

REACTOR PROTECTION FEEDSTOCK FILTRATION

AN APPLICATION FOR FAUDI FILTER



FILTRATION OF LIQUIDS IN REFINERIES

At the refining of crude oil, various different distillation methods and conversion processes are deployed to produce mineral oil products that are both marketable and in line with the market.

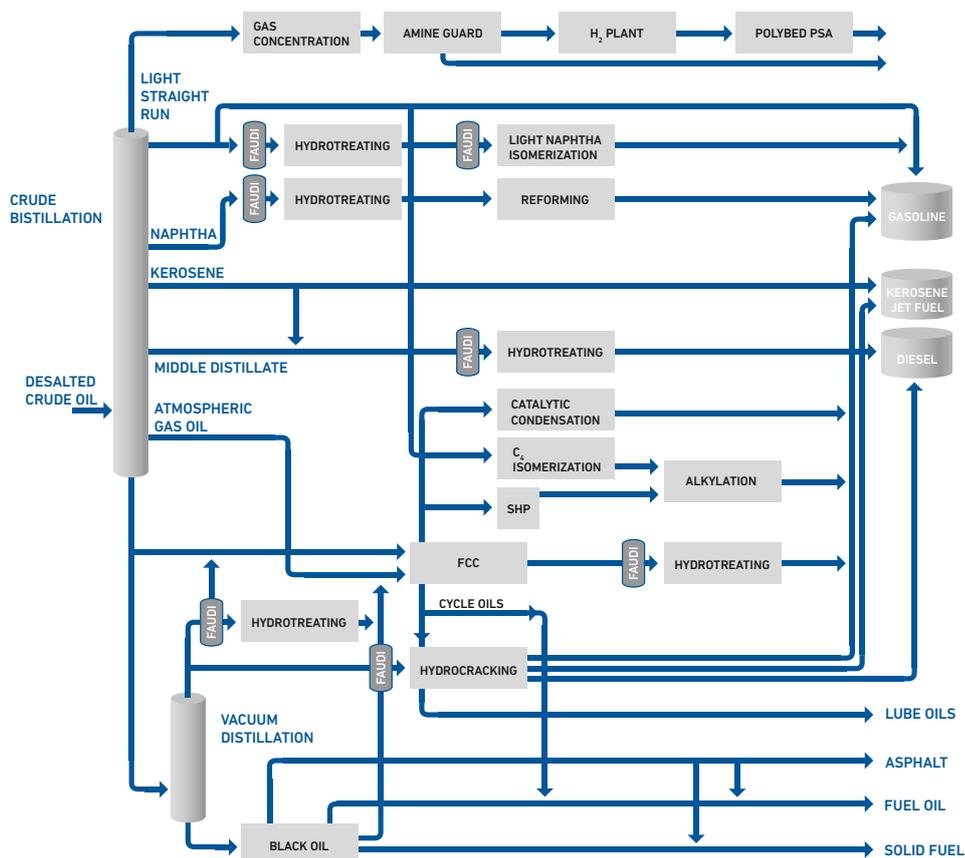
Following the primary processing, a series of refining processes (e.g. hydrotreatment and catalytic reforming) in order to extract noxious matter, such as sulfur and nitrogen, out of the fuel and to raise the octane index.

The consistent trend in respect to demand for more lighter fuels and less heavier products, as well as the increasing requirements due to environmental issues are affecting the effectiveness of conversion plants. For this reason, they are referred to as the "economic drive" of a refinery.

Catalytic systems, e.g. hydrotreaters (HAT) or hydrocrackers, operate with solid catalyst layers, respectively catalyst beds. The hydrocarbon liquids generated by various distillation methods (e.g. atmospheric or vacuum distillation) are often charged with contaminants such as coke particles and rust from process equipment or pipelines. Caused by various physical and chemical reaction channels these contaminants lead to fouling of the catalyst beds. This negatively affects the effectiveness of the system and leads to loss of system pressure.

The consequence of this is a reduction of the performance and the life cycle. The low yield of the system due to the deteriorated performance on the one hand, and increased nonoperation periods on the other, have the effect of reducing the economic efficiency and increasing the maintenance costs.

