



NAVAL EQUIPMENT, NBC / CBRN FILTRATION SYSTEMS

Excellent filtration systems, essential for maintaining the safety of crew and electronic equipment, designed by Van Halteren Technologies

INTRODUCTION



Based on the experience gained during many naval projects, Van Halteren Technologies has developed high-quality technological components, packages and solutions for submarines and naval surface vessels, such as frigates and minehunters. The VHT expertise in the field of air filtration systems against nuclear, radiological, biological and chemical contamination (NBC or, more common for land systems, CBRN) has resulted in excellent filtration systems. NBC / CBRN filtration systems are essential for maintaining the safety of the crew and electronic equipment of Military Vehicles and Ships, operating under the threat of an attack with warfare agents or TIC's and TIM's (Toxic Industrial Chemicals & Toxic Industrial Materials).

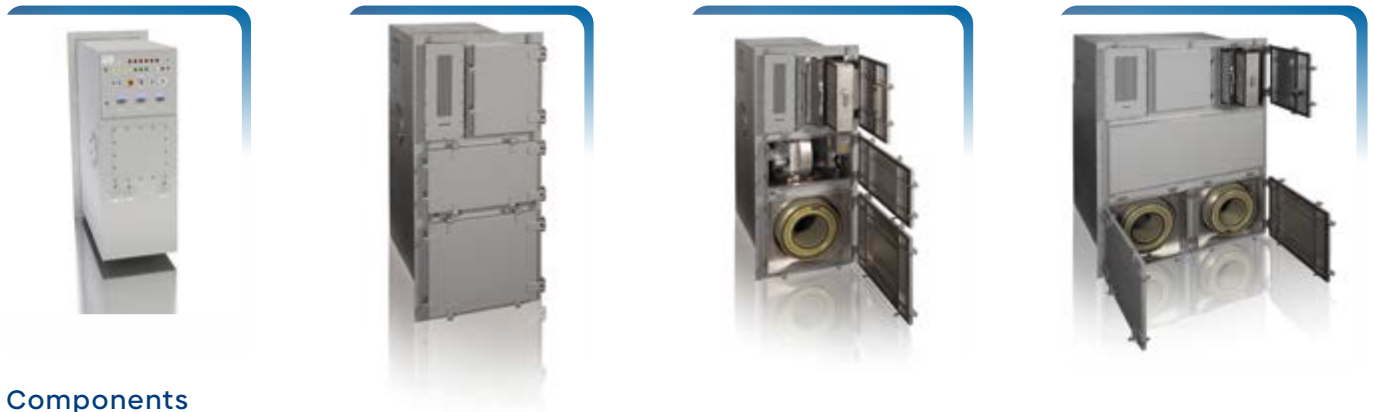
VHT can create a safe operating environment on ships (citadel) with the VHT NBC Filtration Units, supplied with NATO STANAG 4447 or AEP 54 filter elements, in combination with overpressure controllers. NBC Filtration Units are available in a range of capacities from 600 up to 3600 m³/h. The in-house design,

production and testing of the systems, guarantees the quality of the COLlectiv PROtection (COLPRO) products of VHT.

Unique selling points:

- Mounted in the outside bulkhead, to dispose of contaminated NBC Filter elements directly to the outside
- “Plug and Play”; electrical power & control panel integrated in the enclosure
- Programmable Logic Controller (PLC) to provide system integrity; ensuring safe and fool-proof operation
- Stainless steel enclosure, reducing noise and EMC levels
- To ensure no leakage of contaminated air, especially after shock: Rigid tube around filter elements and no springs to tighten the seals of the NBC filter elements
- Proven concept; hundreds of units installed in NATO ships all over the world

NBC & CBRN FILTRATION SYSTEMS



Components

A VHT NBC Filtration unit is provided with the following components:

- **Water separator** - draining water droplets out of the fresh air and returning it outward
- **Blast valves** - protecting interior against shock waves
- **Washable pre-filter** - filtering larger particles from the air
- **Fine filter** - preventing HEPA filters in NBC filters from clogging too quickly
- **Electrical heater** - controlling relative humidity and minimum temperature
- **Centrifugal fan** - supplying air (with an overpressure of 500 Pa) to the citadel
- **Gas-tight valves:**
 - manually operated valves inside the unit
 - external electrically-operated shut-off valve
- **NBC filters** - complies with STANAG 4447 or AEP 54, one element per 300 m³/h air flow
- **Electric Power / & Control panel** - connected by bus to IPBMS with a Programmable Logic Controller (PLC), to operate /monitor the Unit.

OPTIONAL:

- Bypass valve - this valve allows the NBC Filtration Unit to be used for training or testing purposes without air flow through the filter elements
- Hermetic seal valve - with this valve the NBC filter elements can be hermetically sealed to preserve the NBC filter elements from contamination
- Electrical control on NBC / By-pass / Hermetically sealed valves (modified casing)
- Dummy Filter Detection - the option to use dummy filters for training or testing purposes



Why Van Halteren Technologies

System integrity

The NBC Filtration Unit is equipped with a PLC and internal sensors to ensure safe operation. If there is a possibility that warfare agents can bypass the filter elements, the unit will shut down. If a non-critical failure is detected, only a general alarm is sent to the IPBMS.

Example: If the system is running in NBC mode and the pressure drop over the NBC filters is too low, an alarm is generated and forwarded to IPBMS. This alarm indicates that the filters elements are not, or not correctly, installed in the unit. As there is a risk of contaminated air entering the Citadel - the unit will automatically shut down.

Humidity and temperature control of outside air

To ensure optimal efficiency of the NBC filters, the relative humidity of the air to the NBC filter elements may not exceed 60%. This is controlled by heating the outside air with an electric heater. The air is heated to a minimum temperature.

Control and operation modes

The unit can be operated locally and from the Central Monitoring System (IPBMS). A selector switch enables selection of local or remote operation. The manual controls on the panel can only be used when the selector switch is set to local. On this panel, a PLC controls the complete unit and provides monitoring / operation data by bus-system to the ship's IPBMS system. The unit can operate in NBC mode, and optionally in bypass or dummy mode.

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Leading the way

Design data

	NBC900	NCB1200	NBC1800	NBC2400	NBC3600
Airflow (m ³ /hr):	900	1200	1800	2400	3600
Power consumption (kW):	15,4	19,6	30,0	39	60
Dimensions casing					
Height (mm):	2000	2000	2000	2000	2000
Width (mm):	700	700	1300	1300	2300
Depth (mm):	1300	1600	1300	1600	1600
Dimensions flange					
Height (mm):	2200	2200	2200	2200	2200
Width (mm):	900	900	1500	1500	2500
Weight (kg - incl. filters):	800	900	1500	1700	2500

Note: figures are indicative and alternative capacities or custom sized units are available on request.

General

Shock:	(Static) 560 m/s ² vertical; 280 m/s ² horizontal
Blast protection grade:	1 bar (closing time 2ms)
Noise specification:	Airborne noise: Lw 69 dB(A)
External electrical power supply:	440V/60Hz/3ph according STANAG 1008
EMC according to:	DEFSTAN 59-41 (equivalent to MilStd 461G)

