



MARINE TECHNOLOGY

ALWAYS ON A SAFE COURSE

Efficient filtration and separation
solutions for marine technology

WITH OUR FILTRATION AND 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



FOR THE TOUGHEST REQUIREMENTS IN MARINE TECHNOLOGY

With decades of experience and expert knowledge from countless applications, FGI is the innovative development and systems partner in fluid technology, oil and water separation, and water treatment for marine technology. Besides an extensive standard range of high-quality filters, we work together with you to develop customized filtration and separation solutions that exactly meet your specific requirements—in their filtration performance, reliability, economic efficiency, and environmental protection. It goes without saying that our production meets all international standards.

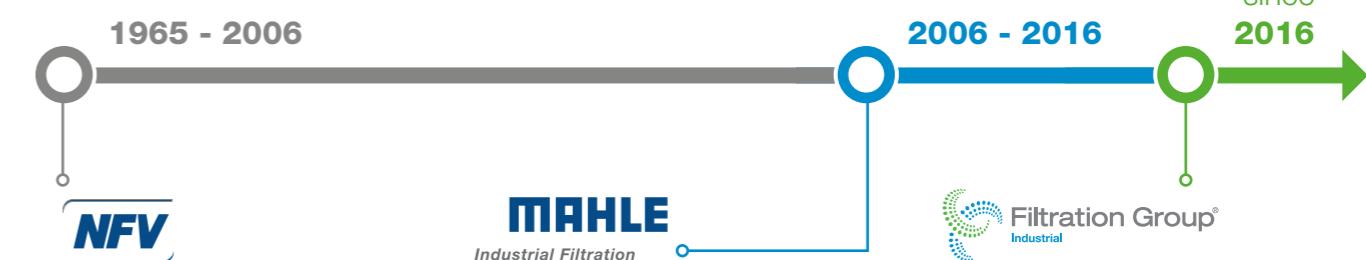
AN OVERVIEW OF OUR SOLUTIONS FOR MARINE TECHNOLOGY:

- Coalescer technology for oil separation from bilge water and condensates
- Filtration and separation solutions all around the engine (fuel filters, lubricating oil filters, fuel treatment systems)
- Filtration systems for hydraulics, lubrication, and systems reliability



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.



Over the years, **Nord-deutsche-Filter-Vertriebs GmbH (NFV)** developed a wide range of high-performance filter and separation solutions. Filter coalescer elements, spare parts and excellent service complete the product range.

Norddeutsche-Filter-Vertriebs GmbH (NFV) was taken over by **MAHLE Industriefiltration GmbH** in 2006 and supplemented its own industrial filtration product portfolio with the expertise, technology, products and patents of NFV. In November 2016, MAHLE GmbH spun off its industrial filtration division. The former NFV became a part of the Filtration Group.

As a subsidiary of the US Filtration Group, **Filtration Group GmbH**, based in Öhringen (Germany), is specialized in filtration and separation solutions. The company develops and produces components and systems for sophisticated solutions in the fields of fluid filtration, air filtration, process filtration and separation.

