Alfa Laval ALDEC range of decanter centrifuges

High-performance decanter for sludge thickening and dewatering

Applications
The Alfa Laval ALDEC range of decanter centrifuges are designed with a focus on cost-efficiency, reliability and easy operation. They are used for thickening and dewatering of sludge from municipal and industrial water and waste treatment plants.

ALDEC decanter centrifuges are capable of handling a wide range of flow rates. They are designed to be efficient, simple to install, easy to maintain and straightforward to operate. Installation, operating and service life costs are minimal.

Benefits
The ALDEC decanter centrifuge design provides a series of practical benefits:

- Reduces sludge volume, which cuts down on transport and disposal costs
- High capacity at small footprint: Compact, modular design saves space
- High performance combined with low energy consumption

Design
The rotating part of ALDEC decanter centrifuges is mounted on a compact, in-line frame, with main bearings at both ends.

Vibration dampers are placed under the frame. The rotating part is enclosed in a casing with a stainless steel cover and a bottom section with integrated outlets for both solids and the liquid being removed.

Working principle
Working principle Separation takes place in a horizontal cylindrical bowl equipped with a screw conveyor (see diagram). The feed enters the bowl through a stationary inlet tube and is accelerated smoothly by an inlet distributor. The centrifugal force that results from this rotation then causes sedimentation of the solids on the wall of the bowl.

The conveyor rotates in the same direction as the bowl, but slightly slower, thus moving the solids towards the conical end of the bowl. The cake leaves the bowl through the solids discharge openings into the casing. Separation takes place throughout the entire length of the cylindrical part of the bowl, and the clarified liquid leaves the bowl by flowing over adjustable plate dams into the casing.
Features
• Critical parts made of wear-resistant material
• Fully open feed zone for improved separation
• 360° solids discharge to avoid blocking
• Baffle disc provides higher capacity and drier cake solids
• Steep or shallow cone configuration for optimum separation of any type of slurry
• Special conveyor designs to suit particular types of slurry
• Different kinds of wear protection for conveyor flights, to suit any particular processing requirements
• Complete, fully enclosed cleaning-in-place (CIP)
• Floater disc for light particle removal (optional)

Process optimization
ALDEC decanter centrifuges can be adjusted to suit specific requirements by varying
• Bowl speed to obtain the G-force required for the most efficient separation
• Conveying speed for the most efficient balance between liquid clarity and solids dryness
• Pond depth in the bowl for the most efficient balance between liquid clarity and solids dryness

Drive system
In all ALDEC decanter centrifuges, the bowl is driven by an electric motor and a V-belt transmission drive. Power is transferred to the conveyor via a planetary or Direct Drive gearbox. For smaller ALDEC decanters, countershaft transmission is an option.

Operation can either be pre-set to a suitable set of parameters, or the difference between the speeds of the bowl and the conveyor can be controlled automatically, with no need for changing belts or pulleys.
Materials
The bowl, conveyor, inlet tube, outlets, cover and other parts in direct contact with process media are all made of stainless steel. The discharge ports, conveyor flights and feed zone are protected with materials that are highly resistant to erosion. Various types of additional optional wear protection can be added, including conveyor flights protected with flame-sprayed hard surfacing, and/or sintered tungsten carbide tiles. The frame is made of mild steel with an epoxy enamel finish. Different materials are available to meet different requirements.

Automation
Each decanter centrifuge in the ALDEC range equipped with a variable frequency drive (VFD) is delivered with the Basic control package as standard. This package is capable of fully controlling operation of the decanter, ensuring the most efficient performance and keeping costs for installation, commissioning, operation and maintenance to a minimum. The controller is also designed to measure the temperature of the bearings, and to monitor vibration levels.

An upgrade to the Plus control package is also available as an option for ALDEC 45 models and upwards.
### Technical specifications

<table>
<thead>
<tr>
<th>Designation</th>
<th>ALDEC 10</th>
<th>ALDEC 20</th>
<th>ALDEC 30</th>
<th>ALDEC 45</th>
<th>ALDEC 75</th>
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<tr>
<td>Length</td>
<td>2150 mm / 85 in</td>
<td>2936 mm / 116 in</td>
<td>3216 mm / 127 in</td>
<td>3998 mm / 168 in</td>
<td>4749 mm / 195 in</td>
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<tr>
<td>Width</td>
<td>580 mm / 23 in</td>
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<td>780 mm / 31 in</td>
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<td>Height</td>
<td>162 mm / 6 in</td>
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<td>930 mm / 37 in</td>
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<td>1376 mm / 54 in</td>
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<td>Maximum weight</td>
<td>375 kg / 830 lbs</td>
<td>1125 kg / 2459 lbs</td>
<td>1125 kg / 2459 lbs</td>
<td>2300 kg / 5071 lbs</td>
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<tr>
<td>Main drive size</td>
<td>4-11 kW / 5-15 hp</td>
<td>11-18.5 kW / 15-25 hp</td>
<td>11-18.5 kW / 15-25 hp</td>
<td>11-22 kW / 15-30 hp</td>
<td>11-45 kW / 50 hp</td>
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<td>Back drive size</td>
<td>3 kW / 4 hp</td>
<td>7.5 kW / 10 hp</td>
<td>7.5 kW / 10 hp</td>
<td>5.5-11 kW / 7 hp</td>
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<td>Back drive control</td>
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*Countershaft fixed differential speed

**Variable frequency drive

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<th>ALDEC 125</th>
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<td>Height</td>
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<td>30-110 kW / 40-200 hp</td>
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<td>55-250 kW / 75-350 hp</td>
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<td>15-30 kW / 30 hp</td>
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*Variable frequency drive

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