible inert gas solutions enabling one point of contact for support and service.

## Standard configuration



## Approvals

The Maritime Protection Nitrogen system is based on membrane technology and designed in accordance with SOLAS, IMO MODU Code and other standards for the maritime markets. It is developed to meet any offshore specifications, including NORSOK. The system is delivered with all necessary approvals.



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## Compressors

TECHNICAL DATA	
Type	oil flooded screw compressors
Control method	modulating control and variable speed drives
Pressure	8 - 14 bar(g)
Cooling	air, fresh or sea water cooled
Power consumption	35 kW per 100 Nm <sup>3</sup> /h (Q 95% nitrogen)
Starting method	star / delta

## Nitrogen generators

TECHNICAL DATA	
Cabinets	up to 940 Nm <sup>3</sup> /h (Q 95%)
Open skid design	up to 5300 Nm <sup>3</sup> /h (Q 95%)
Process controlled	PLC
Ambient temperature	3 - 55 °C
Pressure	7 - 14 bar
Feed air temperature	Up to 60 °C

## Nitrogen specifications

TECHNICAL DATA	
Oil content in product	less than 10 ppb
Particles in product	max 0.01 micron
Purity	95 - 99.9 % nitrogen
Gas outlet dew point	-70 °C

## Product range

CABINET DESIGN		
Type	Nitrogen capacities* (Q 95% [Nm <sup>3</sup> /h])	Feed air pressure [bar]
IGN-CU-100	up to 112	7 - 14
IGN-CU-200	112 - 243	7 - 14
IGN-CU-400	50 - 450	7 - 14
IGN-CU-900	450 - 940	7 - 14

CABINET	
Dimension L x W x H [mm]	Weight [kg]
1204 x 505 x 1420	235
1204 x 505 x 1420	255
1430 x 805 x 2141	450
1630 x 805 x 2145	730

Notes:

\* Measured at 14 bar pressure and 50 °C feed air inlet

\*\* For max nitrogen plant capacity

OPEN SKID DESIGN		
Type	Nitrogen capacities* (Q 95% [Nm <sup>3</sup> /h])	Feed air pressure [bar]
IGN-SU-1000	940 - 1315	7 - 14
IGN-SU-2000	1315 - 2630	7 - 14
IGN-SU-3000	2630 - 3950	7 - 14
IGN-SU-5000	3950 - 5265	7 - 14

FLITER SKID	
Dimension L x W x H [mm]	Weight [kg]
2800 x 800 x 1900	1180
3100 x 900 x 2210	1850
4000 x 1100 x 2545	1930
4000 x 1100 x 2545	2030

MEMBRANE SKID	
Dimension** Qty x L x W x H [mm]	Weight** Qty x unit weight [kg]
1x 1565x665x2125	1x 680
2x 1565x665x2125	2x 680
2x 1565x665x2125	2x 680
3x 1565x665x2125	3x 680

## 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



**GET IN TOUCH**

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