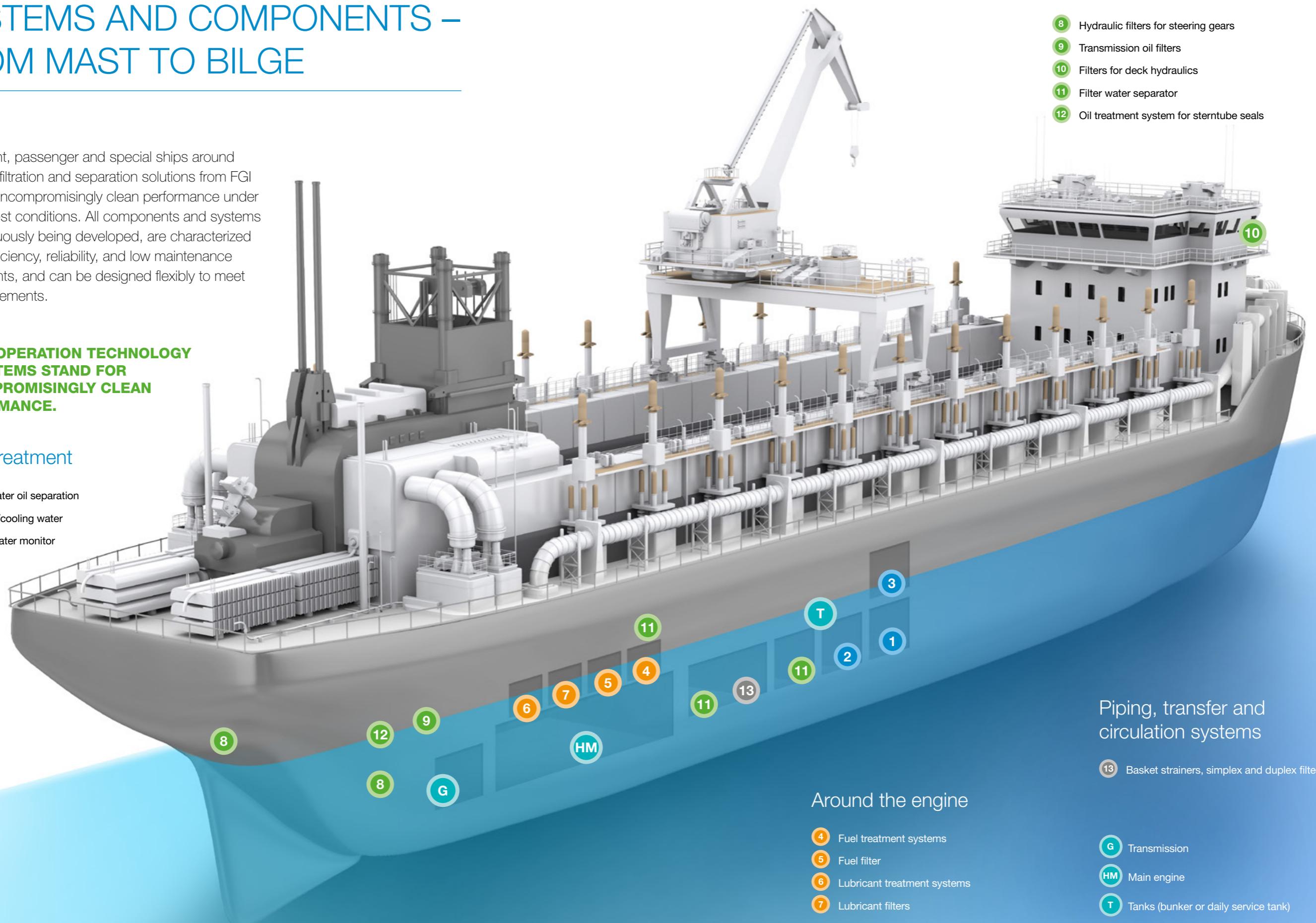
SYSTEMS AND COMPONENTS – FROM MAST TO BILGE

In merchant, passenger and special ships around the world, filtration and separation solutions from FGI stand for uncompromisingly clean performance under the toughest conditions. All components and systems are continuously being developed, are characterized by high efficiency, reliability, and low maintenance requirements, and can be designed flexibly to meet your requirements.

IN SHIP OPERATION TECHNOLOGY
FGI SYSTEMS STAND FOR
UNCOMPROMISINGLY CLEAN
PERFORMANCE.

Water treatment

- 1 Bilge water oil separation
- 2 Service/cooling water
- 3 Oil-in-water monitor



HIGHER PERFORMANCE, LOWER EMISSIONS – FILTRATION AND SEPARATION ALL AROUND THE ENGINE

The longer, more reliably, and lower-maintenance large engines can operate in marine applications, the higher their efficiency and cost effectiveness. Clean fuels and lubricating oils contribute decisively to maintaining and extending the service life of your engine, and to low-emissions operation. FGI offers a wide spectrum of fuel and lubricating oil filters, fuel and oil treatment systems, as well as intake air and ventilation filters for marine engines of all types.

FUEL TREATMENT SYSTEMS

High-performance fuel filters and treatment systems from FGI can make the worst quality fuels optimally usable. Complete fuel filter systems are specially matched to the requirements of large engines. The filter systems work reliably and safely around the clock in fully automated mode. Using the FGI filter and coalescer technology, FGI fuel treatment systems can reduce the water content in fuel to a minimum, and thus prevent premature wear of engine components.

