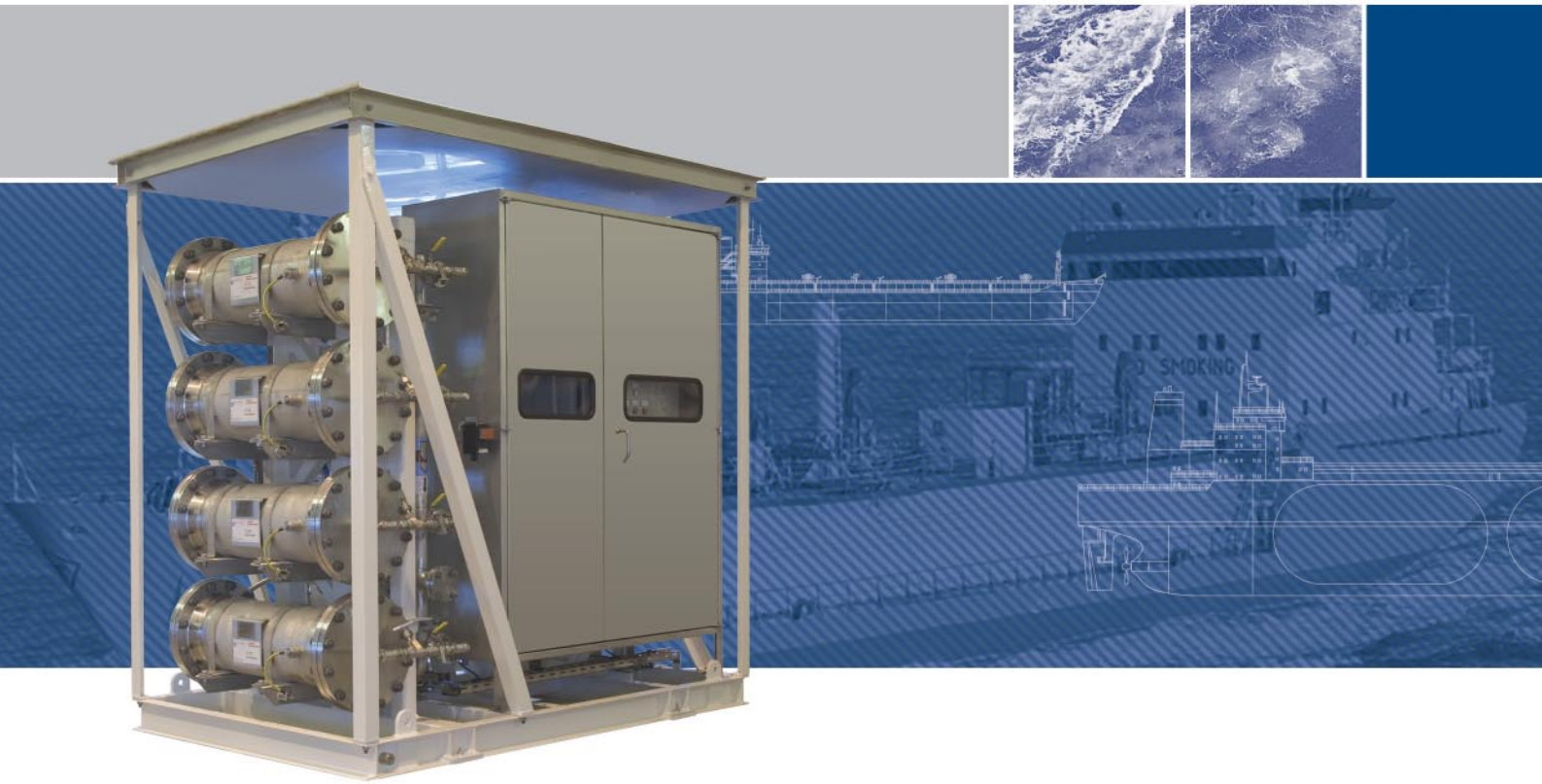
Hamworthy



Moss Nitrogen Generator System

Inert Gas Systems

Assembly of membrane cabinets

Moss nitrogen generator system

The unique design is based on experience from thousands of installations of inert gas systems of all kinds. The first conventional inert gas systems were delivered in the 1960's, the first nitrogen system in 1994. High efficiency, low maintenance costs, safe and easy operation combined with minimum space requirements are important features of the Moss design. This is reflected in the overall layout, the choice of materials/corrosion protection and the control system.

The **Moss Nitrogen Generators** use state of the art membrane technology.

Membranes separate gases by the principle of selective permeation across the membrane wall. Ambient air is compressed, rigorously filtered, and temperature controlled before entering one or more membrane modules, each containing thousands of hollow fibres. Within these fibres, the separation of air takes place producing nitrogen gas under pressure. The resulting nitrogen is dry and depleted of carbon dioxides.

Complete system ready for shipment

On chemical/product carriers a double block and bleed system and Moss Pressure/Vacuum Breaker may be provided.

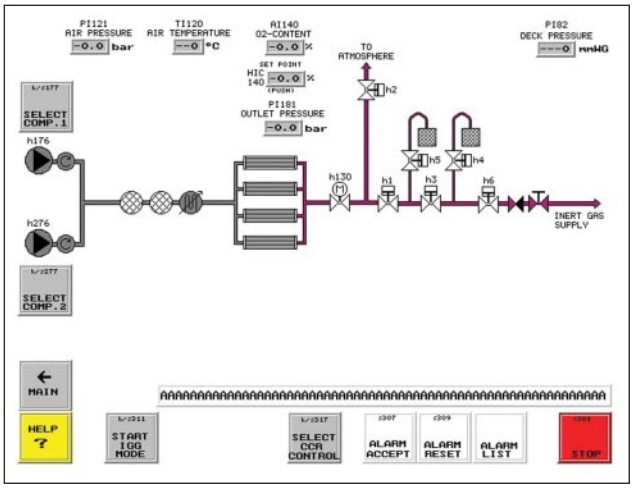
A design based on handy modules means that the **Moss Nitrogen Generator** system offers valuable savings in space and installation costs both for newbuildings and for retrofitting on existing vessels.

