

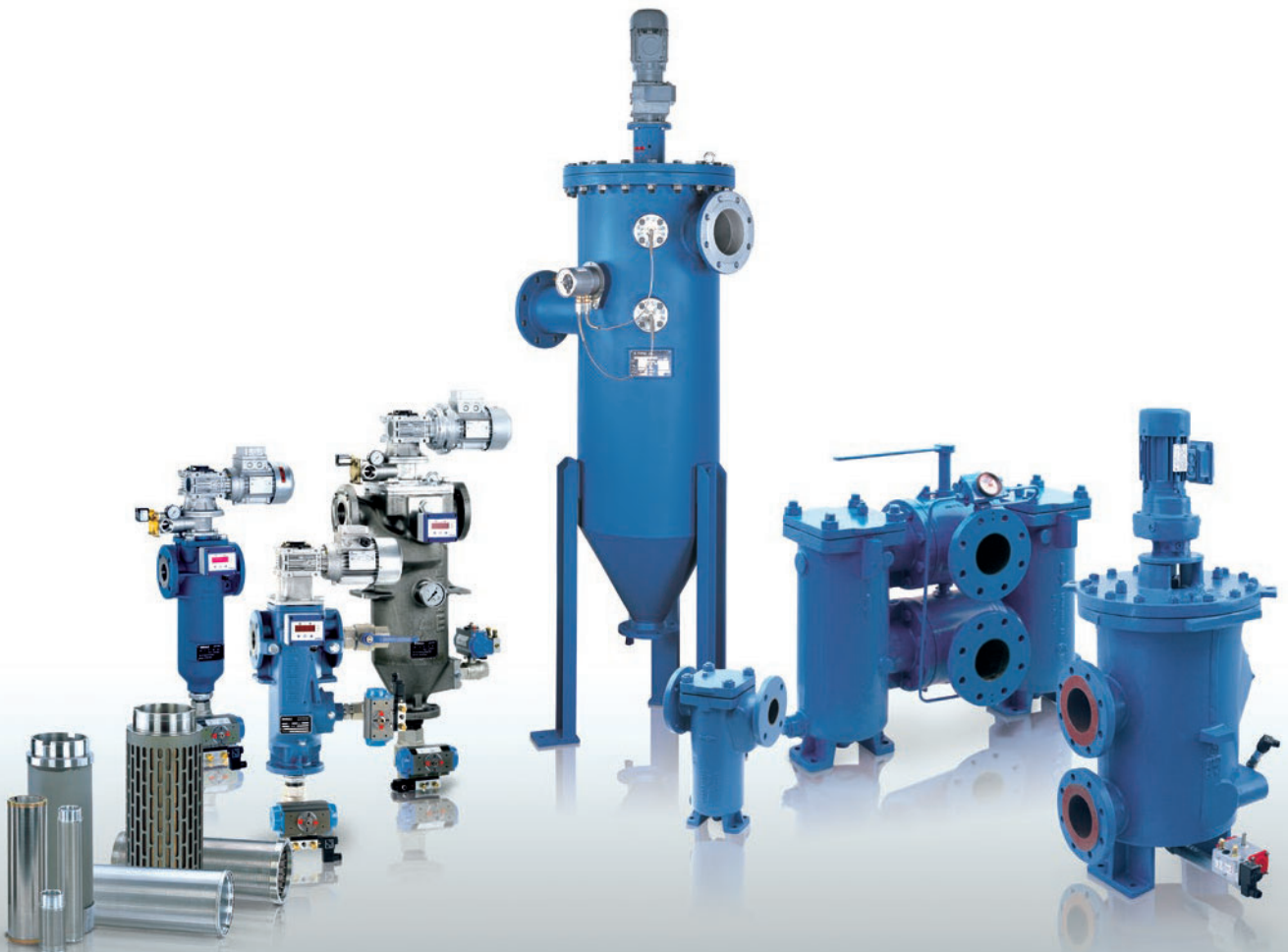


Filtration Group®
Filtering The World

ALWAYS AUTOMATICALLY CLEAN.

Efficient and reliable automatic and process filters for the industry.

PROCESS COMPONENTS



HISTORY

FILTRATION GROUP - FILTERING THE WORLD.

Filtration Group has an extensive product range. Our options range from filter components like, filter elements, cartridges – bags and sheets, filter housings and modules to large system installations. Tell us your application, we will advise which product would fit best to support your application.



