AUTOMATIC FILTER F451

Setting a new benchmark!

Reliable filtration by using the Bernoulli principle

SINCE 1937
NEW IDEAS · NEW HORIZONS
SCHÜNEMANN

EXECUTIVE SUMMARY

For more than 80 years SAB Georg Schünemann has been a reliable partner supplying innovative filtration solutions for industrial and navy applications. SAB's Automatic Self-cleaning Filters are ideally suited for the pre-treatment of water and low-viscosity fluids. No matter the application – whether filtering particles from seawater, process water or cooling water, SAB's Automatic Filters are designed to meet the specific customer requirements.

Based on decades of experience the patented F451 is setting a new benchmark with respect to efficiency and cost-effectiveness.

Standardized Design

The new F451 automatic filter series utilizes standardized cast housings and impresses with a significantly more compact design. Although the F451 is standardized, it can be easily adapted to specific application requirements. The F451 covers a broad range of materials like austenitic stainless steel (1.4581 / 316SS / SA-351), super austenitic stainless steel (1.4557 / SA-351) and ductile cast iron (GGG-40). All F451 filters can be designed according to PED or ASME VIII Div.1.

Grade of Filtration

The F451 ensures the safe protection of our customer's applications with a consistently high filtration quality down to 100 µm. The proven Bernoulli technology warrants continuous and effective filtration even at low operating pressures starting from only 0.7 bar.

Delivery Time

Due to the streamlined and standardized design all sizes and materials are available from stock within short delivery times.

BERNOULLI PRINCIPLE

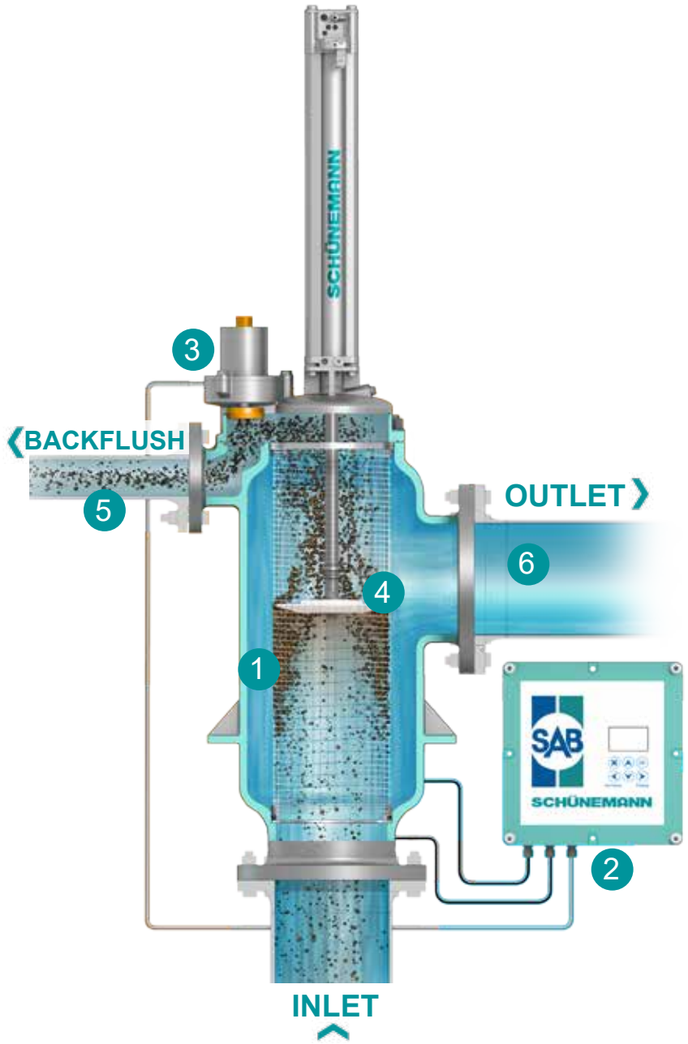
Bernoulli's principle states that an increase in the speed of a fluid occurs simultaneously with a decrease in static pressure.

$$\frac{1}{2}\rho v^2 + \rho g h + P = constant$$

FILTRATION CYCLE

Operating pressure of only ≥ 0,7 bar

1. During normal filtration, particles accumulate from top to bottom on the inside of the strainer.
2. Cleaning begins automatically according to a timed cycle, or after a high differential pressure signal.
3. During the pre-flushing phase, the flushing valve opens and particularly larger particles are flushed out.
4. The flow velocity increases locally around the disc within the gap between the flushing disc and the strainer. Simultaneously the static pressure is reduced in accordance with the Bernoulli Principle and the direction of the flow is reversed which releases the particles from the surface of the strainer basket.
5. The released particles are flushed out from the filter via the flushing outlet. Finally, the flushing valve is closed.
6. The filtration will not be interrupted during the entire cleaning cycle.



