

SEPARATION

---

# SEPARATION THAT CREATES CLARITY

---

Deoiling and dewatering systems for shipping,  
offshore platforms and industrial applications



# WITH OUR SEPARATION SOLUTIONS WE MAKE THE WORLD



## safer

by ensuring that even in the heaviest seas, vital propulsion systems and engines can be relied on



## healthier

through our systems exceeding the statutory requirements for deoiling bilge water and in this way making an important contribution to protecting the oceans



## more productive

by creating optimal conditions for reliable operation of equipment on ships and in industrial applications

# EXPERTISE BASED ON DECADES OF EXPERIENCE

**SEPARATION SYSTEMS** from Filtration Group reliably separate fluids that cause problems as compounds: either on ships or offshore platforms or in ecologically-relevant areas. Our efficient solutions for deoiling or dewatering prevent premature wear, unnecessary losses of output and avoidable environmental pollution, thereby creating a healthy equilibrium in the economic and ecological balance sheet.

**SYSTEMS FOR DEOILING OR DEWATERING** are important guarantees for trouble-free operation in shipping, on offshore platforms and in industrial applications. Deoilers separate oil, propulsion and hydraulic fluids from cooling, condensation and seawater; dewatering systems protect engines and hydraulic systems from premature wear on ships and offshore platforms. Both systems

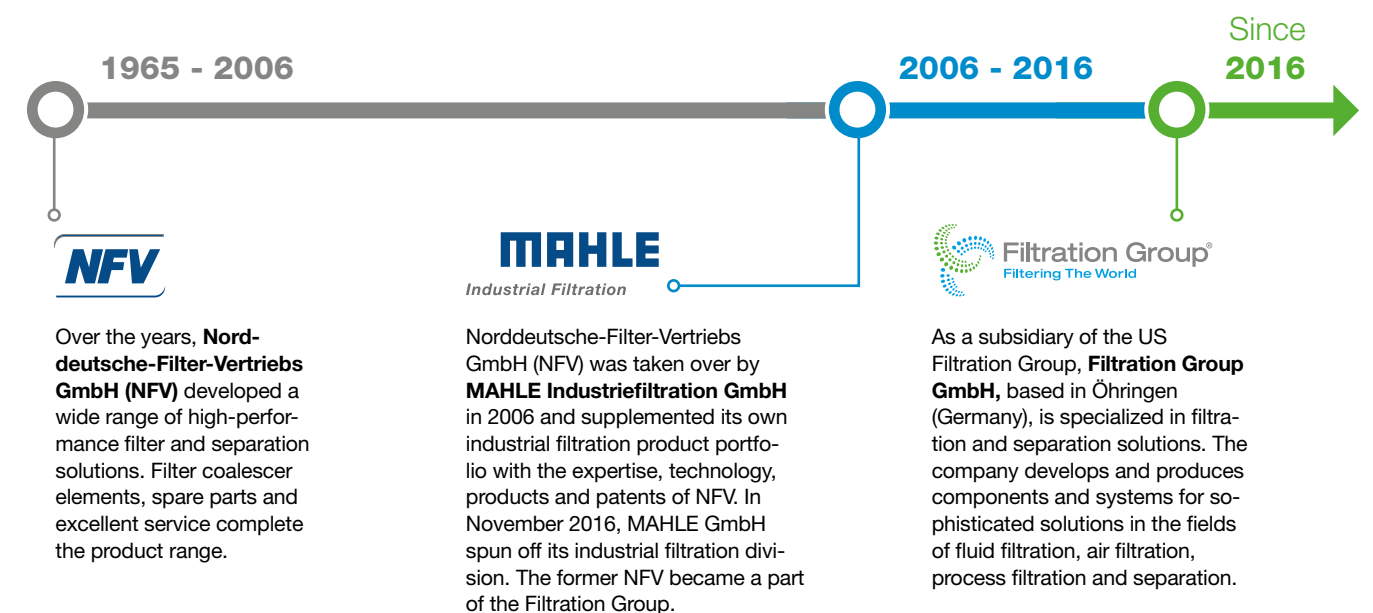
exploit the different physical behavior of fluids through the coalescer principle and as a result work without moving parts or additional chemicals. This boosts service life and lowers the requirement for maintenance.

