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**

![FALCON 12-200 module](image)

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

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

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.

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.

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, FPUs, 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
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
- 3\textsuperscript{rd} 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

Engineered modules

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

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.
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.

Technical data and utilities consumption

<table>
<thead>
<tr>
<th>Separator type</th>
<th>FALCON 6</th>
<th>FALCON 12</th>
<th>FALCON 25</th>
<th>FALCON 40</th>
<th>FALCON 50</th>
</tr>
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<tr>
<td>Main supply voltage</td>
<td>3-phase 400 / 440 / 480 V ± 10 % short, ± 5 % normal</td>
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<tr>
<td>Control voltage</td>
<td>24 V DC / 230 V AC / 110 V AC</td>
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<tr>
<td>Frequency</td>
<td>50 or 60 Hz ± 5 % short, ± 2 % normal</td>
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<tr>
<td>Water supply pressure</td>
<td>300 to 600 kPa</td>
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<tr>
<td>Oil inlet pressure</td>
<td>Flooded suction</td>
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<tr>
<td>Oil outlet pressure, max.</td>
<td>200 kPa</td>
<td>400 kPa</td>
<td>350 kPa</td>
<td>400 kPa</td>
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<tr>
<td>Instrument air pressure</td>
<td>500 kPa to 750 kPa</td>
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<td>Sludge outlet pressure, max.</td>
<td>300 kPa at 500 kPa air pressure</td>
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<td>Ingress protection</td>
<td>IP 54 / IP 55 / IP 56</td>
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<tr>
<td>Electric power consumption during start up</td>
<td>10.3 kW</td>
<td>14.0 kW</td>
<td>19.5 kW</td>
<td>28.0 kW</td>
<td>28.5 kW</td>
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<tr>
<td>Water consumption (per discharge)</td>
<td>20 litres</td>
<td>24 litres</td>
<td>40 litres</td>
<td>40 litres</td>
<td>40 litres</td>
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<tr>
<td>Air consumption (per discharge)</td>
<td>Approximately 1 Nm³, max. flow 150 Nl/min.</td>
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The above data refers to standard specifications and typical operation conditions for the single unit option.

Technical specifications (standard unit without optional equipment)

<table>
<thead>
<tr>
<th>Separator type</th>
<th>FALCON 6</th>
<th>FALCON 12</th>
<th>FALCON 25</th>
<th>FALCON 40</th>
<th>FALCON 50</th>
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<tbody>
<tr>
<td>L (Length) mm / inch</td>
<td>2734 / 108</td>
<td></td>
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<tr>
<td>W (Width) mm / inch</td>
<td>1907 / 75</td>
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<tr>
<td>H (Height) mm / inch</td>
<td>2140 / 85</td>
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<tr>
<td>Dry weight kg / lbs</td>
<td>2340 / 5159</td>
<td>2629 / 5790</td>
<td>3352 / 7383</td>
<td>3557 / 7835</td>
<td>3590 / 7915</td>
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<tr>
<td>Operating weight kg / lbs</td>
<td>2780 / 6129</td>
<td>3049 / 6716</td>
<td>3772 / 8308</td>
<td>3977 / 8760</td>
<td>4030 / 8885</td>
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<tr>
<td>L (Length) mm / inch</td>
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<tr>
<td>W (Width) mm / inch</td>
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<tr>
<td>H (Height) mm / inch</td>
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<tr>
<td>Dry weight kg / lbs</td>
<td>3980 / 8774</td>
<td>4547 / 10015</td>
<td>5993 / 13200</td>
<td>6403 / 14103</td>
<td>6460 / 14242</td>
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<tr>
<td>Operating weight kg / lbs</td>
<td>4860 / 10714</td>
<td>5387 / 11866</td>
<td>6833 / 15051</td>
<td>7243 / 15954</td>
<td>7340 / 16182</td>
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Alfa Laval reserves the right to change specifications without prior notification.