



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

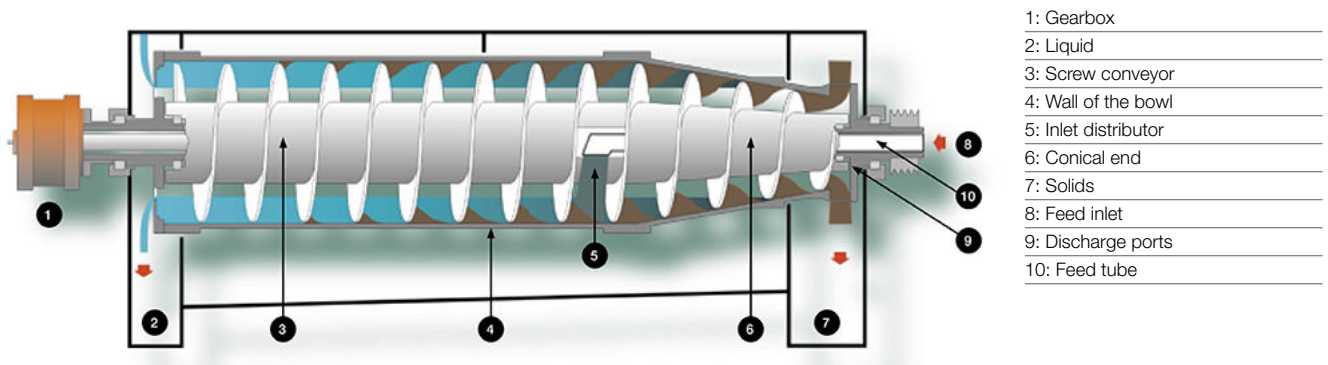
The rotating part of ALDEC decanter centrifuges is mounted on a compact, in-line frame, with main bearings at both ends.

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)



Figure 1. Steep cone configuration



Figure 2. Shallow cone configuration

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.



Figure 3. Solids discharge, free from blocking



Figure 4. Baffle disc provides higher capacity and drier solids



Figure 5. Sintered tungsten carbide tiles as wear protection for conveyor flights

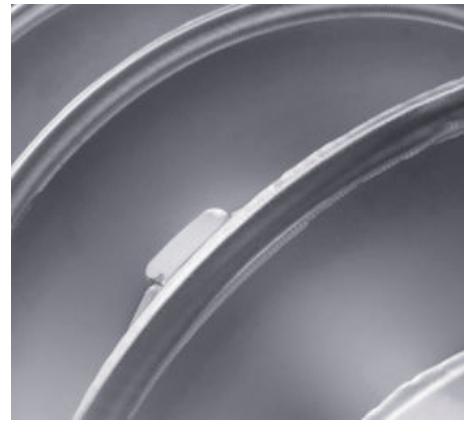


Figure 6. Flame sprayed tungsten carbide wear protection on conveyor flights

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.

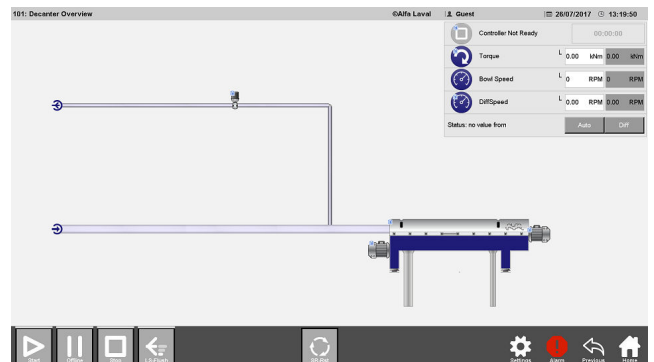
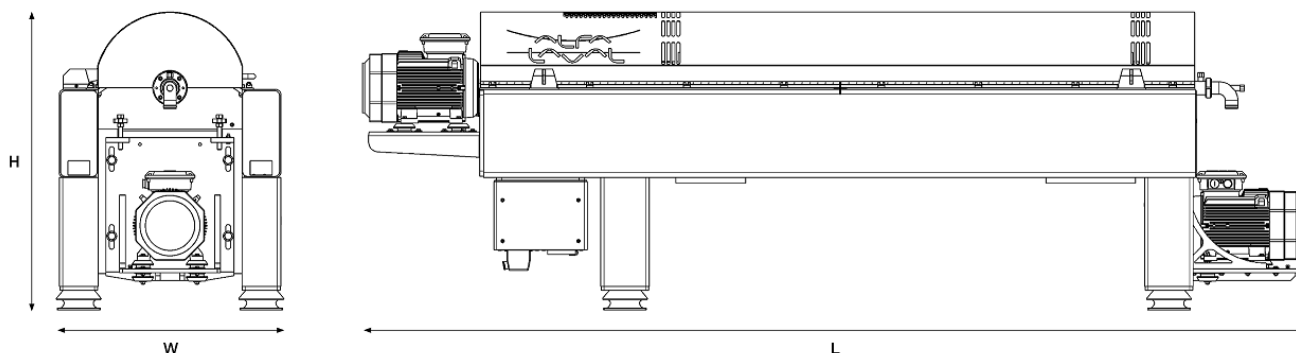


Figure 7. Decanter overview



Technical specifications

Designation	ALDEC 10	ALDEC 20	ALDEC 30	ALDEC 45	ALDEC 75
Length	2150 mm / 85 in	2936 mm / 116 in	3216 mm / 127 in	3998 mm / 168 in	4749 mm / 195 in
Width	580 mm / 23 in	780 mm / 31 in	780 mm / 31 in	990 mm / 39 in	1060 mm / 42 in
Height	762 mm / 30 in	930 mm / 37 in	930 mm / 37 in	1304 mm / 51 in	1376 mm / 54 in
Maximum weight	375 kg / 830 lbs	1125 kg / 2459 lbs	1200 kg / 2660 lbs	2300kg / 5071 lbs	3200 kg / 7050 lbs
Main drive size	4-11 kW / 5-15 hp	11-18.5 kW / 15-25 hp	11-18.5 kW / 15-25 hp	11-22 kW / 15-30 hp	11-45 kW / 50 hp
Back drive size	3 kW / 4 hp	7.5 kW / 10 hp	7.5 kW / 10 hp	5.5-11 kW / 7 hp	5.5-15 kW / 7 hp
Back drive control	CS* or VFD**	CS* or VFD**	CS* or VFD**	CS* or VFD**	CS* or VFD**
*Countershaft fixed differential speed					
**Variable frequency drive					

Designation	ALDEC 85	ALDEC 105	ALDEC 115	ALDEC 125
Length	5076 mm / 200 in	5842 mm / 230 in	6502 mm / 256 in	6901 mm / 264 in
Width	1140 mm / 45 in	1300 mm / 51 in	1450 mm / 57 in	1510 mm / 60 in
Height	2146 mm / 84 in	1696 mm / 67 in	1791 mm / 71 in	1852 mm / 73 in
Maximum weight	4900 kg / 10,800 lbs	5000 kg / 11,023 lbs	6500 kg / 14,300 lbs	8600 kg / 18,959 lbs
Main drive size	22-75kW / 30-125 hp	30-110 kW / 40-200 hp	37-160 kW / 50-200 hp	55-250 kW / 75-350 hp
Back drive size	5.5-22 kW / 7,5-40 hp	15- 30 kW / 30 hp	15-30 kW / 20-40 hp	22-37 kW / 30-50 hp
Back drive control	VFD*	VFD*	VFD*	VFD*
*Variable frequency drive				

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