HYDRAULIC FILTERS

QUALITY THAT TURNS MOVEMENT INTO PROGRESS

Systems, modules and elements for hydraulic, lubricating and operating fluid filtration

Filtration Group®
Industrial

WITH OUR FLUID FILTERS, WE ARE MAKING THE WORLD

safer

By ensuring that your oils and lubricants are free of contamination for a longer period of time, our filter systems protect your employees and equipment from the hazards of excessive wear and unnecessary maintenance

healthier

by helping to reduce the consumption of oils and lubricants and to keep working environments clean with our long-term highly efficient filter systems, elements and modules

more productive

by extending the service life and condition of your fluids, your equipment remains in production for longer periods of time

EXPERTISE FROM DECADES OF EXPERIENCE

HYDRAULIC FILTERS from Filtration Group Industrial ensure that the pressure fluid in the circuit of a plant or machine meets the required cleanliness class. This ensures a high degree of efficiency in energy transmission as well as protects the system components from damage and premature wear.

FILTER SYSTEMS FOR LUBRICATING OILS, FUELS AND GEAR OILS also contribute to longer service lives and economical operation of machines, engines and drive systems. The filtration performance of Filtration Group Industrial solutions pay off economically because they provide longer maintenance intervals and higher operational reliability. The longer service life of lubricating oils and hydraulic fluids conserves resources and enable more economical disposal at the end of the service life - aspects that are of ecological importance.

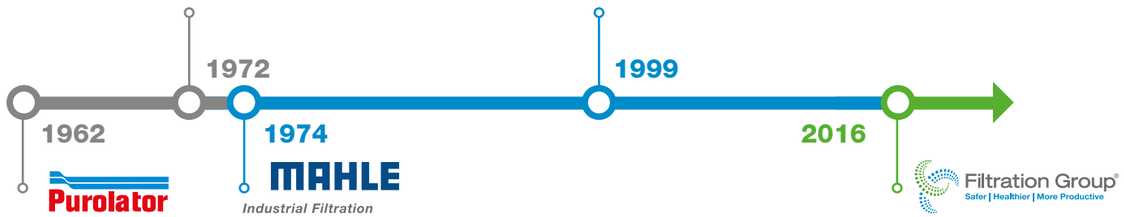
DESIGN AND MATERIALS OF FILTER ELEMENTS by Filtration Group Industrial exceed standards in all cleanliness classes and application areas. Innovative technologies such as PulseShield™ or e-protect increase the dirt holding capacity of the filter systems and assure of their full functionality in even the most challenging applications. The consistently high separation performance throughout the entire life cycle make Filtration Group Industrial filter elements a safe investment in a company‘s productivity.

With the breadth of our hydraulic filter offering and ongoing efforts to develop solutions for your toughest challenges, we demonstrate a motivation to keep with our credo:

WE INSPIRE OUR CUSTOMERS.

TO THE HISTORY

From the very beginning, fluid filtration was part of the core competence of the company in Öhringen, which today is part of Filtration Group Industrial. Over the decades since its foundation as a subsidiary of the American Purolator Group, the company has continuously expanded and improved its portfolio of filter systems, components and elements - a development that will continue in the future.



The American company **Purolator** sets up the first location of an international subsidiary in Öhringen. In addition to filters for motor vehicles, industrial filter production was introduced in 1966.

The **Purolator subsidiary** in Öhringen assumes overall responsibility for the European market. In the same year MAHLE joins the **Knecht** company, which manufactures filters for Purolator.

MAHLE purchases Purolator Öhringen, but continues to manufacture the filter systems under the well-known brand name. After the license agreement expired in 1990, filters from Öhringen are sold exclusively under the brand names Knecht and MAHLE.

The **Knecht** company merges with the **MAHLE Group** The company has developed into the largest employer with 800 employees in the city of Öhringen, and the filter division has become the cornerstone of the group.

The American filter specialist **Filtration Group Corporation** has integrated the industrial filtration sector into its family of companies. The company, a subsidiary of Madison Industries, operates over 100 sites in 28 countries.

THE PERFECT SOLUTION FOR EVERY APPLICATION AREA

The hydraulic filter systems achieve excellent results in terms of separation performance and dirt holding capacity. In addition, they are durable, easy to install and available in many sizes.

Power generation

Hydraulic systems play a central role both in power generation from renewable energy sources and in conventional power plants. Filtration Group Industrial has developed space-saving hydraulic filters specifically for wind turbines for azimuth, transmission and brake systems. Filtration Group Industrial also offers ventilation filters for cleaning intake air that cools the hydraulic system and the transformer. In traditional power plants, efficient filters keep the hydraulic fluids and lubricants free of impurities, and oil filter modules separate suspended water from the oil. Patented technologies make the filter elements with PulseShield™ technology extremely stable and receptive, special materials prevent electrical discharges in the filter medium. The wide range of products covers all application areas and common licensing formats.