LUBRICANT FILTRATION

FGI Filter systems for lubricant treatment and lubricant conditioning ensure low-maintenance, trouble-free engine operation over a long period of time. All oil care systems are adapted to your specific area of application, quality and design. Typical contaminations such as solid and suspended particles, sediment, rust and water from the lubricants of all engines. FGI lubricant filters are available as switchable or automatic systems and ensure high availability of your engines.



Our systems for oil and fuel treatment

KFWA

The efficient fuel treatment system prevents the concentration of free water rising to over 70 ppm. This provides effective protection against diesel pest. Thanks to its compact design, it does not need much space in a ship's engine room.

- Volume flow: 700 to 8000 l/h
- Classification: DNV GL, Lloyd's Register, Türk Loydu, CCS and others on application
- Low operating costs
- Low maintenance requirements
- Easy handling
- Robust design



PTS

Apart from the coalescer elements, the PTS 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 PTS is configured individually for the corresponding requirements.



FTS

This two-stage system filters the fuel before water separation in the coalescer elements, 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.

- Residual water content below 70 ppm free water
- Volume flow: 600 to 4500 l/h
- Classification: DNV
- Low space requirements
- Simple handling





PRODUCTS

A FINE THING FOR THE ENVIRONMENT – HIGH-PERFORMANCE BILGE WATER OIL SEPARATION

Container ships, oil tankers, and freighters: bilge water is present on every ship. This gives rise to a severe disposal problem, because before the bilge water may be discharged into the ocean, the hazardous mixture must be intensively treated according to the requirements of the International Maritime Organization (IMO). FGI offers high-performance, economical systems for bilge water oil separation.

CHALLENGES OF BILGE WATER OIL SEPARATION

Bilge water arises due to leakage, dewatering of settling and sediment tanks, and the discharge of various cleaning processes. The bilge water collects in what is known as the bilge in the lower part of the hull and can contain saltwater, cooling water, fuel and lubricating oil, as well as soot and dirt particles. These contaminants and pollutants must not get into the seawater.

The permissible residual oil content for bilge water discharge is max. 15 ppm, which is easy to guarantee today. But development keeps its pace. Ever tighter environmental protection regulations around the world must be observed, such as NSA (National Special Areas) and PSSA (Particularly Sensitive Sea Areas). So-called „Green Ship“ or „Green Harbor“ requirements also demand more efficient oil separation solutions with a residual oil content of ≤ 5 ppm. FGI is your systems partner for tailor-made bilge water cleaning solutions and

can already offer systems, such as the MPEB-VT and the PPT BWS (MESB), that will easily meet future international environmental standards.

CLEAN WATER IN TWO STAGES: BILGE WATER

OIL SEPARATORS FGI bilge water oil separators clean contaminants and pollutants from bilge water quickly and reliably in two stages. In the first stage (MPS), water, oil, and particulate material are separated in three phases. In the second stage (MESB), very fine oil droplets (emulsions/dispersions) are separated safely and permanently. FGI bilge water oil separators are nearly maintenance-free and do not use any chemicals or thermal energy.

APPROVALS The oil separation system and the oil-in-water monitor are approved in accordance with IMO's Resolution MEPC.107(49). FGI bilge water oil separators also meet the requirements of all major classification companies.

Our systems for deoiling and water treatment

MPEB

In this Oily Water Separator, the multi-phase separation and mechanical emulsion and foam breaker are located together in one pressure vessel.

- Residual oil content: 15 ppm (5 ppm), corresponding to the international standard according to IMO MARPOL MEPC.107(49)
- Supplied with all components in accordance with IMO MARPOL MEPC.107(49)
- Standard versions with 5 and 10 m³ per hour flow capacity
- Low maintenance



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: 5 or 10 m³/h
- Classification: DNV 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.

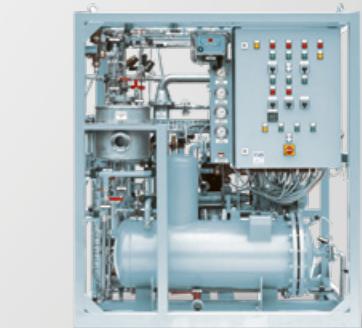
- Residual oil content: 5 ppm, certification according to decision MEPC.107(49)
- volume flow: 2.5; 5 or 10 m³/h
- Classification: DNV GL according to IMO decision MEPC.107(49) Module B
- additional permissions: RMRS, USCG, 5 ppm permission DNV



MPS/MF

With this high-performance unit, the residual oil content of the outgoing water can be reduced to less than 1 ppm. In the MPS/MF, a membrane is connected to the multiphase separator, which separates the remaining water-oil emulsions under high pressure. Oil and other residues are concentrated and re-circulated.