Special features

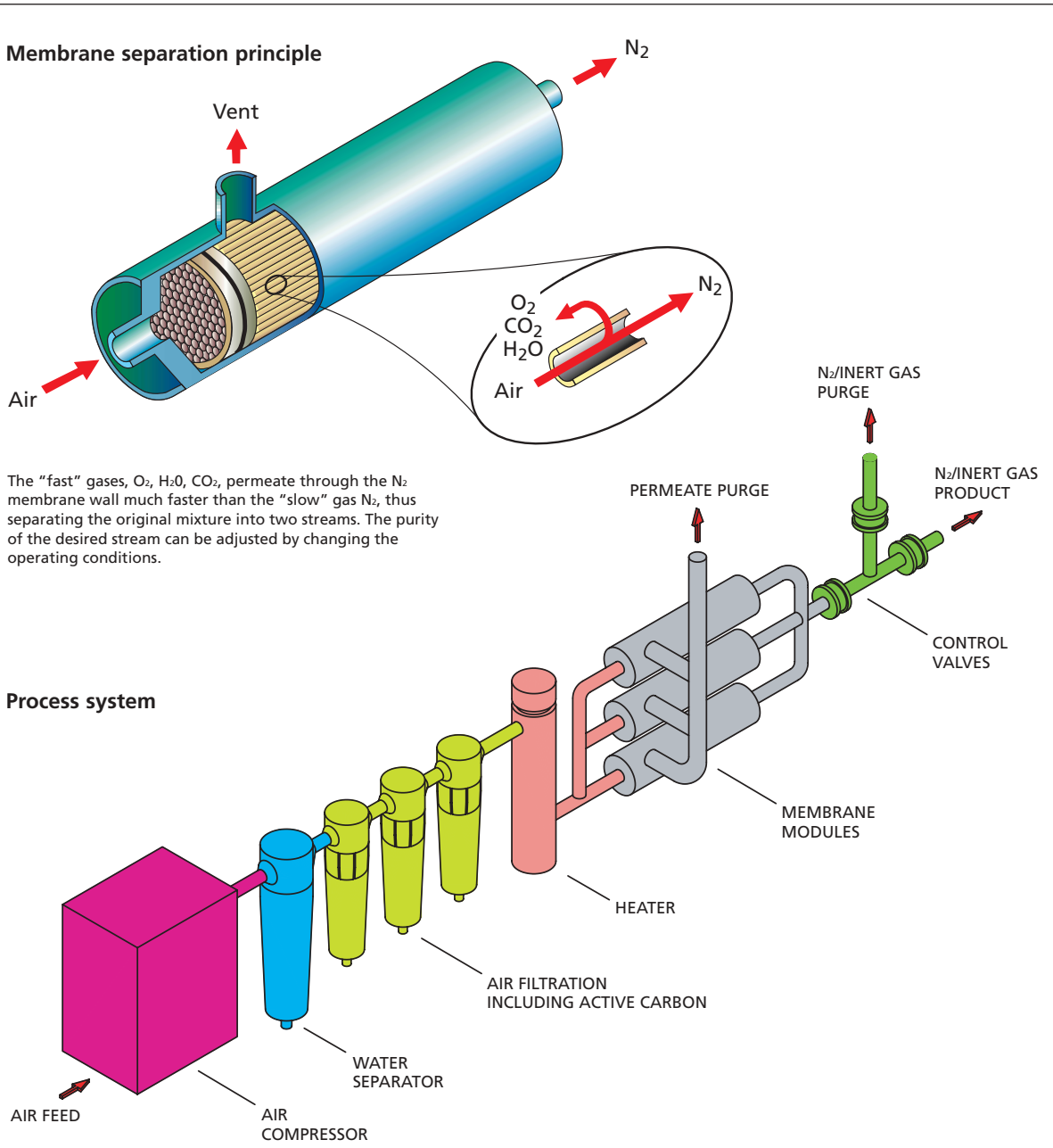
The Moss membrane assembly
The required number of membranes are assembled in handy cabinets or racks. The design caters for low space requirement as well as easy installation and maintenance.

The Moss filter and heater assembly
The various components are normally on a skid. For smaller systems the components might also be installed in a cabinet.

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.



Typical picture of the touch screen user interface



Performance data

Product capacity:
10 - 4000 Nm³/h or more.

Product dew point:
-60°C or lower.

Product CO_2:
Less than 5 ppm.

Product pressure:
Up to 12 bar g, without product compressor.

Nominal el. power consumption:
Approx. 0,315 kW/Nm³/h gas at 95% N_2 (excluding water pump).

Nominal sea/fresh water consumption:
8 l/Nm³/h gas at 95% N_2.

Capacity/purity relation:

Product flow	Purity (N_2+Inerts)
100%	95%
84%	96%
69%	97%
54%	98%
37%	99%
27%	99,5%
14%	99,9%

Worldwide sales and service network

Our global network of sales and service centres ensures that we can provide first class technical, spares and service support to our customers wherever they are around the world. In addition to our sales and service locations, we are supported by agent representatives in all major shipping areas.

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