APPLICATION AREAS

- Azimuth drive
- Transformer
- Transmission and brake system
- Turbine lubrication and dewatering

Machine tools

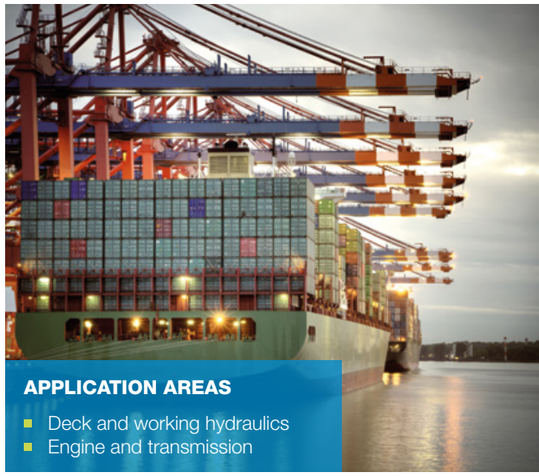
Filter systems from Filtration Group Industrial make a decisive contribution to protecting sensitive hydraulics in mechanical and plant engineering by keeping liquids in the circuit clean. Efficient solutions for every application in the hydraulic circuit prevent liquid or solid impurities from attacking the components and limiting the efficiency of the hydraulic fluids. The material and design of the filter media guarantee a high dirt holding capacity and a consistently high separation efficiency throughout the entire service life. Even under extreme conditions, such as strong pressure fluctuations or pulsations, the cleanliness classes of the liquids can be maintained.

APPLICATION AREAS

- Motion hydraulics of machine tools
- Cooling lubricant filtration

Marine Industry

Complex technology is built into every ship, which must function perfectly even in wind and weather. To protect the various hydraulic systems on and below deck from contamination and corrosion, Filtration Group Industrial offers a broad portfolio of filter and separation solutions, including filter elements - original parts or replacement elements that are compatible with other filter systems. Filtration Group Industrial offers filter systems designed to fit to all requirements of each type of ship and meet the cleanliness requirements. They reliably clean all liquids to keep the ship running and thus its profitability. All FGI filtration and separation solutions meet international standards and are approved by leading marine companies. A specially trained team provides advice, commissioning and maintenance support.



APPLICATION AREAS

- Deck and working hydraulics
- Engine and transmission

Agricultural and construction machinery

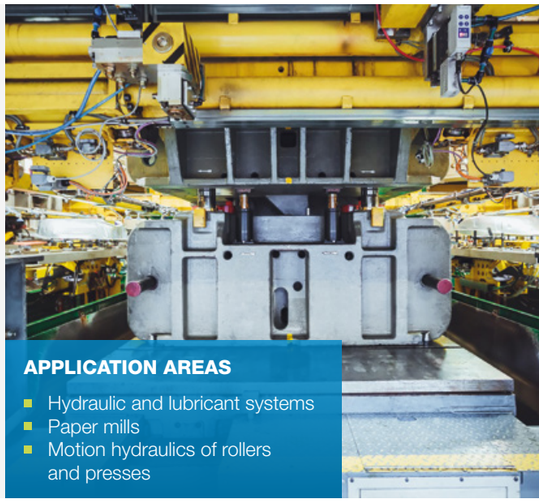
Hydraulic and drive systems in mobile work machines must be able to provide maximum performance in the smallest and harshest environments. Filtration Group Industrial has developed special space-saving filter systems for agricultural and construction machinery that keep hydraulic oils, fuels and lubricants clean. FGI filters absorb considerably more dirt than comparable models due to their design and the selection of filter media. They also last longer which is an economic and ecological advantage. The outstanding cleaning performance of FGI filter systems reduces the pressure loss and lowers overall energy consumption.