Amafilter Group

With over 70 years of experience in the application of horizontal and vertical Pressure Leaf Filters, Cricketfilters and several other types of filters, Amafilter Group provides an unique spectrum of filtration and separation solutions, complemented by an extensive range of filter elements, spare parts and services.

MAHLE acquired the Amafiltergroup in 2008, adding the expertise, synergy of technology and filter products of Amafilter, LFC, Nowata, Vanpipe and Eurofiltec to its Industrial Filtration portfolio.

MAHLE Industrial Filtration

MAHLE Industrial Filtration specializes in the cleaning and processing of industrial oils and lubricants as well as air and water. With its extensive application expertise, in-house research and development, technical center, laboratory, and design department, it offers its customers tailor-made filter components and process engineering solutions.

Filtration Group

In 2016 Filtration Group Corporation closed the acquisition of the industrial filtration business of MAHLE GmbH. The acquisition adds filtration capabilities in industrial filtration across a variety of applications including industrial air filtration, process filtration, hydraulics and fuel separation and replacement elements.

This acquisition will give customers more choice and flexibility in how they can utilize filtration to make their environments cleaner, safer and more productive.

An organization's ability to learn, and translate that learning into action rapidly, is the ultimate competitive advantage. — Jack Welch



Fluid Filtration



Automatic Filtration



Air Filtration



Process Filtration



Separation



OVERVIEW

EFFICIENT FILTRATION AND CLEANING FOR PRODUCTION PROCESSES THAT RUN SMOOTHLY.

To remain competitive, the products from a wide variety of industries must fulfill the strictest quality requirements and production capacities must be fully utilized. Automatic filters from Filtration Group allow high-performance, economically efficient filtration of liquids, pastes, and similar substances, ensure optimal product quality, and keep production running reliably.

Your worldwide systems partner for automatic filter systems

In order for production to run reliably, working liquids must be processed and regenerated. Product media must correspond precisely to specifications and reliably satisfy strict safety requirements in terms of the installations and processes employed. In addition, maintenance and disposal procedures should not disrupt operations.

Automatic filter systems from Filtration Group provide the basis for highperformance, economically efficient production operations with no downtimes. Unlike filters that use consumables, the cleanable filter systems require no specific maintenance or disposal procedures during running operation. The cleaning systems and filter materials used in the compact filters allow flexible, demand-oriented applications from absolute to coarse filtration, as well as homogenization.

FG process components are used in machinery and plant construction, the automotive, chemical, and food and beverage industries, in marine and extraction technology, and in marine and industrial engines.

The process components at a glance:

- Automatic metal-edge filters with scraper cleaning for isocyanate, adhesives, PVC, or chocolate
- Automatic filters with internal pressure cleaning for engine oil in marine applications
- Vario automatic filter series with variable cleaning systems and filter materials for universal applications
- Simplex and duplex filters (basket strainer filters) with cleanable metal filter elements
- Fully automatic backflush filter systems for process water and lubricating oil treatment

The possible applications at a glance:

- Cooling lubricants for metal forming and working
- Materials used in marine applications such as engine oils and fuels
- Treatment of cooling water, process water, drinking water, wastewater
- Processing of washing liquids for industrial parts cleaning
- Manufacturing and processing of chemical products such as oils, paints, dyes, pastes, and adhesives
- Manufacturing and processing of food and beverages such as edible oil, miscella, honey, chocolate, dough, or fruit pulp

AUTOMATIC FILTERS AND DUPLEX FILTERS

CLEAN PROCESS PERFORMANCE FOR FACTORY EQUIPMENT.

In factories, FG process components offer an enormous range of applications for processing and maintenance of operational liquids such as cooling lubricants, process and cooling water, and washing liquids. The self-cleaning automatic filters operate without any disposable consumables, which means that there are almost no maintenance costs.

AF 113 backflush filter



AF 72 metal-edge filter



R8 40-II backflush filter



Broad range of applications

FG automatic filters ensure a long useful life and reliable operation of cutting emulsions and metalworking and grinding oils in the metal processing industry, allow washing agents to efficiently clean workpieces and components, protect heat exchangers and other components from contaminants in the cooling water, and clean process water and wastewater reliably to remove contamination. Filtration tasks involving liquid, highly viscous, or paste-like products can also be carried out with automatic filters to ensure greater process safety, less production downtimes, and improved end quality.

