

... think new about deoiling

Multi Phase Emulsion Breaker

# Bilge-Water Deoiling



Successfully tested!  
- G + SeeBG -  
IMO-Marpol MEPC 107(49)



**NFV**

*...einfach sauber*

Filtration & Separation

**UK SALES**



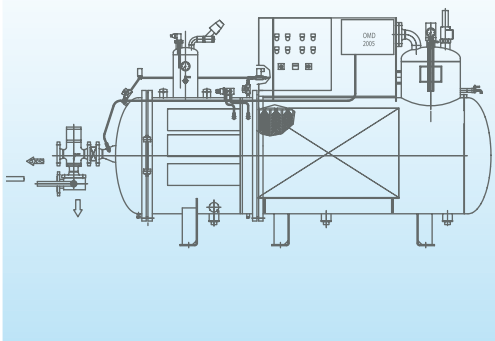
**Fawcett Christie Hydraulics**

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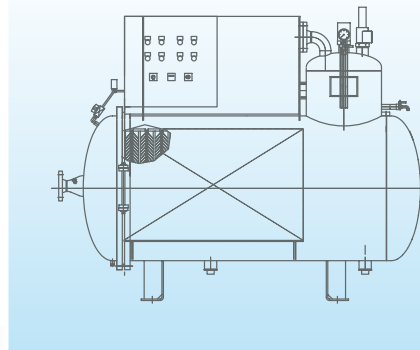
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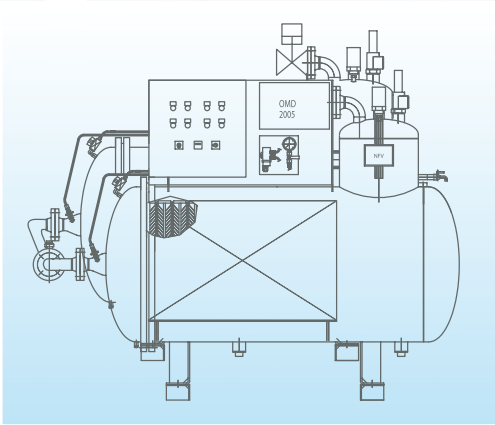
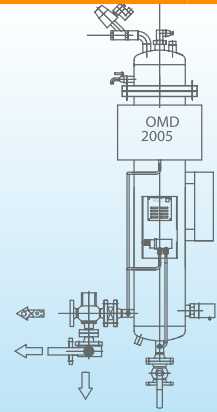
Flow rate m <sup>3</sup> /h	Bilge Water Separator Type	L x W x H mm, incl. service	Weight kg, net	Bilge Water Separator Type	L x W x H mm, incl. Service	Weight kg, net	Bilge Water Separator Type	L x W x H mm, incl. Service	Weight kg, net
0.1				MPEB- VT 0.1	2000x800x1800	180			
0.25				MPEB- VT 0.25	2100x800x1800	210	PPT-BWS/MESB 250	1500x900x1150	400
0.5				MPEB- VT 0.5	2100x800x1800	280	PPT-BWS/MESB 500	1500x1240x1300	450
1.0	MPEB 1	2200x1100x1500	500	MPEB- VT 1.0	2500x800x2200	390	PPT-BWS/MESB 1000	1600x2000x1500	550
2.5	MPEB 2.5	3000x1300x1800	600	MPEB- VT 2.5		630	PPT-BWS/MESB 2500	2700x2300x1800	700
5.0	MPEB 5.0	3400x1500x2000	895	MPEB- VT 5.0		830	PPT-BWS/MESB 5000	2800x2800x2000	1150
10.0	MPEB 10.0	3400x1500x2000	935	MPEB- VT 10		890	PPT-BWS/MESB 1000	2800x2800x2000	1200



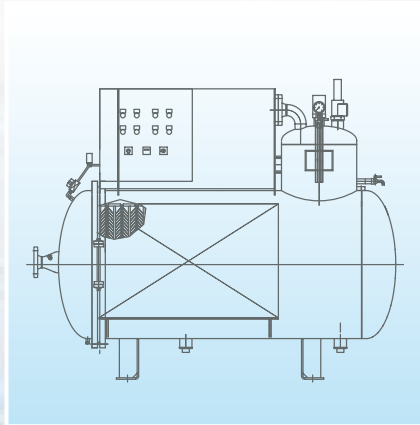
MPEB (1 m<sup>3</sup>/h - 10 m<sup>3</sup>/h)