APPLICATION AREAS

- Working hydraulics
- Hydrostatic drive
- Combustion engine

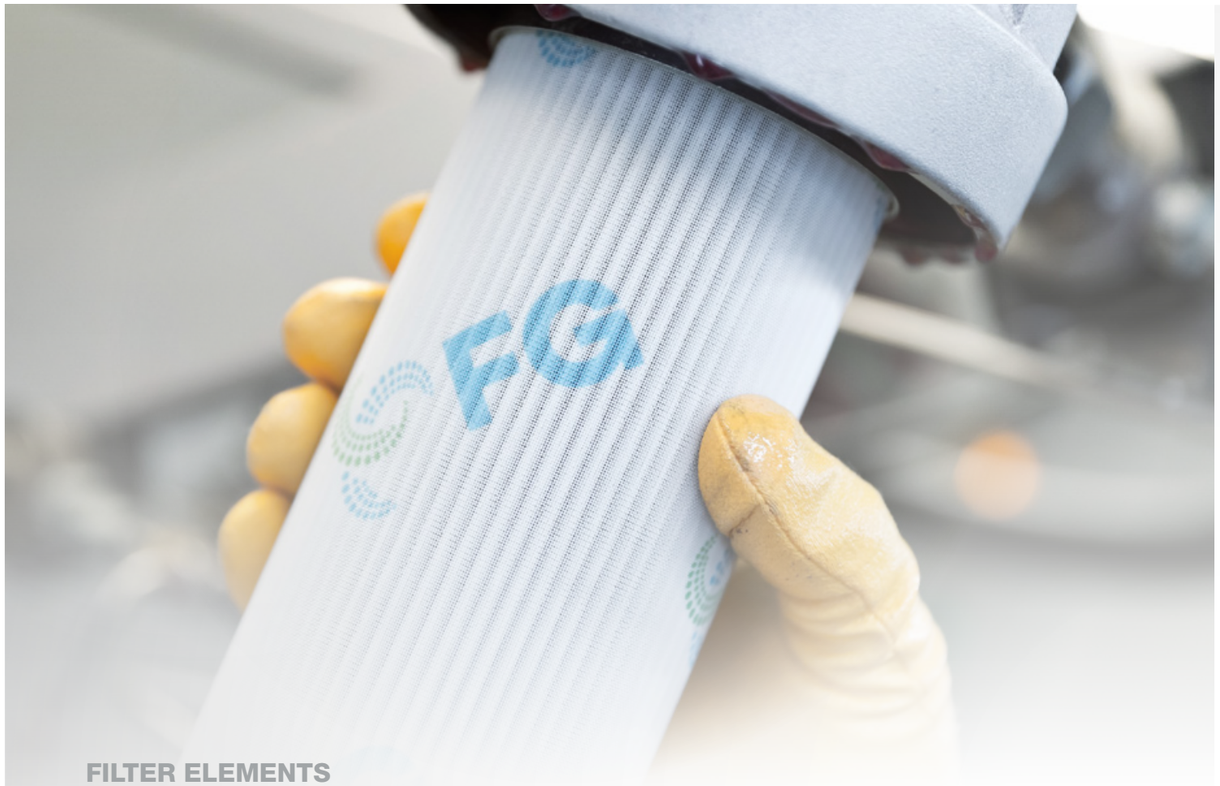
Stationary hydraulics

Hydraulic industrial equipment moves large and heavy loads, their enormous strength is based on the maximum energy transfer of the liquids under pressure. However, this can only occur if the hydraulic fluids are pure. Filtration Group Industrial provides solutions for a wide range of applications with a broad portfolio of high-performance products. This also includes lubricating oil filters and oil mist separators to protect machines components from damage and people from dangerous oil vapors. Filtration Group Industrial offers innovative technologies, like the compression sleeves on the FGI PulseShield™ elements, to maintain the fluid cleanliness in a wide range of demanding applications. Filter systems from other manufacturers can also be equipped with the high quality replacement elements the EcoParts product offering.



APPLICATION AREAS

- Hydraulic and lubricant systems
- Paper mills
- Motion hydraulics of rollers and presses



FILTER ELEMENTS

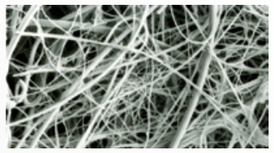
Core values assure superior quality

Filtration Group Industrial focuses on superior quality in the development and manufacturing of filter elements. The filter elements deliver top results in any desired cleanliness class and maintain a high dirt holding capacity. Patented design with robust parts ensures a long life of the filter system and stable performance throughout its life. Thanks to optimum particle separation, FGI filters protect against rapid wear of expensive components and thus prevent high maintenance costs.

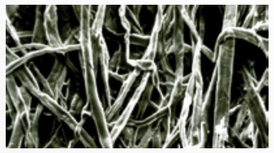
THE RIGHT OPTION FOR YOUR APPLICATION

Filtration Group Industrial offers specific filter constructions that comply with machinery specifications and known industry standard. There are FGI filter elements available from the standard series and from the series according to DIN 24550 compliant series, which meet the requirements of the stricter European standard for machinery and mobile systems and almost every other field of application.

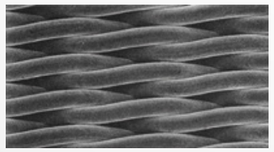
Fiberglass fleece



Cellulose-/ Polymer fleece



Wire mesh



ANY EQUIVALENT AN ORIGINAL

Filtration Group Industrial also has suitable filter elements in its product portfolio for the housings of other manufacturers. This allows customers to easily increase the efficiency of their existing filter systems by switching to elements in proven FGI quality. The alternative elements are also available with Pulse-Shield™ technology. On request, these filters can be printed with the customer's company logo. This adds top quality of Filtration Group Industrial to the brand.

ADVANTAGES AT A GLANCE:

- Form, fit and function compatibility with high filter performance
- PulseShield™ technology for higher β_x value stability over the entire lifetime of the element
- high safety and economy
- Speedy delivery and excellent customer service

WE MAKE IT REORDERS A SNAP
Simply scan in the QR code, enter the old part number in the EcoParts Cross-reference Database and order a new FGI filter element.

Spin-on cartridge

QUICK CHANGE SPIN-ONS FOR LONG MACHINE LIFE

Filtration Group Industrial offers a comprehensive range of spin-on cartridges for lubricating oil filtration. These are available in different versions and dimensions as well as for different pressure levels. In addition to the conventional cellulose filter media, spin-on cartridges are also available with fiberglass media for applications that demand significantly higher separation performance. No matter where the spin-on cartridge needs to be mounted, we have a suitable solution.

NOTHING CAN SHOCK OUR E-PROTECT ELEMENTS

Filter elements from Filtration Group Industrial are optionally available with patented e-protect filter technology. This prevents electrostatic discharges during the filtration of low conductive fluids such as zinc- and ash-free synthetic oils and protects the system from damage. The friction that occurs when the oil flows through the fabric of conventional filters often leads to electrostatic discharge - occasionally with drastic consequences. In addition to damage to the filter sheets, varnish is produced, which causes the oil to age quickly. With e-protect technology, the electrostatic charge is dissipated from the filter surface, preventing damage. The FGI e-protect construction extends the service life of the filters and components while maintaining a high separation rate.