MUSSEL AND SNAIL LARVAE

Due to the high flow speed and the simultaneous rotational movement, strong acceleration forces act on the microorganisms. This, combined with the larvae forcefully "hitting" the wire of the profiles, ultimately leads to the death of the larvae.

COMPONETS

1 LOCAL CONTROL PANEL

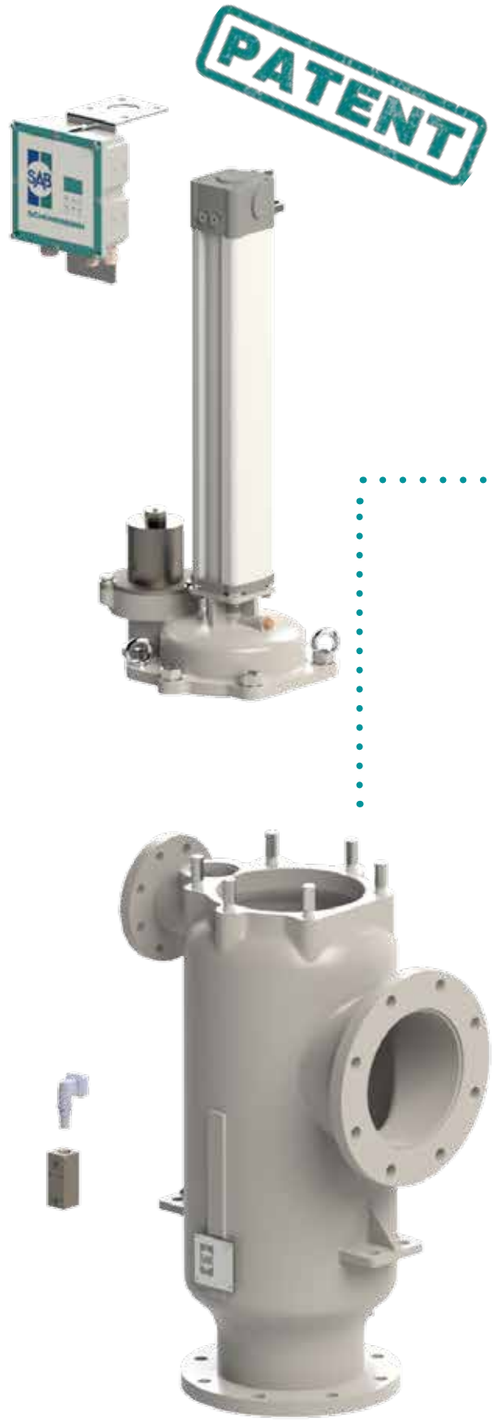
All filters of the F451 series are supplied with a standard interference-insensitive PCB controller with LED indicator. This is equipped with inputs/outputs for operation, flushing and error reporting. The filter can also be equipped with any other SAB controller. The cleaning cycle (or flushing) is triggered by a time sequence or a differential pressure signal. A MODBUS interface is integrated

2 COVER AND CYLINDER

A new patented cover system guarantees easy maintenance of the filters in any position due to decreased weight, a screw-in connection and user-friendly piping. Main advantages of the new cover are the Integrated backflush valve and a leakage protection system in the filter cover prevents water from entering the backflushing cylinder and corroding it. Furthermore a cylinder with an integrated valve/throttle is much more compact than other pneumatic cylinders. They guarantee reduced air consumption by fewer connections and fewer hoses/pipes. The cylinder can be built in 316SS or Super Duplex material.

3 DIFFERENTIAL PRESSURE SWITCH

The cleaning cycle (or flushing) is triggered by a time sequence or a differential pressure signal. The amount of dirt collected on the inside of the screen is measured and shown on an optical display on the differential pressure switch. The differential switch is extremely compact and mounted pipe-free. Materials can be in stainless steel or Monel.