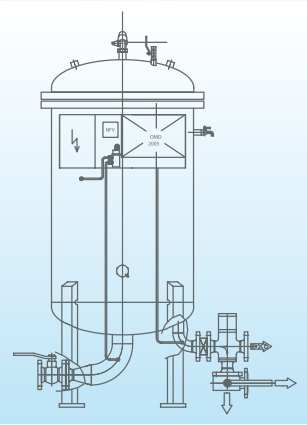
MPEB-VT (0.1 m<sup>3</sup>/h - 1 m<sup>3</sup>/h)



Deoiler 2000 - PPT-BWS/MESB (0.1 m<sup>3</sup>/h - 10 m<sup>3</sup>/h)



MPEB-VT (2.5 m<sup>3</sup>/h - 10 m<sup>3</sup>/h)



# How the MPEB functions

Basic principle: two-stage bilge water cleaning

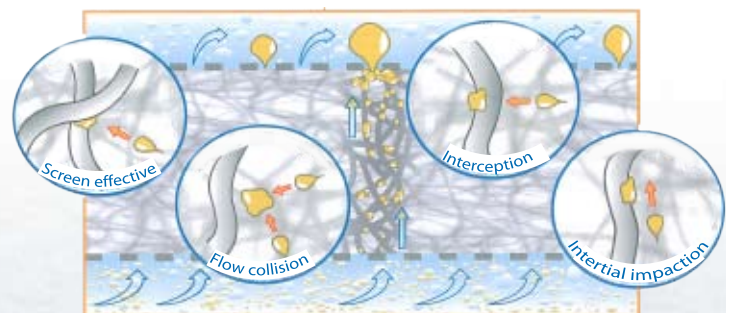
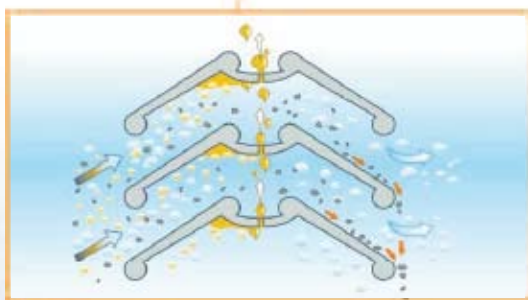
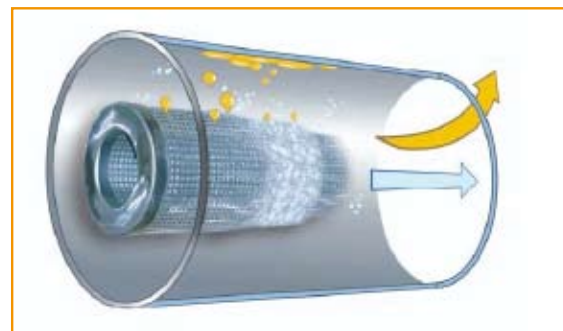
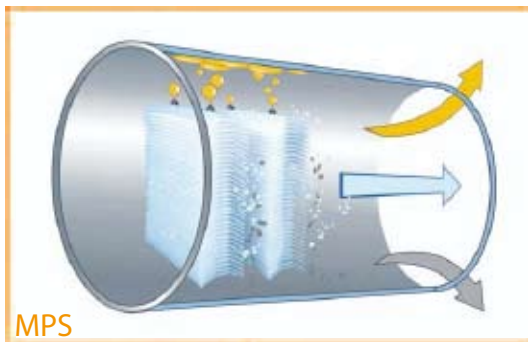
The 'multiple phases' (water, oil, solids) are separated in the first stage (MPS). This is followed by the second stage in which the fine oil droplets  $< 1 \mu\text{m}$  are permanently removed (emulsion/dispersion).

## Stage 1: Multi Phase Separation (MPS)

The bilge water is pumped through the MPS profiles. The bilge water accelerates and swirls as it passes through the inlet on to the profiles, making the small oil droplets coalesce to form large drops which are then bound by the adhesion force of the profiles. These large drops pass through oil ascent lines into the first oil dome. All solids and heavier substances slide down the profiles into the sludge holding tank.

## Stage 2: Mechanical Emulsion Breaker (MESB)

The water is then pumped through an element from the inside to the outside for fine droplet separation. The fine oil droplets ( $> 0.5 \mu\text{m}$ ) coalesce in a microfibre bed to form large drops, which are fed into the second oil dome. This permanent separation delivers complete operational safety at remarkably low cost.



## Configuration and design

NFV offers a wide range of bilge water deoilers for all types of ships. NFV's filter systems are modular in design, allowing for flexible configurations and customised dimensions.