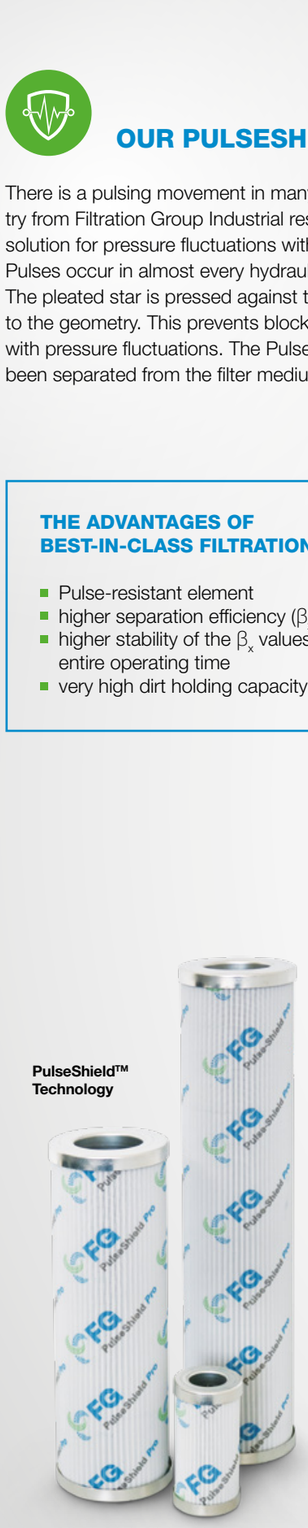
e-protect filter technology

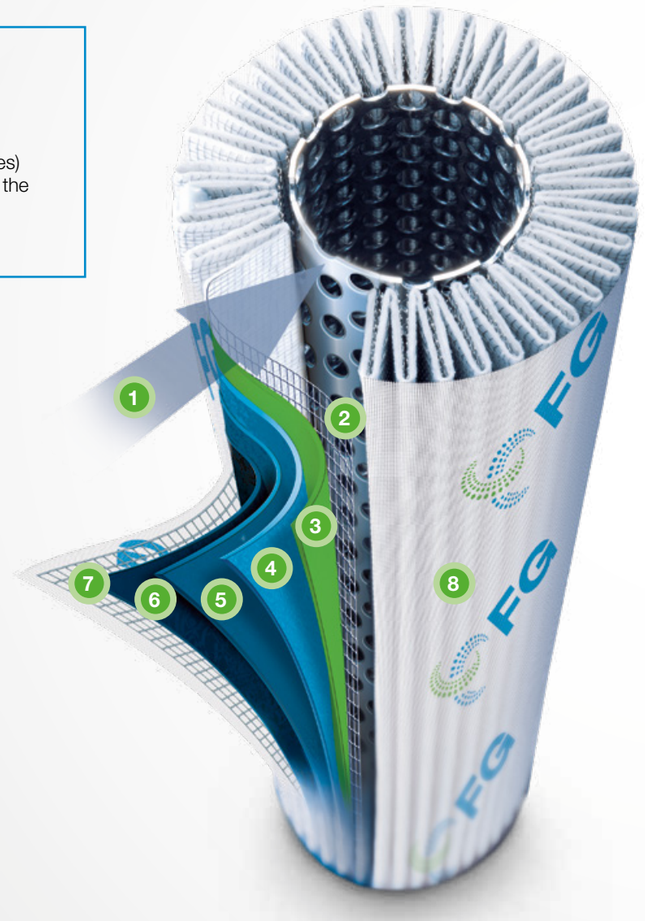
OUR PULSESHIELD™ FILTERS DON'T GIVE WAY

There is a pulsing movement in many hydraulic systems and the innovative pleated star geometry from Filtration Group Industrial resists it. Filtration Group Industrial has developed an effective solution for pressure fluctuations with its patented PulseShield™ compression sleeve technology. Pulses occur in almost every hydraulic circuit when pistons move or valves are switched quickly. The pleated star is pressed against the inner core by our compression sleeve and provides stability to the geometry. This prevents blocking of the pleats. The separation efficiency remains high even with pressure fluctuations. The PulseShield™ technology also prevents particles that have already been separated from the filter medium from being released again by these pulsations.

THE ADVANTAGES OF BEST-IN-CLASS FILTRATION:

- Pulse-resistant element
- higher separation efficiency (β_x values)
- higher stability of the β_x values over the entire operating time
- very high dirt holding capacity





1 Flow direction
2 Inner support fabric
3 Protective fleece
4 Fine glass fiber fleece
5 Medium glass fiber fleece
6 Coarse glass fiber fleece
7 Outer support fabric
8 FGI PulseShield™

PRESSURE FILTERS

This employee works best under pressure

Filtration Group Industrial has developed a wide range of pressure filters for use in hydraulic systems, lubrication systems and test benches, which ensure long-term cleanliness of liquids and oils. A robust housing also withstands high operating pressure, and the flow-optimized designs ensure maximum performance. With an extensive product portfolio that is continuously developed in line with system requirements, Filtration Group Industrial covers a wide range of application scenarios. If the right solution is not available, Filtration Group Industrial experts will customize a design to meet your specifications. The pressure filters from Filtration Group Industrial are suitable for countless applications, including line filters, flange-mounted filters, spin-on filters and filters in intermediate plate design.

Filtration Group Industrial can also offer different connection threads, flange types and filter head shape options. Additional options for FGI pressure filters are available from our extensive range of accessories.