Reliable fine filtration of cooling lubricants

In metalworking and metal processing, modern cooling lubricants (water-soluble/emulsions and non-water-soluble/metalworking oils) allow maximum precision and efficiency. Clean cooling lubricants ensure a better surface quality. The cooling lubricant circuit is maintained by means of high-performance automatic filters, increasing the service life of cooling lubricants considerably. Maximum cutting speeds can be reached thanks to internal coolant feed via channels in the machine spindle and in the machining tool, usually with high pressures of up to 100 bar. The components

involved in the high-pressure internal cooling require fine filtration of the cooling lubricant in order to minimize wear and ensure greater process safety. FG automatic backflush filters are practically setting the industry standard.

Maximum flexibility in process water treatment

Water is the most commonly used coolant and transports process heat in a number of processes. Filtration prevents installations from becoming contaminated by components in the cooling water.

Process water at the required level of purity is indispensable for keeping industrial processes running efficiently without interruption. For example, water to be used for quenching hot metal must be processed by means of filtration. Heat exchangers, pumps, piping, valves, and fittings for cooling and process water must be protected from contaminants to ensure reliable operation. Semi-open cooling tower water circuits are particularly affected by significant particle ingress. However, parts of pipe walls that are becoming loose, spalling deposits, etc., can clog nozzles, valves, and fittings—leading to production interruptions and sometimes causing expensive damage to machinery and installations.



» Our machines and production facilities have to run reliably around the clock. We can count on the filtration solutions from Filtration Group. «

High-end cartridge filter elements



With their self-cleaning function, FG automatic filters offer the ideal solution for protecting your installations and processes without having to interrupt the water cycle.

The efficient solution for industrial parts cleaning

The requirements in industrial production processes for surface finish and cleanliness, as well as residual contamination and particle values, are constantly rising. The quality of many end products is dependent on the cleanliness of the components, such as modern combustion engines with fuel injection systems that operate at well over 1.000 bar.

Our fully automated and self-cleaning filtration systems ensure the necessary removal of particulate matter from the cleaning fluid circuit, even with a large degree of particle ingress—e. g., as a result of casting residues adhering to crankcases. High-pressure deburring installations not only clean but also remove machining burrs.

Reliable filtration of highly viscous products

In the manufacture of highly viscous products for the chemical industry, such as adhesives, insulation materials, seals, underbody coating, etc., FG automatic metal-edge filters are often the only technology that allows economical filtration in order to protect subsequent process steps from contaminants.

Many products are processed in complex machines and installations—e. g., applied with fine nozzles or as an extremely thin adhesive coating. In these situations, foreign matter and agglomerates of product ingredients would result in faults and production scrap, or—in the worst case—damage to the machinery. FG metal-edge filters ensure reliable operation without requiring the use of consumables. They improve process safety and product quality, minimize production downtimes, and reduce costs.

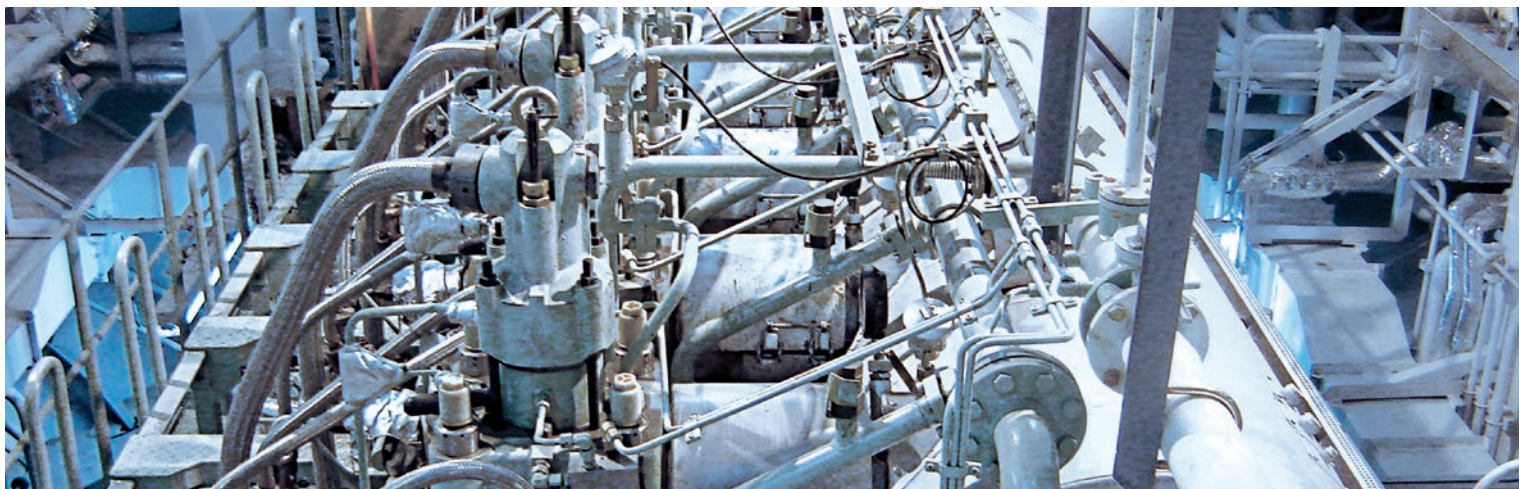
The advantages of FG automatic filters at a glance:

- Self-cleaning filters that do not require consumables
- Complete range of models and sizes
- Customer-specific design adapts perfectly to the process
- Fully automatic operation
- Chemical-free, environmentally friendly process
- Reduced need for cooling lubricants, washing agents, cleaning fluids, and process water
- Reliable processes
- Extended service life of tools, pumps, and installations
- Reliable, constant product flow
- Improved product quality
- Less production scrap

FUEL CARE AND LUBRICATING OIL FILTER SYSTEMS

FULL SPEED AHEAD WITH MARINE AND INDUSTRIAL ENGINES.

The longer and more reliably large engines can operate, and the lower their maintenance requirements, the higher their efficiency and cost effectiveness. Clean fuels and lubricating oils contribute decisively to maintaining and extending the service life of the engines, and to low-emissions operation. Filtration Group offers a broad spectrum of fuel and lubricating oil filters as well as process water filtration solutions for all types of marine and industrial engines.



Reliable fuel care systems

High-performance filter systems from Filtration Group can also optimize the usability of low-quality fuels and lubricants. Our automatic filter installations are specifically geared toward the requirements of large engines and work reliably at all times in fully automated operation. Using coalescence technology, FG fuel treatment systems can reduce the water content of fuel to a minimum, and thus prevent premature wear of engine components.

Reliable lubricant filtration

Automatic filter systems for lubricant treatment and preparation from Filtration Group ensure low-maintenance, failure-free engine operation over a long period of time. The type, quality, and design of all oil treatment systems are matched to your specific area of application. This means that typical contaminants, such as solid and suspended particles, sediments, rust, and water can be reliably and economically removed from the lubricants in all engines, increasing their availability.

The advantages at a glance:

- Customer-specific design of automatic filters
- Chemical-free, environmentally friendly process
- High cleaning performance
- Reduced engine component wear
- Longer service life
- Higher engine availability
- Efficient ballast water treatment

COM plus backflush filter



METAL-EDGE AND BACKFLUSH FILTERS

A SMOOTH FLOW IN THE FOOD AND BEVERAGE AND CHEMICAL INDUSTRIES.

The chemical and food and beverage industries place the highest requirements on process quality, cleanliness, reliability, and environmental protection. FG automatic filters are used in a broad spectrum of processing operations in order to guarantee product quality and ensure that processes are operationally safe and free from interruptions.

A clear advantage in the chemical industry

In the manufacture of highly viscous products such as adhesives, insulation materials, seals, underbody coating, etc., FG metal-edge filters are often the only technology that allows economical filtration in order to protect subsequent process steps from contaminants. In demanding processes, extremely narrow nozzles, mixing heads, or coating systems have to be protected from contaminants, which could otherwise lead to faults, production downtimes, and scrap.

Reaction injection molding example: The raw components isocyanate and polyol are filtered using FG metal-edge filters. A hugely diverse range of products are manufactured from these components in reaction injection molding machines and foaming plants, including car body components, cellular materials for vehicle instrument panels and interior trim, foam upholstery materials, or sandwich panels for buildings.

AF 43 metal-edge filter



AF 42 metal-edge filter



Pure taste in the food and beverage industry

In industrial food and beverage production, self-cleaning filters are used, for example, to remove foreign objects from semifinished goods and preproducts in loading stations and thus avoid contamination of storage tanks and installations.