The NFV bilge water deoiler works with ultra-efficient components and can even be used to treat highly contaminated media. Emulsions and dispersions are separated in a continuous process without the use of added chemicals, adsorbers, activated carbon or other filter systems. Our deoilers are supplied with all components in accordance with IMO-Marpol MPEC 107(49) regulations (harbour control valve, oil alarm monitor with 3/2-way valve).

# Bilge water separation is a highly demanding task

## What is Bilge water



Bilge water can be a mixture of water, fuel oil, lube oil, hydraulic oil, detergents, oil additives, chemicals, dust, soot and other substances. This mixture is normally collected in a bilge water tank.

## The advantages of MPEB technology



NFV bilge water deoilers employ highly effective, patented technologies to remove all contaminants from the bilge water. NFV's systems use no chemicals, no adsorption processes, no filters, no high-speed centrifugal forces, no membrane filters, no back-flushing and no periodic cleansing.

## A high degree of installation flexibility



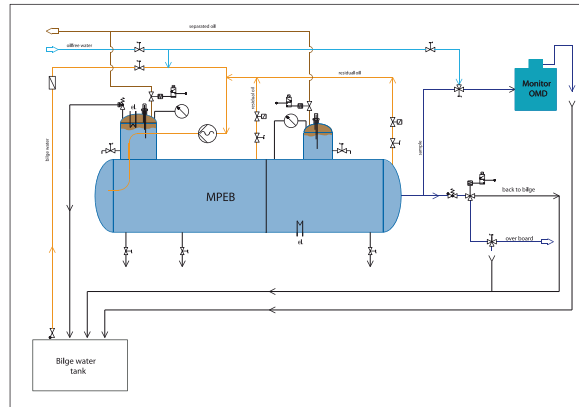
Ships are not built around the technology they contain, which is why NFV bilge water deoilers are available in all performance capacities (0.1 m<sup>3</sup>/h–10 m<sup>3</sup>/h) and in three different designs. We believe that bilge water deoilers should be flexible in design and configuration to allow shipyards and shipbuilding companies to implement effective, creative solutions.

## Anti-pollution regulations are becoming increasingly stringent



Ensuring that the maximum residual oil content in bilge water permitted under present legislation (< 15 ppm) is not exceeded is reasonably straightforward. However, with more and more countries introducing ever stricter environmental protection regulations to protect NSA (National Special Areas) and PSSA (Particularly Sensitive Sea Areas) zones, there will soon be a surge in the demand for advanced deoilers. Compliance with "green ship" and "green harbour" requirements also calls for even more effective deoiling systems. NFV is a specialist for these high-performance systems.

# Over 50 years expertise in separation



Flow diagram of an MPEB deoiler

## The development of maritime deoiling technology

At SMM in 1972, NFV was the first company to present a bilge water deoiler which left a residual oil content of < 15 ppm. That deoiler was in tune with the decade's emerging environmental consciousness; it became the basis for the MARPOL Guidelines 73/78 and set a precedent for the competition.

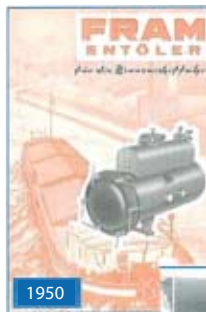
In 1992, the IMO-MARPOL Resolution MEPC 60 (33) was passed and came into effect on April 1, 1994. Again NFV was the first company to present the deoiler "PPT-BWS" that met these specific demands. Viewed from the angle of the demands of practical, everyday applications, this standard is still below what could be achieved.

In light of environmental protection and operational safety, a far higher deoiling performance is necessary and is also feasible. The standards defined by the German Navy, for instance, are exemplary.

NFV's product development work is consistently aligned to these high standards. As a result, NFV's deoiling systems are licensed for use in NSA and PSSA areas (National Special Areas and Particularly Sensitive Sea Areas), where a residual oil content of < 5 ppm is stipulated.

At NFV, we believe that only the very highest standards have a future. The future is bound to bring more and more stringent special national regulations, similar to those already in place in the Antarctic, Alaska, the Great Lakes and Australia. Driven and inspired by the challenges set by exacting customers, including federal civil authority vessels, German navy vessels and cruise ships, all of who demand the greatest possible standard of environmental protection, optimum operating safety and low residual oil contents, NFV continues to consistently hone and advance the company's technologies.

The increasing demands of stevedores, charterers and investors for cleaner ships, and the focus of shipping companies' marketing efforts on this factor, all contribute to making deoiling standards more stringent.



1950



1972



1994



1998



2000



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Filtration & Separation

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