



FALCON series

Fuel oil separator modules for the oil & gas industry



FALCON 12-200 module

Alfa Laval FALCON modules are automated modular systems, especially designed for the oil & gas industry for the purification of liquid fuel oils. The fuel cleaning process is designed to overcome the harmful effects of fuel oil contaminants, primarily water, water soluble salts, and solid particles.

Keeping fuel oils clean

Reliable engine/gas turbine performance and prolonged engine/gas turbine lifetime require clean fuel oils.

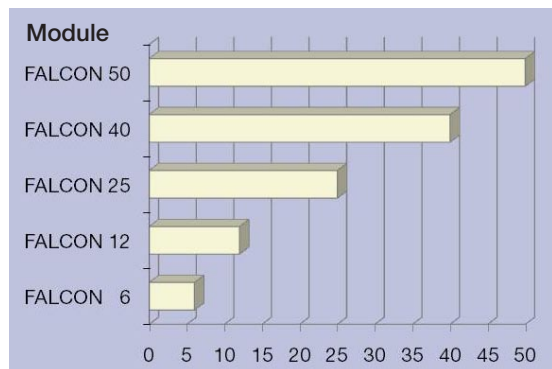


Fig. 1. Throughput capacities for Distillate No. 2, 30 °C separation temperature. Capacity reduction factors may be applied for other fuel grades.

Based on the centrifugal separator, Alfa Laval fuel oil treatment systems are designed to protect your engine and/or gas turbine equipment. They have proven their efficiency and reliability in engine rooms worldwide for decades. Installed between the bunker tank and the day tank, Alfa Laval fuel oil separators protect diesel engines and gas turbines by removing water, water soluble salts, and solid particles from the fuel.

For heavier fuel and crude oils, Alfa Laval supplies a wide range of self-cleaning purifier systems. These are available as separate modules and include pre-heater, starter and control panel.

Features and benefits

- Simple, compact and robust design
- Highest separation efficiency in removing solids and water
- No pre-filtration necessary
- Environmentally friendly sludge disposal (no cartridges)
- Automatic, unattended operation
- Easy maintenance
- Low operating cost
- Proven reliability and long lifespan
- Reliable process for maximum performance

Process description

The FALCON module will pump untreated fuel oil with a feed pump via a suction strainer to the separator. The centrifugal separator is the heart of the cleaning unit and provides a reliable and consistent method for the removal of solids and water simultaneously from fuel oils.



Fig. 2. Centrifugal separator - the heart of the cleaning unit

Untreated fuel oil is fed continuously through the separator, where any water and solids are separated from the fuel oil by the action of centrifugal force.

Separation takes place in a rotating bowl. When the water seal has been established, the feed is introduced to the bowl inlet. The inlet is equipped with circular discs, the Optiflow inlet, which accelerates the feed before it enters the bowl disc stack.

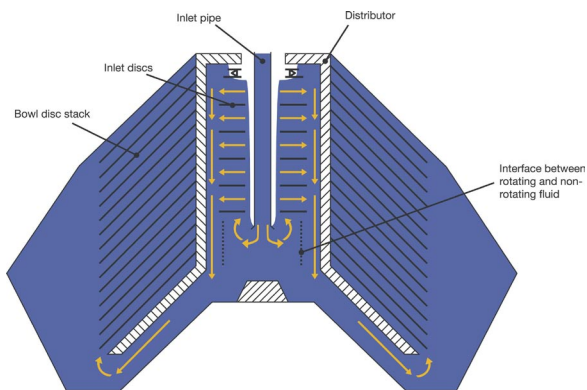


Fig. 3. Optiflow. Disc Inlet Smooth acceleration. This feature is included in the FALCON 25, 40 and 50 units.

The oil is forced towards the centre of the bowl through the disc stack. A built-in paring disc pump discharges cleaned oil continuously.

Separated water rises along the outside of the disc stack and is continuously discharged by a paring disc (FALCON 12 - 50) in the water outlet. Separated sludge and solid particles

accumulate at the periphery of the bowl and are discharged periodically before they build-up to a point where they would interfere with the separation process.