When dealing with higher-viscosity products, FG metal-edge filters ensure the necessary absence of particles. For example, when covering baked goods with chocolate, small broken-off pieces can be removed. FG automatic filters filter highly viscous honey at moderate temperatures and clean crude oils after pressing in vegetable oil production. In chemical vegetable oil extraction, the miscella is filtered in order to protect the downstream distillation equipment from contamination. In large deep-frying lines, high-temperature versions of the FG automatic filters clean the deep-frying oil to remove contaminants such as breadcrumbs.

The advantages at a glance:

- Higher product quality
- Smooth production processes
- Filtration of low- to high-viscosity products in 24-hour continuous operation
- Environmentally friendly process without filter consumables
- Customer-specific design of filter systems
- Optionally integrated prefiltration function for removal of coarse particles and foreign objects
- Design available for high temperatures of up to 400°C (optional)
- Version available for explosion protection zones and ATEX 2014/34/EU certification
- Materials safe for contact with food and beverages



» In food manufacturing, maximum product safety is indispensable. With filter systems from Filtration Group, we are able to achieve a permanently homogeneous product quality. «

METAL-EDGE AND BACKFLUSH FILTERS

CONTINUOUS FILTRATION PERFORMANCE FOR EVERY REQUIREMENT.

Process and fluid circuits with continuous ingress of particles require an automatic filtration system with continuous particle removal. FG automatic metal-edge filters and backflush filters are based on an intelligent modular system and automatically adjust to changing operating conditions. The self-cleaning function runs without interrupting filtration operation.

More flexibility thanks to the Vario automatic filter system

The FG Vario automatic filter system allows a broad range of applications to be implemented with maximum economic efficiency, thanks to its modular design with standard housing. A number of different filter cleaning principles ensure optimal filtration performance for every process. The Vario system makes it possible to convert easily to other cleaning types without removing the filter. The optional prefiltration function removes coarse particles and foreign objects. As there are no filter consumables, the operational and maintenance costs remain low. The solid construction and high-quality materials guarantee a long service life.

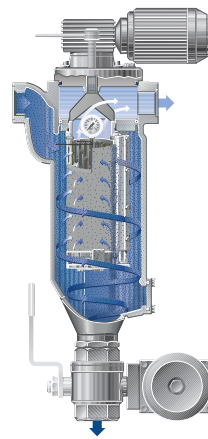
FG automatic metal-edge filters

FG automatic metal-edge filters provide efficient mechanical cleaning of the filter surface and high retention quality. Stable FG metal-edge filter elements made from triangular stainless steel wire on a robust core element are used as filter media. Automatic metal-edge filters are ideally suited for low- to high-viscosity liquids and pastes, and can also be used reliably at higher operating pressures and filter ratings $>100\ \mu\text{m}$.

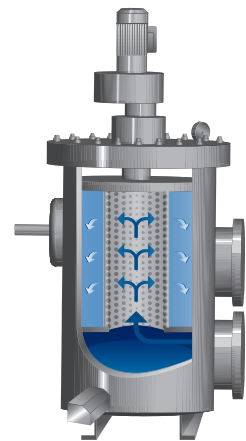
The performance features of the FG automatic metal-edge filters at a glance:

- Gap widths 30–2,000 μm
- Inexpensive cast housing for smaller series
- Welded housing for large models and customer-specific designs
- Integrated prefiltration function for removing coarse particles and foreign objects (optional)
- Customer-specific infeed and outflow connections and materials (optional)
- Design available for high temperatures of up to 400 °C (optional)
- Volume flow rates of up to 900 m^3/h
- Optional heating jacket (heating steam or liquid)
- Optional shaft seals (e. g., sealing liquid system, double mechanical seal, magnetic couplings), optionally certified in accordance with TA Luft
- Version available for explosion protection zones and ATEX 2014/34/EU certification
- Certification by renowned ship classification societies, such as Germanischer Lloyd or DNV