**SOPHISTICATED TECHNOLOGY, INNOVATIVE MATERIALS AND PRODUCTS**, designed for high performance in continuous operation, have a favorable influence on the economic efficiency of a company. Excellent service and uncompromising customer-orientation round off the overall package that makes Filtration Group a reliable partner for shipping, operators of offshore platforms and industrial companies. We have a clearly defined goal:

**WE INSPIRE OUR CUSTOMERS.**

## OUR HISTORY

Our expertise in the field of separation technology has a long history. The company name has changed, the product range has undergone continuous further development: it extends from components and modules to complete separation and filtration systems.





# THE PERFECT SOLUTION FOR EVERY APPLICATION

Separators are required wherever water mixes with oil, fuels or hydraulic fluids. The various systems of Filtration Group have been designed especially for each area of application and separate fluids according to the industry requirements, deployment scenario and legal regulations. Thanks to their modular design, the separators for dewatering or deoiling can be adjusted to almost any spatial requirements and are also suitable for retrofitting old systems.



## Ship operating technology

For use on the high seas, Filtration Group provides separation systems that reduce the water proportion in propulsion and hydraulic fluids to a minimum and as a result permit high engine performance with low wear. Conversely, bilge water separators separate lubricants, hydraulic fluids and oils from water, which can be discharged into the sea with a residual permitted oil content of 15 ppm or 5 ppm.



### APPLICATIONS

- Deoiling of bilge water
- Fuel treatment



## Wind industry

Separators clean rain- and seawater, which has collected on the transformer platforms of wind turbine and create the conditions for clean disposal of separated lubricants, oils and hydraulic fluids. The separation systems for deoiling the surface water reduce the residual oil content up to 5 ppm. This is much lower than the legal requirement.



### APPLICATIONS

- Deoiling the surface water on transformer platforms
- Oil treatment for lubricants
- Fuel treatment for emergency power generators



## Conventional power generation

Efficient separators from Filtration Group are used for fuel treatment in power stations and gensets. This prevents wear in the propulsion systems and promotes economic efficiency. Since a lot of water is involved in conventional power generation, which on the one hand drives steam turbines and on the other serves as cooling water, power stations also need high performance separation systems for process- and waste water treatment.



### APPLICATIONS

- Fuel treatment
- Deoiling waste water
- Treatment of turbine and transmission oil



## Oil and gas industry

The three- and two-stage separation systems of Filtration Group reduce the water content in crude oil to down to 0.1 percent on oil rigs and drilling fields. Thanks to their modular design, they do not need much space and can be adapted to individual requirements. This advantage produces results during installation on oil rigs as well as in fuel depots.



### APPLICATIONS

- Crude oil dewatering
- Deoiling of injection and waste water
- Separation solutions for fuel depots



## Further applications

Apart from the listed applications, separation systems are used in every kind of industrial production, but also for fuel treatment in emergency power generators or large engines, for example. Filtration Group supplies appropriate solutions for every scenario. The high quality features of every separation system from Filtration Group are a high degree of efficiency, great flexibility in space requirements and durability.



### APPLICATIONS

- Treatment of industrial waste water
- Industrial parts cleaning
- Cooling lubricant treatment
- Process water treatment
- Fuel treatment for emergency power generators



## PRODUCTS

# SYSTEMATIC SEPARATION WITH THE PERFECT SEPARATOR

Depending on the base mix and deployment scenario, separation in Filtration Group systems is based on a one-, two- or three-stage separation process.

## SEPARATION PROCESS

### DEOILING

During multi-phase separation (MPS), oil, water and solids are separated from each other in one separation stage by targeted turbulence. Solids slide off the surface of the separation profiles, while oil is collected on the profiles and forms large droplets there. These oil droplets rise and are discharged there. In a second stage, the mechanical emulsion and foam breaker (MESB), the roughly cleaned water flows through a microfiber bed in the coalescer element, in which even the finest oil droplets are collected and rise in the oil dome. With an additional membrane stage the residual oil content can be reduced to below 1 ppm.