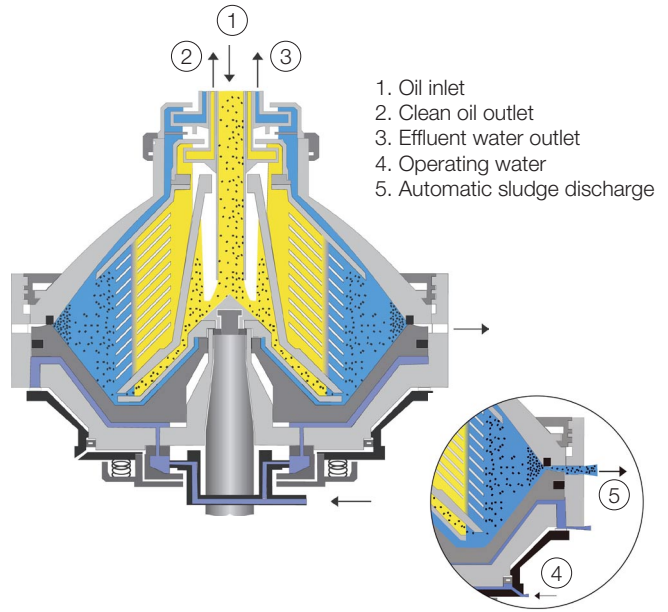


Fig. 4. Automatic discharging centrifugal separator bowl

The discharge cycle is initiated at the control panel by either push button or automatically by the electronic program control system on completion of a set time cycle.

Water and sludge removed by the centrifugal separators are collected in the separator sludge tank and are pumped to the customer's waste treatment system by a pneumatic sludge pump controlled by a level switch.

The fuel oil cleaning unit is controlled, monitored, and supervised from a centralized control console. A state-of-the-art PLC-based control panel provides monitoring and control functions necessary for the operation of the system.

Alfa Laval FALCON fuel oil treatment modules can be optimized for various fuel qualities by adjusting the process parameters. They can be used top side or hull side offshore as well as for onshore installations. The FALCON series is optimized for use offshore on-board oil and gas drilling rigs, production platforms, FPSOs, FSOs, FPU, and onshore on drilling sites and refineries.

Basic design includes

- Feed pump with electric motor
- Self-cleaning centrifugal separator with electric motor
- Control panel with local operator device
- Atmospheric sludge tank complete with sludge pump
- Instrumentation with minimum IP 65 ingress protection
- Instrument air distribution system
- Wired and piped to skid limit
- Module base frame with drip pan, lifting lugs and earthing
- Suitable offshore painting
- Tagging and marking
- Factory Acceptance Test (FAT)
- Documentation

Engineered modules

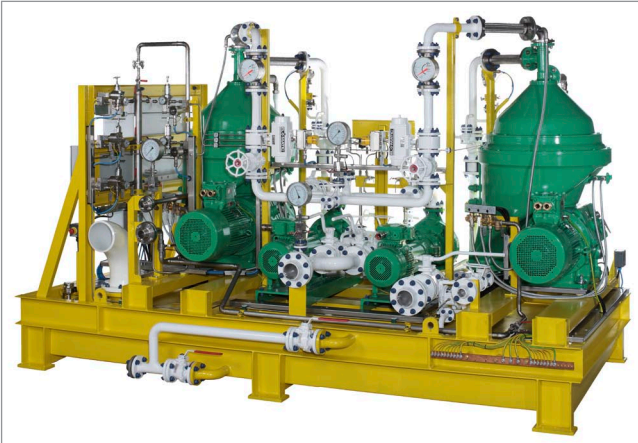


Fig. 5 and Fig. 6. FALCON 25-200 module in explosion proof execution for a central processing platform.

Optional design, e.g.

- Installation in classified area
- Purge design
- Module for parallel operation or stand-by capacity
- Wash water system
- Fuel oil preheater
- Water monitor in purified oil outlet
- Piping and components in different stainless steel qualities
- Pumps according to API 610 or 676
- Fully-enclosed containerized systems
- Remote monitoring and operation via various bus systems
- Redundant PLC and controls
- Welding according to European or US standards
- 3rd party certification according to various classification societies
- Project related tests, certificates and inspections
- Individual oil & gas documentation and drawings

World wide service

- Experienced service engineers for supervision of erection, start-up, commissioning, trial run
- Factory, classroom and on site training



Fig. 7 and Fig. 8. FALCON 25-200 module with two control panels and separate pump module for an FPSO.

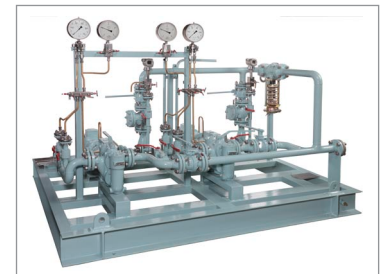


Fig. 9. FALCON 12-200 module for an FPSO.



Fig. 10 and Fig. 11. FALCON 25-200 module containerized for arctic conditions.