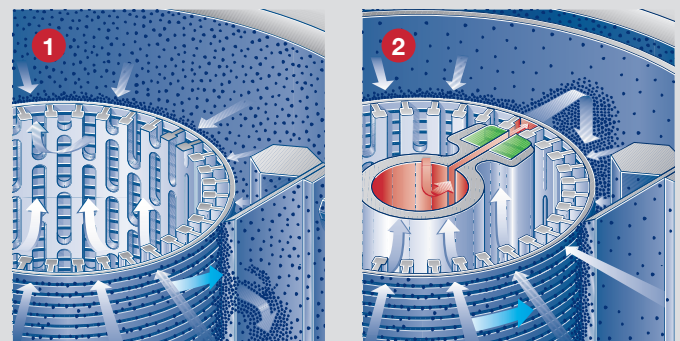
FG metal-edge filter



FG backflush filter



Operating principles of the FG metal-edge filter



01 AF 7x automatic metal-edge filter with radial scraper cleaning
AF 9x automatic metal-edge filter with additional integrated prefiltration function

Cleaning without interrupting operation by rotation of the filter element against a spring-mounted scraper. Particles and agglomerates are lifted off the surface and fall into the collector cone, which is then emptied via the drain valve.

02 AF 15x automatic metal-edge and backflush filter with radial scraper cleaning and external pressure cleaning

Cleaning by rotation of the filter element against a spring-mounted scraper. Segment-by-segment backflushing with externally supplied pressure medium. The collected particulate material is lifted off the surface and falls into the collector cone, which is then emptied via the drain valve.



» With its range of automatic metal-edge and backflush filters, Filtration Group always provides us with the ideal filtration solution for our specific application—both technically and economically. «

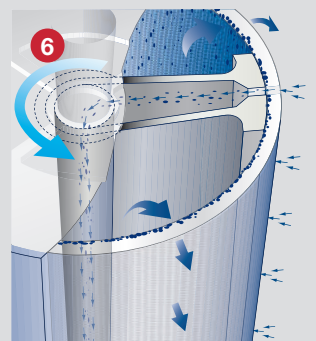
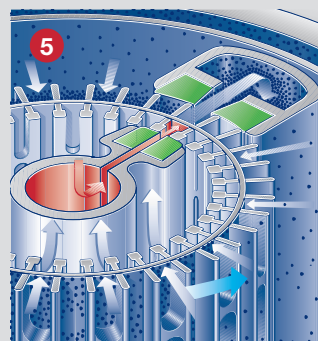
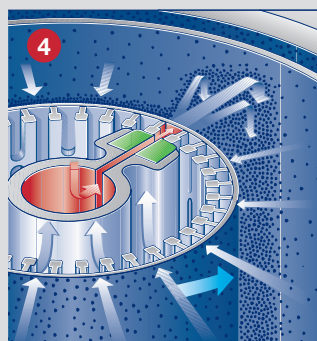
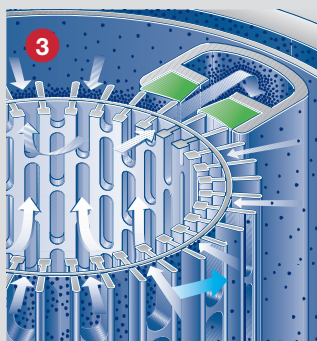
FG automatic backflush filters

FG automatic backflush filters are ideally suited for reliable cleaning of the filter surface by means of temporary or partial reverse flow. The backflush filters give maximum process safety with efficient filter cleaning without interrupting filtration (segment-by-segment cleaning with high backflush pulse) and ultra-high retention quality in accordance with the surface filter principle. High-quality, asymmetric filter media made of multilayer sintered stainless steel wire mesh on a robust core element are used for this purpose.

The performance features of FG automatic backflush filters at a glance:

- Recommended for use at operating pressures < 6 bar, optional design for use at higher pressures
- For product viscosities up to approx. 200 mm²/s
- Particularly suitable for filter ratings < 200 µm
- Volume flow rates of up to 7,000 m³/h
- Versions available for backflushing driven by inlet pressure (internal medium and pressure)
- Versions available for backflushing with external pressure and medium
- Combination of metal-edge scraper cleaning and backflushing available
- Integrated prefiltration (optional in some models)
- Low fluid loss in the cleaning process
- Optimally suited for fine/police filter stage for cooling lubricant applications in centrally supplied machining centers

Operating principles of the FG backflush filter



03 AF 11x automatic backflush filter with internal pressure cleaning and integrated prefiltration function

Cleaning without interrupting operation by rotation of the filter element and backflushing with the filtrate. For efficient backflushing, there must be an operating overpressure on the outlet side. The collected particulate material is carried off via the scavenging channel. Coarse particles are removed from the collector cone via the drain valve.