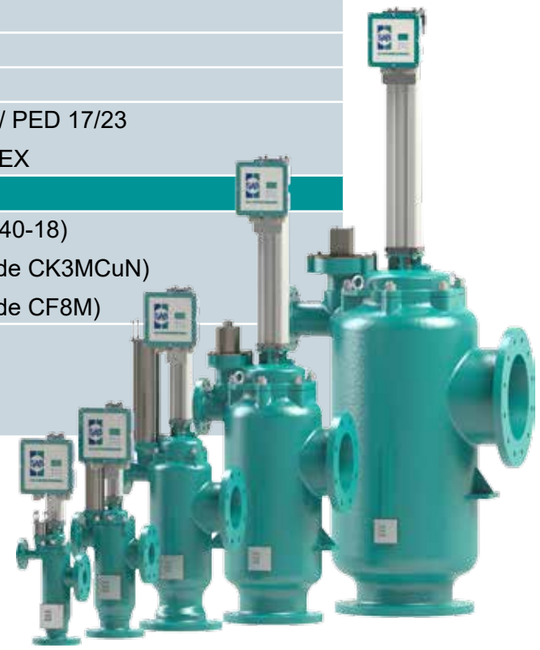
FILTER DESIGN

4 STRAINER

The new F451 standard has slotted-hole screens (helicoidal welding) with more than 50% open screen area compared to other slot wedge wire designs. SAB delivers standard mesh sizes DN50 - DN200: 100µm, 300µm, 500µm / DN300: 150µm, 300µm, 500µm made of 316SS or Super Duplex

TECHNICAL SUMMARY

DESIGN	
Connections	DN 50 - DN 300 G 1¼ / G 2 (only stainless steel)
Volume flow	3,5 m³/h - 1300 m³/h
Grade of filtration	100 µm - 10 mm
Operating pressure	0,7 - 10 bar
Codes & Standards	EN 13445 / AD2000 / PED 17/23 ASME VIII Div.1 / ATEX
MATERIALS	
Housing:	GGG40 (SA-395 60-40-18) 1.4557 (SA-351 Grade CK3MCuN) 1.4581 (SA-351 Grade CF8M)
Internals:	Stainless steel Duplex Super Duplex



MARKETS

Water and Wastewater Applications

Chemical & Petrochemical Industry

Desalination

HAVAC

Power Generation

Irrigation

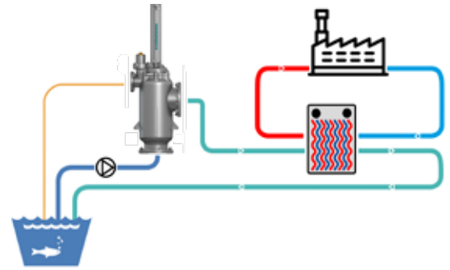
Marine

Offshore

SELECTED APPLICATIONS

Power Generation

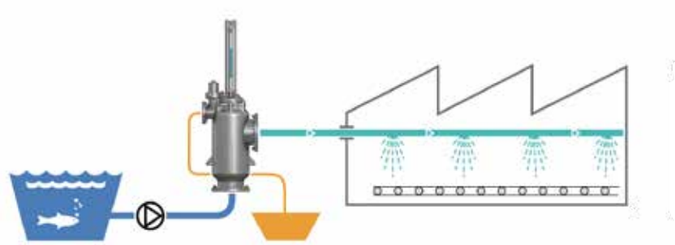
Protection of Heat Exchangers



Many power plants use river or sea water as a source for cooling water. This cooling water is used for the surface condenser cooling circuit. The surface condenser is a water-cooled shell and tube heat exchanger installed to condense exhaust steam from a steam turbine and convert steam from its gaseous to its liquid state at a pressure below atmospheric pressure. In this application the SAB filter reliably removes solids, algae and other microorganisms upstream of the heat exchangers and ensures a high heat exchange rate.

Chemical Industry

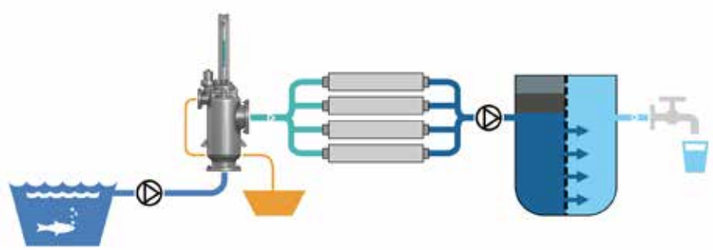
Protection of Spray Nozzles



In many different industries, like the steel, foundry or paper industry, water-operated spray nozzles are used in the fabrication process. To ensure continuous production while maintaining high quality performance, it is key to maintain a defined water quality. The SAB product portfolio covers many innovative and proven filter solutions which reliably remove solids out of the spray water, to protect spray nozzles in industrial processes.

Water Treatment

Pre-filtration of MF/UF/RO/UF



The pre-filtration of contaminated water or sea water is an important step within water treatment facilities, for the production of drinking or process water. SAB´s Automatic Filters efficiently remove the impurities from the contaminated water or sea water and ensure a reliable and continuous operation of the downstream membrane systems.

Made in Germany - AT HOME ALL OVER THE WORLD

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