

# SEAWATER FILTRATION ON-OFFSHORE

AN APPLICATION FOR FAUDI FILTER



# PROCESS AND COOLING WATER

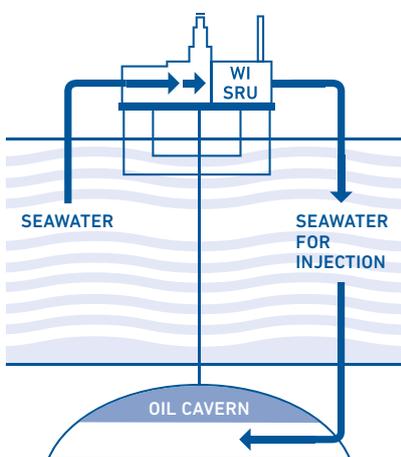


Backflush Filter RSF 30

The direct utilization of seawater as process- or cooling water within the on- and offshore industry is usually connected with major contamination issues. Strongly dependent of the region, unfiltered seawater can contain elements such as micro-organisms, small aquatic organisms, mussels, and also suspended solids that have a damaging effect upon downstream system components. In order to improve the quality and to prevent negative effects in respect to the heat transfer, materials, and the plant function, the seawater must be filtered.

In particular, at heat-transferring system components, e.g. the heat exchangers, the generation of **a deposit coating (fouling)** leads to considerable additional costs due to damage caused by corrosion and a deteriorated heat transfer rate of the system components. Increased energy costs due to falling system pressure, as well as extensive cleaning and maintenance, result in higher TCO (total cost of ownership). Investment costs for system components such as pumps and heat exchangers will also increase as they have to be planned for in larger dimensions without purification.

# SEA-WATER INJECTION



At the secondary recovery, within the scope of oil and gas recovery, seawater is used to increase the yield of oil deposits. In the primary recovery, the oil, respectively the gas, is driven to the surface by the inherent pressure. Should this pressure be too low, or the inherent pressure falls in the course of the primary recovery, seawater is then injected into the underground oil caverns. The importance of seawater processing for this process is often underrated.

Without microfiltration ( $< 1 \mu\text{m}$ ), the fine pores in the bedrock would be blocked by fine particles (suspended solids, micro-organisms) out of the sea. This would substantially impair the oil production.

The seawater must also be filtered as a protective measure for the cost-intensive injection pumps and the upstream valves.

# BACK-FLUSH FILTER RSF 30



**Filtration:** The medium to be filtered passes through the filter elements from the interior to the exterior. Contaminants are consequently retained at the inner surface (filter cake). Due to this fouling, there is a continuous build-up of the pressure difference between the dirt side and the clean side. The self-cleaning process via backflushing is initiated via an appropriate control system based on pressure difference measurement, or interval timing, or a combination of these two switch modes. The filters feature a rotating arm that addresses all filter elements individually. All other filter elements remain operational during the backflush process (**no interruption of the filtration**).

- Fully automatic and continuous filtration and backflush process
- High flow rates of up to 10.000 m<sup>3</sup>/h
- Regenerative filter cartridges – no filter aid is required
- Robust design for highest demands and highest reliability

**Backflush:** To clean the filter cartridges, the mobile backflush arm approaches the filter cartridge from below. During the cleaning process, a small quantity of the filtrate passes through the filter cartridges in reverse flow to the filtration direction and removes the deposited contaminants. The limitation of the backflush loss is controlled via a shut-off valve situated in the backflush line.

**Ideal backflush process:**

- The filter cartridge with triangular profile and smooth surface enables an additional jet effect
- Ideal backflushing effect due to pulse cleaning and clogged backflushing
- Even finest solid particles with adhesive forces are removed from the filter element

# MULTI-MEDIA FILTER RSF 62



**Filtration:** The medium to be filtered flows through the interior filter layer from the top to the bottom, so that micro-particles are retained. The filter media consists of a filling with various layers of different material, e.g. filter sand and anthracite. This enables a superfine filtration of down to 1 µm. In order to optimize the separation process, a flocculent is frequently added to the filtrate.

- Fully automatic filtration process
- Robust construction for highest demands
- Several filters connected in parallel warrant for a continuous filtration process
- The exclusive deployment of premium components and materials warrants for permanent functional capability and reliability

**Backflush:** For the purpose of regeneration, the filter medium, together with a small quantity of filtrate, is flushed through from the bottom to the top in a contrary direction using compressed air. The filter layer is hereby loosened and retained contaminants are flushed out in upward direction. The backflush process is initiated fully automatically via a control system.

# FAUDI AUTO- MATIC FILTER

|                                       | Fully Automatic Backflush Filter Type RSF 30                          | Multi Media Filter with automatic Backflush Type RSF 62 |
|---------------------------------------|---|---|
| <b>APPLICATION AREA</b>               | Process- and Cooling Water Filtration (Prefilter for Microfiltration) | Microfiltration for seawater injection                  |
| <b>FILTER FINENESS</b>                | up to 50 µm   | up to 1 µm  |
| <b>FLOW RATE PER FILTER</b>           | 1–10.000 m³/h   | up to 450 m³/h  |
| <b>PRESSURE</b>                       | 1,5–25 bar  | 0–25 bar  |
| <b>FILTER MEDIUM</b>                  | Slotted Tubes or Fabric Cartridges                                    | Multi-Media Filling                                     |
| <b>TYPICAL ARRANGEMENT OF FILTERS</b> | 1–5 parallel  | 3–4 parallel  |
| <b>BACKFLUSH MEDIUM</b>               | Filter System Fluid   | Filter System Fluid / Air                               |
| <b>CASING MATERIAL</b>                | Carbon Steel <sup>1</sup> , Duplex, Super Duplex, Monel               | Carbon Steel <sup>1</sup> with protective coating       |

<sup>1</sup> in carbon steel with internal coating: rubber or glass flake vinylester

The combined deployment of both filters has the advantage that high volume flows can be handled on a more cost-effective basis. The high-capacity prefilters which separate coarse contaminants serve for the process- and cooling water supply system and the downstream microfilters for the seawater processing for seawater injection.

The complete production and process chain is aligned to the relevant national and international regulations and standards: ASME, ANSI, ATEX, as well as DIN ISO 9001, and others.



FAUDI is a globally operating enterprise committed to filtration and separation technology. Decades of experience in the development and the construction of filter plants for the processing of cooling lubricants, as well as the provision of process filtration systems for the chemical and petrochemical industry ensure for a highest operational standard of systems.

With our know-how in consultancy, planning, delivery, assembly, commissioning, maintenance, as well as repairs and retro-fitting, we ensure for a high level of availability of our filters and filter systems. Since the foundation of the enterprise in 1938, our enterprise has successfully developed highly efficient filter plants in cooperation with our customers.

# FAUDI