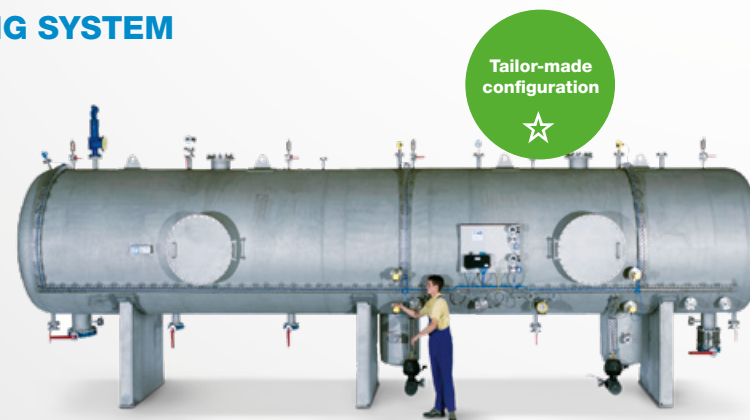
### DEWATERING

Treatment of oil and fuels is likewise based on the coalescer principle. In this case, during the separation, large water droplets form on the filter surface and sink downwards in a container. If an even lower residual water content is required, an additional separation stage is added downstream to the coalescer elements. Here, the oil or fuel flows through a water-repellent membrane, which separates even the tiniest water droplets. The residual water content can in this way be reduced to down to 0.1 percent. The coalescer principle makes use of centrifuges or chemical additives unnecessary.

## Our high-end solution for crude oil dewatering

### CWD / OTS CRUDE OIL DEWATERING SYSTEM

The crude oil dewatering system is the ultimate in crude oil dewatering. The system combines multi-phase separation, mechanical emulsion and foam breaker (MESB) and membrane filtration in one system and reduces the residual water proportion to down to 0.1 %. The CWD / OTS is principally used in oil and gas industry and is tailored to the medium and level of purity required. The flow ranges from 10 m<sup>3</sup> to 100 m<sup>3</sup>/h. On request, fully automatic operation of the system is possible.



## Our systems for oil and fuel treatment

### KFWA / OFWA

The efficient fuel treatment system prevents the concentration of free water rising to over 70 ppm. This provides effective protection against diesel pest. The single-stage system mainly used on ships and prevents engine damage and system failures there. Thanks to its compact design, it does not need much space in a ship's engine room. For example, in the OFWA version, the system is also used for the dewatering of hydraulic oils.

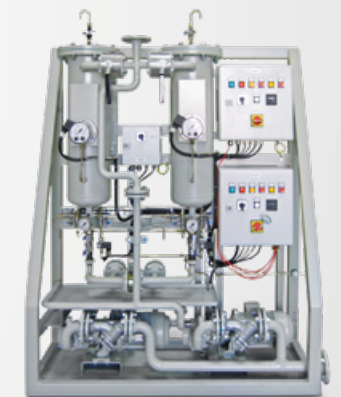
- volume flow: 700 to 8000 l/h
- Classification: DNV GL, Lloyd's Register and others on application
- low operating costs
- low maintenance requirements
- easy handling
- robust design



### FTS / OTS

This two-stage system filters the fuel as FTS or filters the oil before water separation in the coalescer elements as OTS, which in the case of pollution with larger solid particles improves the service life of the system. The efficiency of the first filter stage can be adapted to specific requirements. These systems can be used on ships, in power stations and in industrial applications

- Residual water content below 70 ppm free water
- volume flow: 600 to 4500 l/h
- Classification: DNV GL
- low space requirements
- simple handling



### PTS / OTS

Apart from the coalescer elements, the PTS / OTS is fitted with additional separator membranes. These membranes prevent the escape of even the tiniest water droplets, meaning the fuel or oil is discharged after optimal cleaning. The system is suitable for the protection of gas turbines in power stations and fuel treatment in emergency power generators. The PTS is configured individually for the corresponding requirements. Filtration Group provides OTS standard sizes for volume flows of 300 to 2000 l/h; other sizes are available on request.





## PRODUCTS

### Our systems for deoiling and water treatment

#### BILGEPROTECT

The latest addition to the deoiler product family combines proven and innovative technology: Among other things, an integrated control system indicates maintenance intervals, reports malfunctions and saves measurement data. On request, BilgeProtect is also available with a system for remote monitoring.

- Residual oil content: 15 ppm, corresponding to the international standard according to IMO MARPOL MEPC.107(49)
- Delivery with all components according to IMO MARPOL MEPC.107(49)
- Standard designs with a volume flow of 5 and 10 m³/h throughput
- easy maintenance
- user-friendly spare part ordering



#### MPEB-VT

In the two-stage deoiler, the multi-phase separation and mechanical emulsion and foam breaker are each accommodated in a separate pressure vessel. It is primarily designed for the treatment of bilge water and is also highly suitable for retrofitting due to its modular design.