05 AF 17x automatic filter with external pressure cleaning and integrated prefiltration function

Cleaning without interrupting operation by rotation of the filter element and segment-by-segment backflushing with an externally supplied pressure medium. The collected particulate material is carried off via the scavenging channel. Coarse particles are removed from the collector cone via the drain valve.

04 AF 13x automatic backflush filter with external pressure cleaning

Cleaning by rotation of the filter element and segment-by-segment backflushing with externally supplied pressure medium. The collected particulate material is rinsed from the surface and falls into the collector cone, which is then emptied via the drain valve.

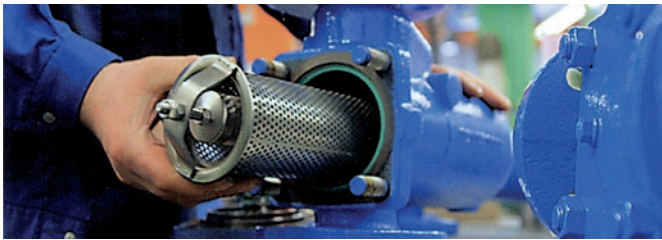
06 Rx automatic backflush filter with internal pressure cleaning

Cleaning process without interrupting operation by rotation of the rinsing nozzle and backflushing with the filtrate. For efficient backflushing, there must be an operating overpressure on the outlet side. The collected particulate material is carried off via the rinsing nozzle and rinsing valve.

SIMPLEX AND DUPLEX FILTERS

UNIVERSAL BASKET STRAINER FILTERS FOR RELIABLE PRODUCTION PROCESSES.

Thanks to their sophisticated design, simplex and duplex filters from Filtration Group are suitable for use with fluids of any kind. They are equipped with cleanable metal filter elements that combine ease of use and cleaning with high reliability and a long service life. Basket strainer filters ensure continuous filtration of coolants and lubricants, helping production processes to run efficiently.



Basket strainer filters for any requirement

FG basket strainer filters achieve a high differential pressure stability of up to 5 bar. They are suitable for a wide range of applications in the marine industry and in other industries that use protective filters or safety filters to prepare and maintain fluid quality.

The medium flows through the basket strainer filter element from the inside to the outside. Contaminants are trapped on the inside of the filter. In a simplex filter, filtering is stopped when the permitted contamination level is reached. The filter is then opened and the basket strainer is removed. The basket strainer is cleaned using a steam or water jet. Duplex filters are equipped with two filter vessels. One filter vessel is used during operation. When the maximum contamination level is reached, the system is switched over to the other filter vessel without interrupting the filtration process. The filter that is not currently being used can now be cleaned.

Simplex filters



EG1

EG2

EG3



ES46

ES

Duplex filters



UG54

US87



VS87-1

VS87

» With its range of metal-edge, backflush, and basket strainer filters, Filtration Group always provides us with the ideal filtration solution for our specific application—both technically and economically. «



HIGH-END FILTERS

HIGH-END FILTER SYSTEMS FOR THE HIGHEST REQUIREMENTS.

With innovative fiberglass material and a specially developed design, FG high-end filter systems meet the highest cleanliness requirements. The unique filter technology, with its constant high performance over its entire lifetime, ensures continuous and constant quality of the process fluid—for greater process stability and durably economical operation.

High-end filter technology for greater performance and longer service life

FG high-end filter systems are suitable for filtration of cleaning fluids in industrial production processes—from alkaline, neutral, and acidic aqueous cleaning solutions to hydrocarbon-based solvent cleaners and modified alcohols. Our high-end filters consist of a unique, multilayer Sm-N pleated star construction, made of fiberglass material, which is more chemically and thermally resistant than plastic. The fiberglass layer is arranged by fineness from the outside to the inside and combines the advantages of a depth filter with those of a large, effective filter surface. The result: higher dirt-holding capacity with low pressure loss, combined with a defined, high retention rate. The stainless steel wire mesh support on both sides ensures high rigidity of the pleated star. The stainless steel inner tube provides high strength and pressure resistance.