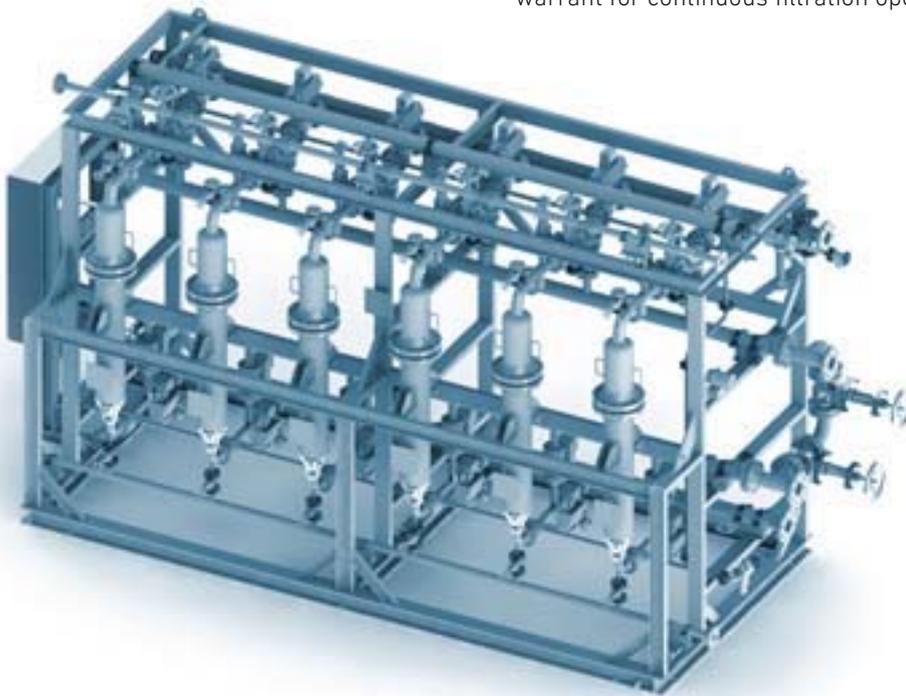
The professional filtration, with FAUDI Modular Filtersystems, extends the life cycle of high grade catalyst beds in refineries and protect against premature system down-times.



MODULAR FILTER SYSTEMS RSFA

Filtration: The medium to be filtered passes through the header pipe and is evenly distributed to the filter modules which are arranged in parallel order. In the interior of the filter modules, there are several cylindrical filter elements where the medium intended for filtration flows from the interior to the exterior. Contaminants deposit themselves on the outer surface of the filter element and form a layer. The filtered medium then passes out of the filter module into the outlet header pipe as pure medium.

Backflushing: In the course of the filtration, the differential pressure increases due to the growing filter cake on the outer surface of the filter element. As soon as the pre-specified differential pressure is reached, upstream connected valves isolate the filter module intended for cleaning from the filtration process and initiate the self-cleaning sequence via backflushing. The remaining operative filter modules warrant for continuous filtration operation.



FAUDI offers three technologies for the regeneration of filter elements:

**FAUDI RSFA Type 29:
Backflushing with internal Medium**

The RSFA Type 29 deploys a certain quantity of filtrate (system medium) for the regeneration of the filters.

**FAUDI RSFA Type 28:
Backflushing with external Medium**

If the loss of filtrate is not acceptable for cost reasons, or if the filtrate is critical, and also if the operational pressure and flow rate is too low, the FAUDI RSFA Type 28 offers the ideal solution. The mode of function is comparable with the RSFA Type 29, the backflushing is however performed with an externally supplied liquid.

- Backflushing process is independent of throughput rate and operational pressure
- Functionality at operation pressure as low as 1,5 bar
- The flow rate required for the backflushing process is higher than the specified flow rate of the filtration

FAUDI RSFA Type 27: Gas-supported Backflushing

The FAUDI RSFA Type 27 deploys inert gas (e.g. nitrogen) to support the backflushing process. The filter elements are flushed in pulses by system medium pressurized by the inert gas contrary to the filtration direction and are consequently effectively cleaned.

- Newly developed backflushing technology with optimized filter elements warrant for best results at the regeneration of filter elements
- Lowest possible backflushing losses
- Enables microfiltration (< 3 µm)

THE IDEAL SOLUTION FOR ALL REQUIREMENTS

	RSFA Type 27	RSFA Type 28	RSFA Type 29
APPLICATION RANGE	Filtration of amine solutions, gas oil, diesel fuels, naphtha and similar liquids in refineries		
BACKFLUSH MEDIUM	Internal medium with gas-supported backflush	External Medium	Internal Medium
FILTER FINENESS	3–50 µm	10–100 µm	20–100 µm
FLOW RATE	15–500 m ³ /h	15–500 m ³ /h	15–800 m ³ /h
PRESSURE	min. 1,5 bar	min. 1,5 bar	min. 3,0 bar
FILTERMEDIUM	Slotted-tube filter cartridges, sintered filter elements and wire mesh elements	Slotted-tube filter cartridges, wire mesh elements	Slotted-tube filter cartridges, wire mesh elements
TYPICAL ARRANGEMENT OF THE FILTERS	3–10 filter casings per filterbank	3–10 filter casings per filterbank	3–10 filter casings per filterbank

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.

An Overview of the Advantages of FAUDI Modular Filter Systems

- Fully automatic and continuous filtration process
- Fully automatic backflush for the regeneration of the filter elements
- The technology lead in the filtration sector: gas-supported backflushing system with new high-performance filter cartridges for microfiltration (< 3 µm)
- Modular construction provides flexibility in respect to future system requirements
- Our filter elements provide a maximum on active filter area to optimize the flow rate and surface load (Flux Rate)
- The exclusive use of premium components and materials guarantees the long-time functional capability and reliability



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