- Residual oil content: 15 ppm (5 ppm), corresponding to the international standard according to IMO MARPOL MEPC.107(49)
- volume flow: 1; 2.5; 5 or 10 m³/h
- Classification: DNV GL according to IMO decision MEPC.107(49) Module B
- additional permissions: RMRS, USCG



#### PPT BWS (MESB) / DEOILER 2000

Multi-phase separation and mechanical emulsion and foam breaker installed in two separate pressure vessels in this deoiler model. The separation efficiency of 5 ppm residual oil content in bilge water corresponds to the requirements in „National Special Areas“ and „Particularly Sensitive Sea Areas“ as well as „Green Ship“ and „Green Harbor“ limits.

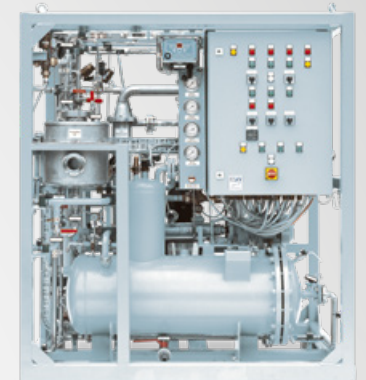
- Residual oil content: 5 ppm, certification according to decision MEPC.107(49)
- volume flow: 0.5; 1; 2.5; 5 or 10 m³/h
- Classification: DNV GL according to IMO decision MEPC.107(49) Module B
- additional permissions: RMRS, USCG, 5 ppm permission DNV GL



#### MFEB

With this high performance system the residual oil content of leaking water can be lowered to below 1 ppm. The multi phase separator is combined with a membrane, which separates the remaining water-oil emulsions under high pressure. Oil and other residues are concentrated and recycled

- Residual oil content: 1 ppm and less, documented in tests of DNV GL and the German Navy
- volume flow: 0.5; 1; 2.5; 5 or 7.5 m³/h
- corresponding to the international standard according to IMO MARPOL MEPC.107(49)
- Areas of use: Treatment of bilge water and industrial waste water as well as waste water deoiling in power stations



#### MESB

The oil-water separator is used mainly in industrial applications like washing bath treatment, handling of industrial waste water and process water treatment. It is robust, compactly built and shows a high efficiency with single-stage separation under pressure. The MESB is also used in the treatment of process and surface water in power stations.

- Residual oil content: up to 5 ppm
- volume flow: 1 to 100 m³/h
- low operating costs, low maintenance expense
- fully-automatic mode
- easy handling



#### MESB-DL

The purpose of the unpressurized deoiler is to treat industrial washing baths and water based cooling lubricants from which foreign oils need to be removed. After separation, the oil film flows on the stream of the dispersion medium to the system outlet, where it runs off via a height-adjustable channel.

- Throughput: 100 to 1000 l/h
- with eccentric screw pump
- optionally available with control and dry running protection





EVERYTHING FROM A SINGLE SOURCE

# INCLUDED IN DELIVERY: OUR DRIVE TO INSPIRE YOU



SPARE PARTS

## Seamless storage

We supply you with everything to maintain smooth operation of our separators, from **filter elements** to the **complete set** of matching spare parts. In addition: with our original spare parts, we provide you with the guarantee that your system achieves maximum efficiency. We always have the matching spare parts for each product in storage and guarantee their availability at short notice worldwide. And with spare parts you order from Filtration Group, the permit for your ship from the International Maritime Organisation (IMO) is preserved. There is simply no replacement for our genuine spare parts.



SERVICE

## service across all borders

The service technicians of Filtration Group support you worldwide in the **installation** and **commissioning** of our separation systems – if the situation calls for it, even on the high seas. Of course, our services also include **changing elements, maintenance, repairs, modernizations and retrofitting**. In addition, we train your operating personnel and are pleased to advise you on choosing the right system. And have no doubt: it's definitely in our product portfolio.



APPLICATION MANAGEMENT

## Advice without question marks

To ensure you get the optimal product for each area of use, our consulting and engineering service will provide you with support throughout the entire procurement process. Based on an **analysis** of the problem and determination of the design parameters, we can provide you with a recommendation for an appropriate separation system. We configure the system and also assume the **project management** and engineering **project supervision**. This is what we mean by comprehensive application management that leaves no questions unanswered.