FGI pressure filters are available as full or partial flow filters for various pressure levels:

- **LOW PRESSURE FILTER UP TO 60 BAR**
- **MEDIUM PRESSURE FILTER UP TO 210 BAR**
- **HIGH PRESSURE FILTER UP TO 450 BAR**
- **SPECIAL FILTER UP TO 1000 BAR**

Low pressure filter Pi 220

Low pressure filter Pi 200

High pressure filter Pi 420

High pressure filter Pi 420 KV

DUPLEX FILTERS

Division of labor enables continuous operation at the highest performance level

Duplex filters from Filtration Group Industrial are particularly suitable for use in machines and motors that must operate continuously. The filter elements can easily be changed during operation with a simple turn of our ergonomically designed handle. A special lever in the handle allows switching and pressure compensation with one hand. Thanks to this patented one-hand switch, the system can continue to run without interruption. When filter elements need to be replaced, a standard maintenance indicator signals the production floor. In continuous running filter systems, the elements can be removed and replaced in one filter housing while the other filter housing takes over. In larger filter systems, the elements can be removed from the top. The systems meet the highest demands in terms of ergonomics and economy.

Low pressure duplex filter Pi 210

REFERENCES

GOOD SOLUTIONS

Worry-free milling in the machine: no problem with the Pi 214

For one of the largest manufacturers of cutting and milling machine tools in Germany, Filtration Group Industrial supplies solutions for keeping the cooling lubricant clean. During the processing of aluminum, chips are produced which get into the high-pressure pumps and the cooling lubricant causing premature wear and damage. Filtration Group Industrial found an effective remedy with the Pi 214 duplex filter. The filter system removes chips and dirt from the cooling lubricant during continuous operation. This can be maintained even if the filter elements have to be replaced. As soon as the employee has turned the handle, the second filter manages the flow of the cooling fluids. The filter elements consist of wire mesh and can be cleaned after removal. Its efficient filtration increases the service life of the machines and ensures trouble-free operation over a long period of time.

SUCTION FILTERS

This is where everything that limits performance is screened out

In many different applications, suction filters clean the oil from the tank before it is introduced to the working circuit by the pump. In addition to classic in-line filters, Filtration Group Industrial also supplies star-pleated wire mesh suction filters and various tank mounting filters from the product range of its sister company Zinga. A contamination indicator indicates when the filter element must be replaced. Filtration Group Industrial offers a wide selection of system-compatible elements that clean the oil with microfiber media in the fine range from 10 to 25 µm. In order to separate coarse particles with up to 100 µm, wire mesh serves as a filter medium.

Customer-specific suction filter module

RETURN LINE FILTERS

Dirt sluice on the way back

Return line filters are now an essential component of modern hydraulic and lubrication systems. The proven design of the Pi series filters ensure safe and economical production processes in the fluid system. The return line filter collects the dirt before it is returned back to the hydraulic reservoir. As a result, fewer particles enter the tank, which reduces wear on the intake pump and the downstream components in the fluid circuit. Highly efficient filter elements used in return line filter applications ensure that proper ISO fluid cleanliness classes can be maintained. Especially in mobile applications such as special vehicles and agricultural and construction machinery, return line filters play an important role of a working filter with defined oil cleanliness.

FGI Return line filter

AIR BREATHERS

Dirt barriers in the invisible area

Air breathers play a central role in the filtration of transmission, lubricating and hydraulic oil by protecting the systems from external contamination. The ambient air that passes through openings in hydraulic fluid reservoirs usually contains particles of dirt or moisture. These contaminants limit the performance of the sensitive components in the hydraulic system or damage them. Filtration Group Industrial offers efficient air breathers in a variety of designs and configurations, equipped with filter elements for all specified operating conditions and any required degree of cleanliness. Filter housings made of corrosion-resistant sheet steel or fiberglass-reinforced plastic are available in many sizes and with various connection options to suit the respective application. Other variants are supplied by the proven products of sister company Zinga. All air breathers have one thing in common: they ensure that hydraulic systems run much longer in high-performance operation than with conventional filters.

FGI Air breathers

ADVANTAGES AT A GLANCE:

- robust and corrosion-resistant
- optional use of cellulose (MIC) or glass fibre (SML) elements; other filter media such as meltblown (MLB) elements on request
- Additional option: Version with MOL element for protection against aerosol leakage
- various screw-on and mounting options
- Additional option: integrated maintenance indicator or vacuum switch to make optimum use of the filter elements
- extensive accessories: valves, oil slosh protection, filling adapter, oil stop or water splash protection on request
- can be printed with a customer logo if the batch size is appropriate

FGI Desiccant breather

DESICCANT BREATHER

Desiccant breathers from Filtration Group Industrial prevent moist air from entering the hydraulic system. Moisture is extracted from the ambient air, preventing premature wear and damage to the sensitive components.