- Residual oil content: 1 ppm and less, proven in tests by DNV and the German Navy
- Flow rate: 0.5; 1; 2.5; 5 or 7.5 m³/h
- Complies with international standard according to IMO MARPOL MEPC.107(49)



PRODUCTS

RUNS LIKE CLOCKWORK – SOLUTIONS FOR HYDRAULICS AND LUBRICATION

Longer service life, higher operational safety, lower maintenance requirements, and more efficient use of resources—the performance of our systems pays off for you and for the environment. You can benefit from our decades of expertise, extensive standard product range, and customer-specific solutions that meet individual requirements.



SMOOTH OPERATION: FILTERS FOR DECK HYDRAULICS

For the widely varying installation points and functions of deck hydraulics, we offer suction filters, pressure filters, duplex filters, return-line filters, bypass filters, air breathers, filter units and elements for all pressure stages, as well as accessories and service units.

SAFE FUNCTIONALITY: HYDRAULIC FILTERS FOR STEERING GEARS

Hydraulic filters from FGI reduce particle contamination in hydraulic and lubricating systems to the level required by the cleanliness class, in accordance with the international standards ISO 4406/1999 and NAS 1638.

OUTSTANDING ECONOMIC EFFICIENCY: TRANSMISSION OIL FILTERS

Our duplex filters are reliably ready for operation around the clock and ensure highly efficient performance, long service life and low flow resistance even at high viscosities.

MAXIMUM EFFICIENCY: DUPLEX FILTERS

Duplex filters from FGI are equipped with two filter vessels enabling non-stop operation of the filter and consistent cleanliness of the media to be cleaned. When the maximum contamination level has been reached, the system switches automatically to the other filter vessel. The filter that has been switched off can now be cleaned out.

PARTICULARLY CLEAN: FILTER WATER SEPARATOR

The coalescer filter was developed to separate free water from oils and fuels. Specifically arranged filter materials collect the small water droplets floating in the fluid and separate them out.

FLEXIBLE FILTRATION: OIL TREATMENT FOR STERTUBE SEALS

Our oil treatment can be used for any middle distillates and reliably separates water and other typical contaminants from the medium.

PERFECT PROTECTION: STRAINERS

Cost-efficient strainers from FGI are perfectly suited to preventively protect piping, and to treat and maintain fluids.

HIGH CLEANLINESS LEVELS: SIMPLEX FILTERS

Our simplex filters, with various housing sizes for flexible use, ensure ultrahigh performance with low costs and simple operation. Simplex and duplex filters are optionally available in a heated version for use in fuel circuits.

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 Industrial 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.



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 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.

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: industrial@filtrationgroup.com

Filtration Group GmbH

Essener Bogen 21
22419 Hamburg
Germany
Phone: +49 7941 / 6466-720
Email: separation@filtrationgroup.com

Clear Edge Filtration CFE GmbH

Erzwäsche 44
38229 Salzgitter-Calbecht
Germany
Phone: +49 5341 / 8151 - 0
Fax: +49 5341 / 8151 - 52

Filtration Group France

2 Place Gustave EIFEL IMMEUBLE DUBLIN
94563 Rungis
France
Phone: +33 1 / 45 12 05 30
Fax: +33 1 / 46 87 58 68
Email: industrial.france@filtrationgroup.com

Filtration Group Srl.

Calea Stan Vidrighin 5A
Timisoara 300645
Romania
Phone: +40 256 / 408 - 230
Email: industrial.romania@filtrationgroup.com

Filtration Group (Shanghai) Co. Ltd.

B 501, Hangyi Road 8
Fengxian District, Shanghai 201401
China
Phone: +86 400 / 821 - 5175
Email: industrial.china@filtrationgroup.com

Your Contact

FILCOM GmbH
Schönbuchstr. 1
D-73760 Ostfildern

www.filcom.de

Phone: +49 (0) 711-4413322-0
Fax: +49 (0) 711-4413322-22
Mail: info@filcom.de

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