LABORATORY

## Uncompromising precision

We are be pleased to analyze any mixture you send us as a sample in our laboratory. The **fuel, crude oil or bilge water examination** provides the precise data for the perfect system with which you can separate the mixture according to the set requirements and legal standards.

REFERENCES

# GOOD SOLUTIONS



## “ High performance deoiler for protecting the oceans

Depending on the size of the ship, up to 10 000 liters of water is collected in the bilge of a ship's hull every day. This bilge water is contaminated with oil and other fluids and is treated in a special separation system before being discharged back into the sea.

Filtration Group installed new separation systems on eleven cruise vessels of major European shipping company. The modular design was an advantage in this respect: the two stages are delivered in separate vessels, which require less space in the cramped space in a ship's hull. The new systems correspond to the international standard according to IMO MEPC.107(49). Ships of a well-known German cruise line clearly come below the statutory guidelines of 15 ppm with a residual oil content of 5 ppm. Consequently, Filtration Group's deoilers, with which they achieve this results, are what create the preconditions for the shipping company's avowal to protect the world's seas.

## “ Fuel treatment enhances data security



To avoid losing any important customer data in the event of a power failure, insurance companies, like the large German company we service, operate an emergency power generator. The fuel stocks must be treated continuously to ensure they are ready for operation at any time.

Filtration Group installed a two-stage FTS system to filter particles out of the fuel before the water separation. Since the fuel tank is in a sealed room, which can only be entered via a 90x90 cm maintenance door, the technicians adjusted the frame of the separation system to the cramped space and installed a display that permits complete monitoring and operation from outside. To permit calibration of the separation according to the respective fuel quality, the treatment intervals can be freely programmed.

## WORLDWIDE AT OVER 100 LOCATIONS IN 28 COUNTRIES



### ADDRESSES

#### Filtration Group GmbH

Schleifbachweg 45  
74613 Öhringen  
Germany

Phone: +49 7941 / 6466 - 0  
Fax: +49 7941 / 6466 - 429  
Email: [fm.de.sales@filtrationgroup.com](mailto:fm.de.sales@filtrationgroup.com)

#### FG Fluid Solutions USA

2400 Zinga Drive  
Reedsburg, Wisconsin 53959  
USA

Phone: +1 608 / 524 - 4200  
Fax: +1 608 / 524 - 4220  
Email: [fg-usa@filtrationgroup.com](mailto:fg-usa@filtrationgroup.com)

#### Filtration Group Japan Corporation

IS Yumicho Bldg, 1-28-24 Hongo  
Bunkyo-ku  
Tokyo 113-0033  
Japan

Phone: +81 3 / 5802 - 7340  
Fax: +81 3 / 5802 - 7345  
Email: [fm.jp.industrialfiltration@filtrationgroup.com](mailto:fm.jp.industrialfiltration@filtrationgroup.com)

#### Filtration Group (Shanghai) Co. Ltd.

B 501, Hangyi Road 8  
Fengxian District  
Shanghai 201401  
China

Phone: +86 400 / 821 - 5175  
Email: [info\\_shanghai@filtrationgroup.com](mailto:info_shanghai@filtrationgroup.com)

#### Filtration Group Srl.

Calea Stan Vidrighin 5A  
Timisoara 300645  
Romania

Phone: +40 256 / 408 - 230  
Email: [fm.ro.office@filtrationgroup.com](mailto:fm.ro.office@filtrationgroup.com)

#### Filtrair B.V.

De Werf 16  
8447 GE Heerenveen  
The Netherlands

Phone: +31 513 / 626 - 355  
Email: [marketing-filtrair@filtrationgroup.com](mailto:marketing-filtrair@filtrationgroup.com)

#### Clear Edge Filtration CFE GmbH

Erzwäsche 44  
D-38229 Salzgitter-Calbecht  
Germany

Phone: +49 5341 / 8151 - 0  
Fax: +49 5341 / 8151 - 52

Further information about our products and a local contact person from our worldwide partner network can be found on our website:  
[www.fluid.filtrationgroup.com/en-US/contact](http://www.fluid.filtrationgroup.com/en-US/contact)

[www.fluid.filtrationgroup.com](http://www.fluid.filtrationgroup.com)