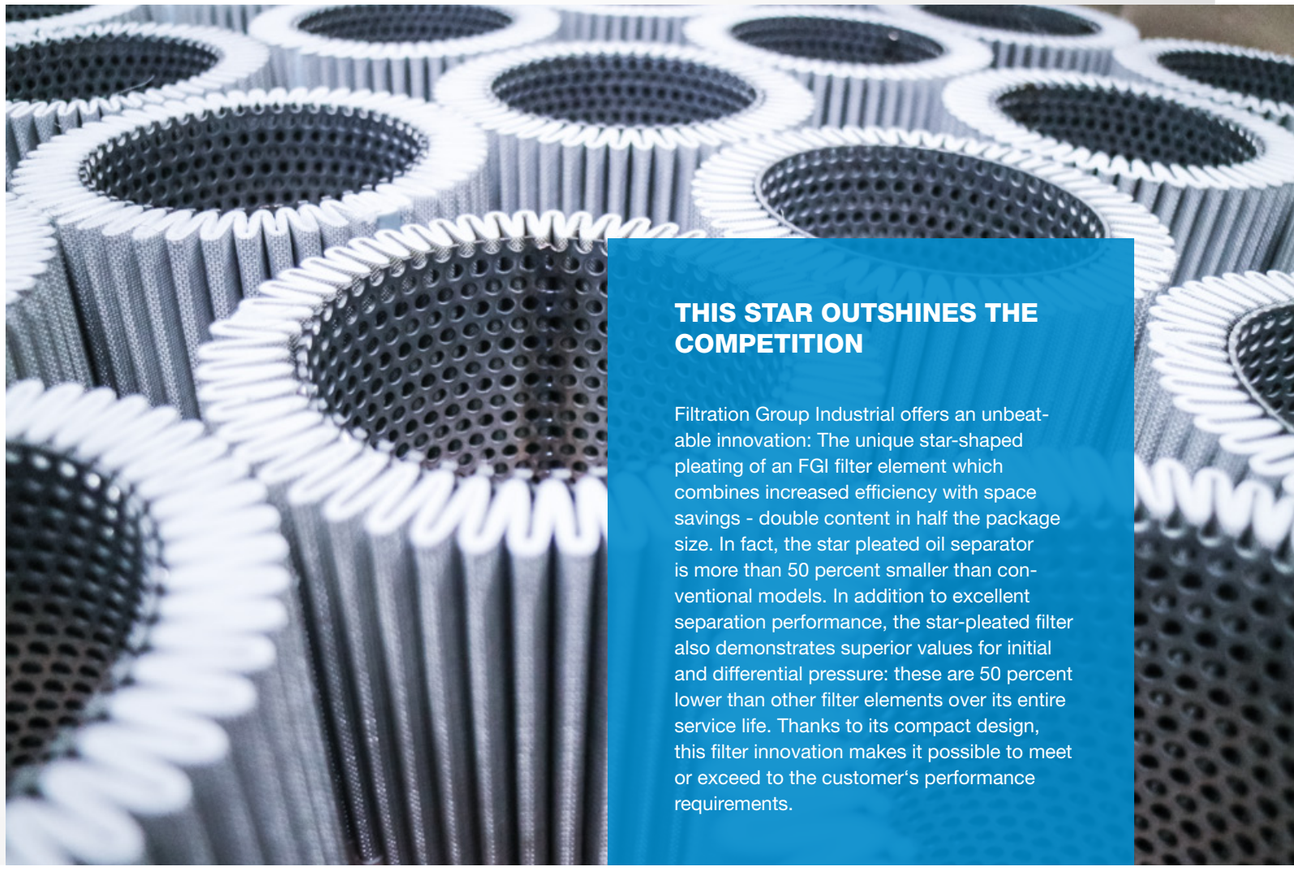
- robust, corrosion-resistant plastic housing
- equipped with highly efficient, non-toxic moisture absorber
- excellent fine filtration
- 100 % ecological design (metal-free)
- available in different sizes and with preload valve
- available in selected markets

OIL SEPARATORS

Protection from oil mist

Oil separators are essential for compressor manufacturers because they offer advantages such as energy efficiency, life cycle costs and environmental friendliness. End users are seeking to reduce the total cost of ownership of compressed air system. In addition, compressors are becoming ever more compact in order to take up as little space as possible. Filtration Group Industrial responds to these challenges by continuously optimizing its oil mist solutions. The oil separators meet two central requirements: They separate the oil added to the air flow for lubrication, sealing and cooling to a residual oil quantity of 1 mg/m³ with relatively no impact on the resulting differential pressure compared to conventional oil separators.

Star pleated oil separator element



THIS STAR OUTSHINES THE COMPETITION

Filtration Group Industrial offers an unbeatable innovation: The unique star-shaped pleating of an FGI filter element which combines increased efficiency with space savings - double content in half the package size. In fact, the star pleated oil separator is more than 50 percent smaller than conventional models. In addition to excellent separation performance, the star-pleated filter also demonstrates superior values for initial and differential pressure: these are 50 percent lower than other filter elements over its entire service life. Thanks to its compact design, this filter innovation makes it possible to meet or exceed to the customer‘s performance requirements.

OIL FILTER MODULE PI 8300

Small, compact and complete

Oil filter modules are self-sufficient systems consisting of an electric motor, a gear pump and a filter. They were originally developed for lubricant filtration in wind turbine gearboxes. They were developed as independent systems with high performance in a compact design. Filtration Group Industrial offers a filter module in two variants, for a volume flow of 110 l/min and 220 l/min. In combination with an oil cooler, the Pi 8300 achieves optimum separation results and prevents overheating of the lubricating oil. As a result, wear in the gearbox is minimized.

A PI 8300 CONSISTS OF:

- Electric motor with gear pump
- Filter housing with 2- or 3-stage filter element
- pressure valve
- non-return valve
- maintenance indicator

Oil filter module Pi 83116

Off-line filter module Pi 8400

OIL FILTER MODULE PI 8400

Impressive performance on the side stage

Although oil filter modules from Filtration Group Industrial are predominantly installed as main flow filters in wind turbines, they are also used for off-line filtration. In hydraulic systems in paper or rolling mills, the Pi 8400 oil filter modules can be used in conjunction with your in-plant machinery and hydraulic equipment to achieve and maintain proper ISO cleanliness classes. When water-absorbing filter is specified, FGI filter elements can remove free water and oil ageing substances from the hydraulic fluid in addition to other contaminants.