The advantages at a glance:

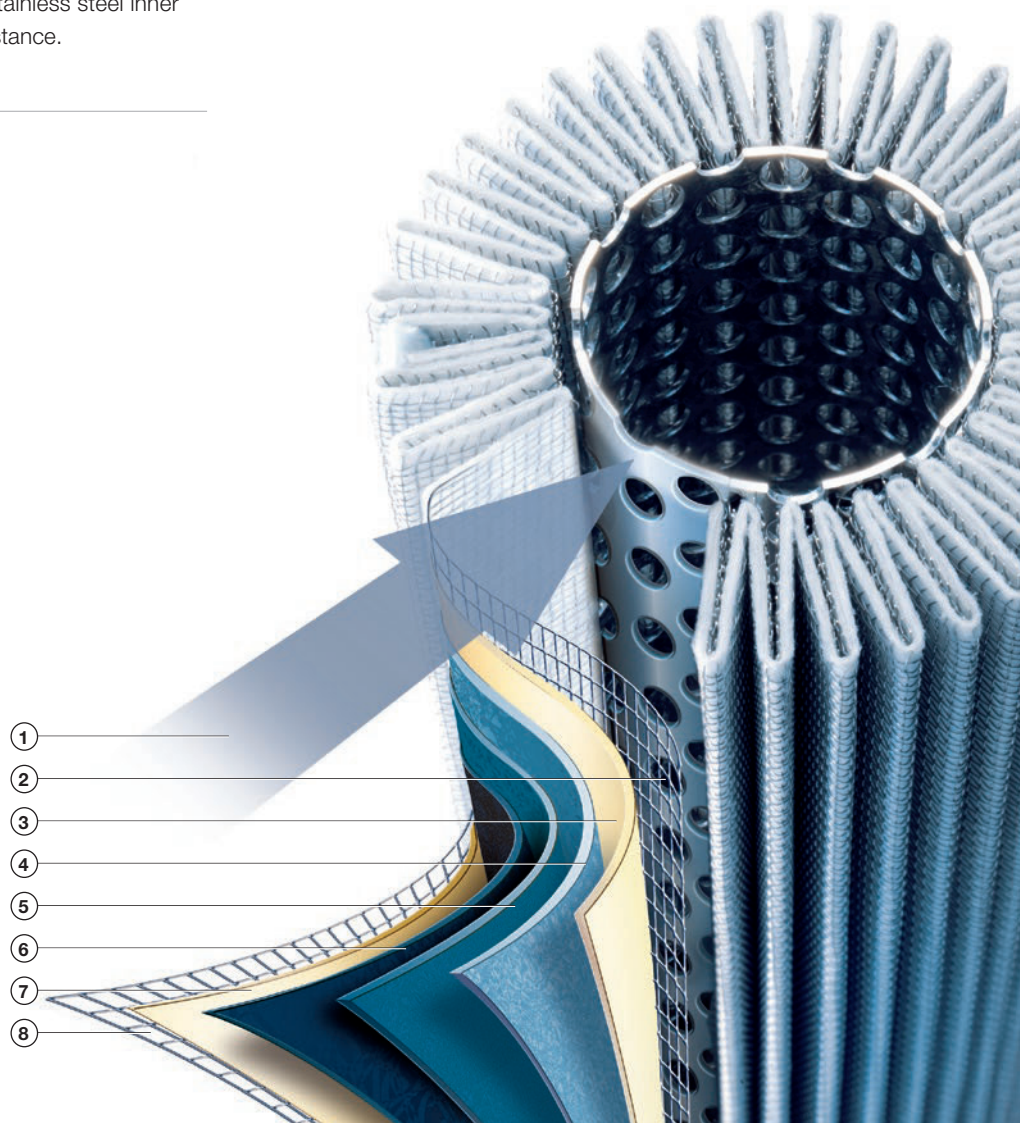
- Guaranteed, defined high filter performance over the entire service life
- Very good dirt-holding capacity due to innovative fiberglass filter technology
- Long service life
- Defined filter performance rating in accordance with ISO 16889 (multipass test)
- Constant cleanliness of media used over the entire service life
- High differential pressure stability
- Excellent price/performance ratio thanks to longer service life than typical filters—at the same level of retention efficiency

High-end cartridge filter elements



- 01 Flow rate
- 02 Internal support mesh
- 03 Protective nonwoven
- 04 Fine fiberglass layer
- 05 Medium fiberglass layer
- 06 Coarse fiberglass layer
- 07 Protective nonwoven
- 08 External support mesh

- ①
- ②
- ③
- ④
- ⑤
- ⑥
- ⑦
- ⑧



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