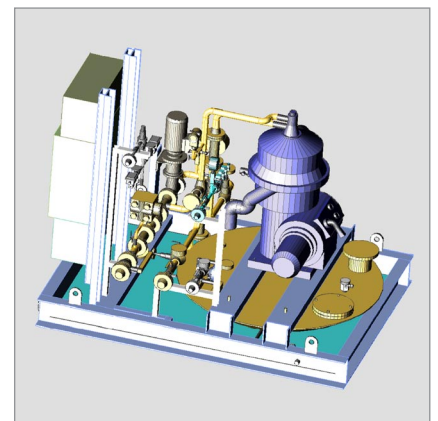


Fig. 12. Typical 3D drawing of a FALCON 6-100 module.

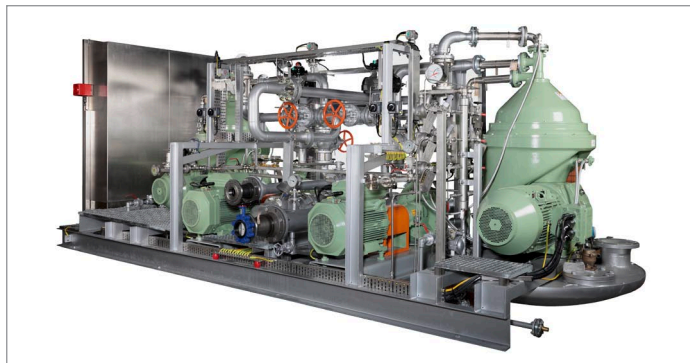


Fig. 13 and Fig. 14. Two FALCON 50-200 modules for a refinery.

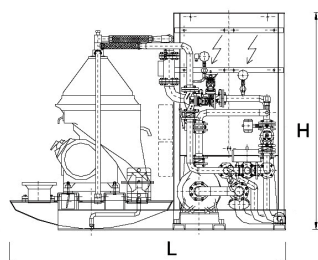
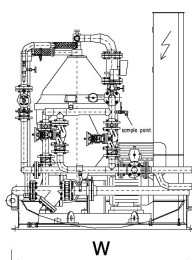
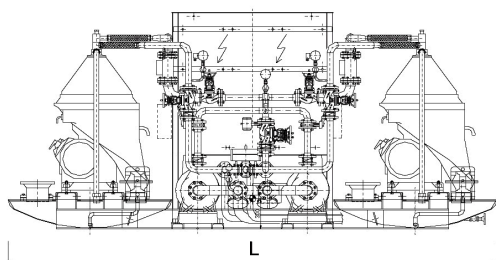
Technical data and utilities consumption

Separator type	FALCON 6	FALCON 12	FALCON 25	FALCON 40	FALCON 50
Main supply voltage	3-phase 400 / 440 / 480 V ± 10 % short, ± 5 % normal				
Control voltage	24 V DC / 230 V AC / 110 V AC				
Frequency	50 or 60 Hz ± 5 % short, ± 2 % normal				
Water supply pressure	300 to 600 kPa				
Oil inlet pressure	Flooded suction				
Oil outlet pressure, max.	200 kPa	400 kPa	350 kPa	400 kPa	350 kPa
Instrument air pressure	500 kPa to 750 kPa				
Sludge outlet pressure, max	300 kPa at 500 kPa air pressure				
Ingress protection	IP 54 / IP 55 / IP 56				
Electric power consumption during start up	10.3 kW	14.0 kW	19.5 kW	28.0 kW	28.5 kW
Water consumption (per discharge)	20 litres	24 litres	40 litres	40 litres	40 litres
Air consumption (per discharge)	Approximately 1 Nm ³ , max. flow 150 NI/min.				

The above data refers to standard specifications and typical operation conditions for the single unit option.

Technical specifications (standard unit without optional equipment)

Separator type	FALCON 6	FALCON 12	FALCON 25	FALCON 40	FALCON 50	
Single unit 1x100 %	Length (L) mm / inch	2734 / 108				
	Width (W) mm / inch	1907 / 75				
	Height (H) mm / inch	2140 / 85				
	Dry weight kg / lbs	2340 / 5159	2629 / 5790	3352 / 7383	3557 / 7835	3590 / 7915
	Operating weight kg / lbs	2780 / 6129	3049 / 6716	3772 / 8308	3977 / 8760	4030 / 8885
Double unit 2x100 %	Length (L) mm / inch	4815 / 190				
	Width (W) mm / inch	1907 / 75				
	Height (H) mm / inch	2140 / 85				
	Dry weight kg / lbs	3980 / 8774	4547 / 10015	5993 / 13200	6403 / 14103	6460 / 14242
	Operating weight kg / lbs	4860 / 10714	5387 / 11866	6833 / 15051	7243 / 15954	7340 / 16182



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Alfa Laval reserves the right to change specifications without prior notification.

How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com.