OIL DEWATERING

Coalescer filter: protection from power stealing water

Water plays a role in many applications of hydraulic systems. It can be used both as an operating medium and for cooling. However, if it gets into the fluid of hydraulic and lubrication systems, an acid forms in conjunction with the oil molecules, which corrodes components or causes so-called steam bubbles. This acid will cause significant damage in hydraulic valves and pumps. The hydraulic fluid itself is not as efficient as an energy carrier with the addition of water.

Free water in hydraulic and lubricating oil systems has expensive consequences in the long run: costly repair work, necessary shutdown of the system and expensive replacement of the diluted hydraulic fluid.

Filtration Group Industrial developed filters based on the coalescer principle, which separates free water from oil efficiently, cost-effectively and without the use of chemicals. The water droplets finely distributed in the oil collect on specially arranged filter materials and are efficiently separated. Filtration Group Industrial offers high-performance filter types for use in mobile applications, stationary hydraulic systems, paper machines, on ships and in fuel filtration for diesel engines.

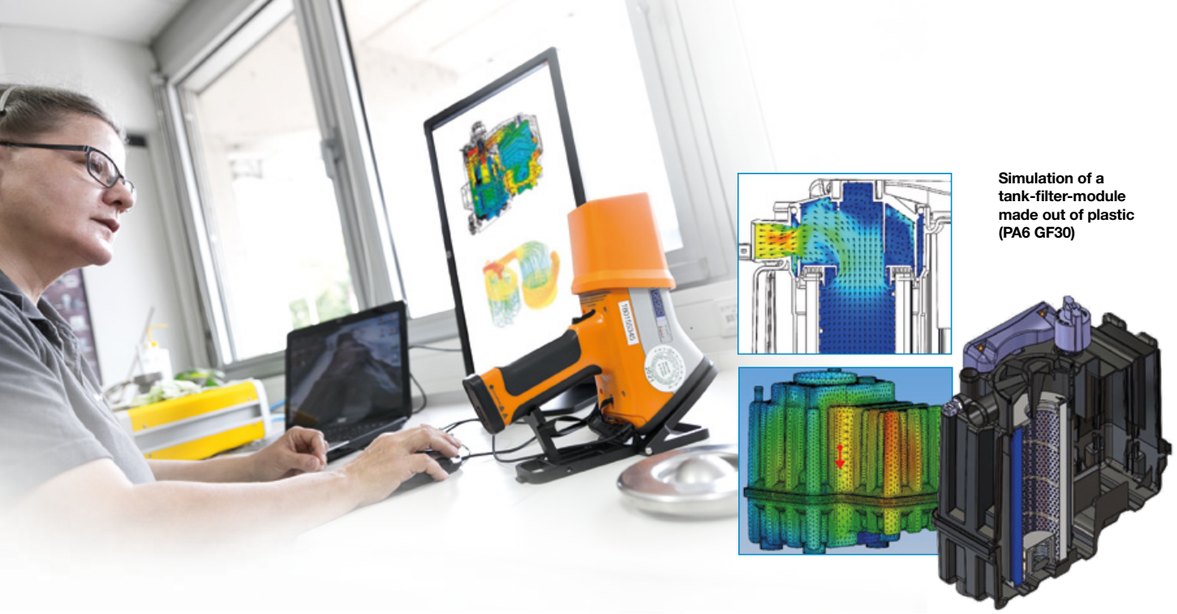
Water separator PiW 2175

FGI Maintenance indicators

MAINTENANCE INDICATOR

Reliable signal generator for filter replacement

Filtration Group Industrial filters are designed to remove a lot of dirt over a long period of time. They should always be replaced before their efficiency is reduced and their dirt holding capacity is reached. Maintenance indicators from Filtration Group Industrial detect changes in pressure in hydraulic fluids and lubricating oils as a result of contamination. The sensors register the negative pressure in suction filters, the differential pressure in pressure filters and the dynamic pressure in return line filters. When a pressure is exceeded, the indicator signals changes to the operator via a pressure gauge, optical or optical-electrical switches. Filtration Group Industrial offers three types of maintenance indicators, which can either be installed on new filter systems or retrofitted into an operational system. By indicating when the filter should be changed, they contribute to the economical operation of the system.



Simulation of a tank-filter-module made out of plastic (PA6 GF30)

FGI-SIMULATION

CAE SAVES COSTS AND ENERGY

Filtration Group Industrial offers simulation services based on CAE (Computer Aided Engineering). Specially trained engineers with several years of experience, gained through numerous customer projects, provide a high level of effectiveness and efficiency and have acquired an enormous amount of experience.

WE SUPPLY OUR CUSTOMERS with reliable analyses of their problems, tailored to their applications. Sustainable optimization based on the results is of course also part of the scope of services.

In addition to classical structural analyses to assess the strength of stressed components, we also perform both single-phase and two-phase CFD simulations.

TYPICAL EXAMPLES FOR SIMULATION PROJECTS

- Stiffness and strength evaluation of short fiber reinforced plastic components
- Stiffness and strength evaluation of metal-based components
- Stiffness and strength evaluation for railroad applications according to DIN EN 12663-1
- Modal analyses / determination of natural or resonant frequencies
- Combined load scenarios (e.g. basic load, internal pressure and external loads due to acceleration)
- Pressure drop analyses and velocity profiles (single-phase simulation)
- Simulation of fluid mixtures (e.g. undissolved air in hydraulic oil, heavy oil in water, etc.)

THE ADVANTAGES ARE OBVIOUS:

- Increased reliability of our and your products
- Efficient and resource-saving use of raw materials
- Reduction of costs to an absolute minimum
- Realization of energetic saving potentials
- Reduction of development times and costs

EVERYTHING FROM A SINGLE SOURCE

INCLUDED IN DELIVERY: OUR DRIVE TO INSPIRE YOU

Filter systems ensure the safe and economical operation of machines and equipment. However, their performance capacity relies on proper system design and filter maintenance. A professional filter management program is the basis for efficient filter systems. Properly managing your filter systems will result in increased productivity, less downtime and a reduced cost of ownership. Let Filtration Group Industrial manage and service your filtration systems for additional piece of mind.

NEEDS BASED EXPERTISE

We know which filter system must work where in your system and how to achieve the best results. On the basis of a careful audit, we put together the optimum system solutions for individual plants, entire fleet of vehicles, or machinery.

FILTER CHANGE ACCORDING TO PLAN

Even with with our patented filter designs, a Filtration Group Industrial filter element will eventually have to be replaced. If you do not have the time or personnel to do so, we will be happy to help you - either on demand or as part of routine maintenance interval.

TRAINING IS A PRIORITY

The proper maintenance of filter systems is critical to the operations of a plant. You want maintenance staff with the experience and expertise to keep your equipment running. You have options: either our professional service team or your own employees, who we will gladly train to become filter experts for your systems.

THE COMPLETE PACKAGE

Our all-round service program: After detailed consultation, we commission the filter systems on site and, if required, carry out maintenance and all repairs. It goes without saying that we also handle complaints ourselves and assist you with your filter systems.

AVAILABILITY IS THE PROGRAM

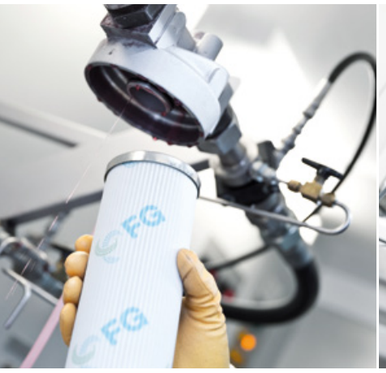
Our large product range includes original parts and elements for all Filtration Group Industrial filter systems as well as spare parts for all other common types on the market. And if the right product is still not available, our experts are available to develop a solution to meet your needs.

WE ARE EVERYWHERE - EVEN ON THE HIGH SEAS

The world of Filtration Group Industrial is big: we have over 100 locations in 28 countries and offer our proven services almost everywhere. For offshore applications, we even have specially trained experts on board who are very familiar with the requirements on ships. We deliver spare parts quickly worldwide.

PREFORMANCE TESTING IS THE TRADEMARK OF A QUALITY FILTER

At Filtration Group Industrial, product quality is always core of our filters. The high demands placed on the performance of filter elements, modules and systems by our customers demand that we engineer a quality product. In order to meet our customer's high standards, every innovation is carefully validated and tested before it goes into serial production.



With the **MULTIPASS TEST**, the filter element must show that it's properly capturing the contaminates as promised: The separation efficiency and dirt holding capacity are determined here.

The **FLOW MEASUREMENT** records important filter characteristics which are measured by the pressure increase in the volume flow.

At the **PULSATION TEST**, the housing and filter heads are subjected to powerful pressure: This shows how long the parts can withstand continuous pressure pulsations with low, medium and high pressure.

At the **BURST PRESSURE TEST** everything goes to pieces - and that's exactly what needs to happen. The filters must withstand extreme pressure. A burst pressure test is conducted to make sure that the filter will continue to last at pressures far greater than the normal operating pressure. Otherwise, it goes back to the development workshop.

The **COLLAPSE PRESSURE TEST** also tests for failure of the filter as the fluid passes from the outside of filter to the inside as a result of extreme differential pressure. They must withstand a pre-defined differential pressure.

During the **BUBBLE POINT TEST**, the seal of the filter elements is put to the test. Compressed air is introduced at the filter inlet and then increased until a stream of bubbles occurs. We design our seals so they do not leak at higher pressures.

The **FLOW ENDURANCE RESISTANCE** of a filter element is also tested. This determines how long the filter element can withstand a pulsating load.

The **HIGH PRESSURE TEST** is used to test in accordance with the TÜV or by marine companies such as DNVGL, Det Norske Veritas or Lloyd's Register.

In the **MICROSCOPICAL EXAMINATION**, the particles that have been filtered out of the liquid or are present in an oil sample are examined in detail.

The **FTIR SPECTROMETER** is used to detect organic compounds or chemical changes in the oil. This provides crucial information for the selection of the appropriate filter.

The **FLENDER TEST** helps to reduce excessive oil foaming: Two gears supply air to a hydraulic or transmission oil to check how quickly an air-oil dispersion concentration harmful to the hydraulic system is formed.

THE POWER IS IN THE QUALITY.

Friedrich Nietzsche, German philosopher

Filtration Group Industrial continues to innovate and develop solutions that meet or exceed the requirements of leading machine designers and manufacturers. Coupled with our experienced sales and technical support team, our customers can be assured that they are collaborating with an industry leader. This is in line with Filtration Group Industrial's credo: "We don't want to satisfy our customers, we want to inspire them."

FILTRATION GROUP INDUSTRIAL – MAKING THE WORLD SAFER HEALTHIER AND MORE PRODUCTIVE

WORLDWIDE AT OVER 100 LOCATIONS IN 28 COUNTRIES

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