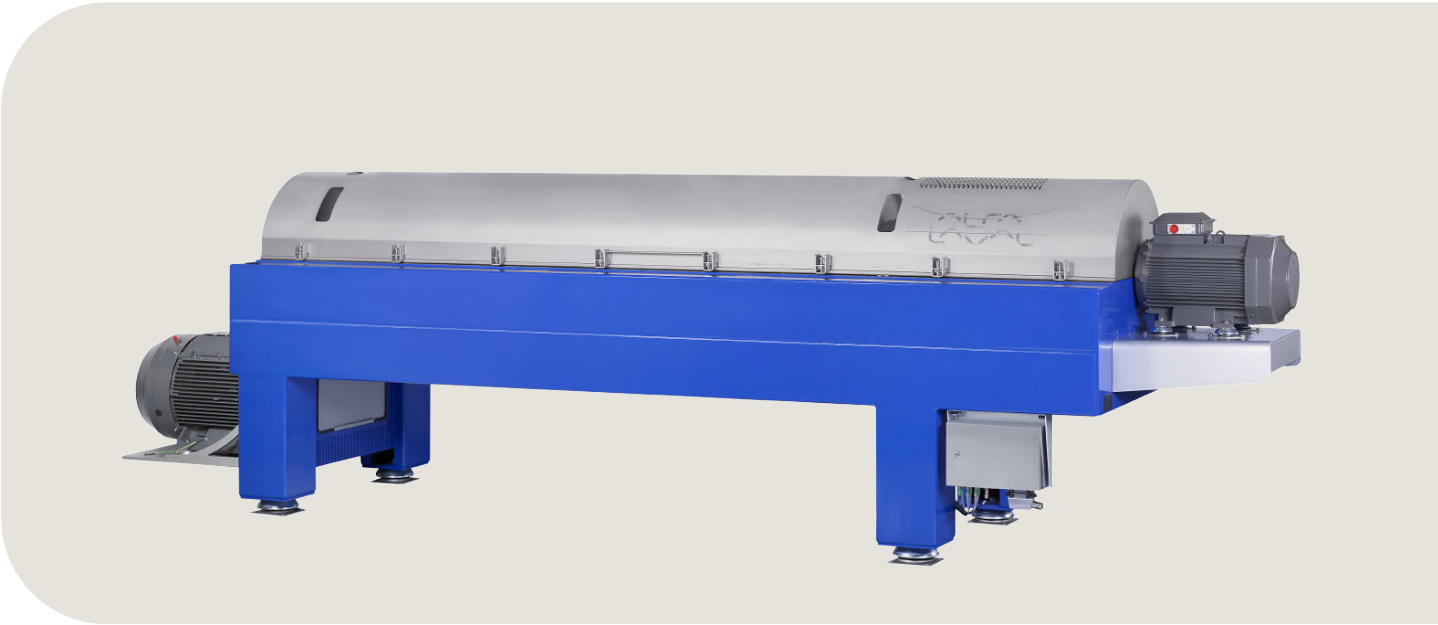
Alfa Laval ALDEC range of decanter centrifuges

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.

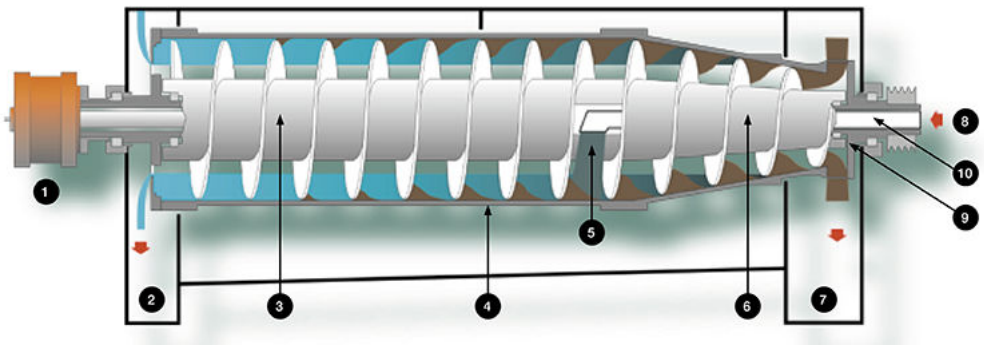
Design

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.



1: Gearbox
2: Liquid
3: Screw conveyor
4: Wall of the bowl
5: Inlet distributor
6: Conical end
7: Solids
8: Feed inlet
9: Discharge ports
10: Feed tube

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)

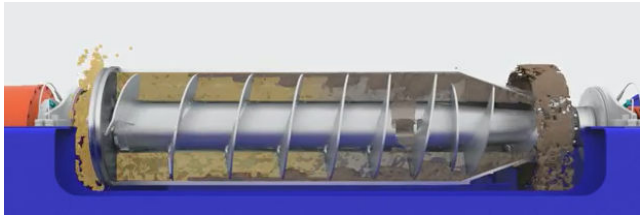


Figure 1. Steep cone configuration

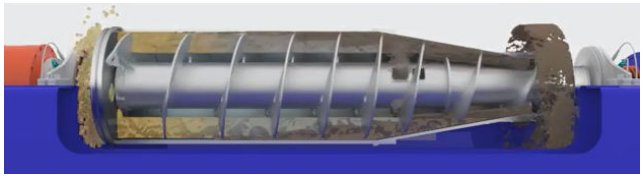


Figure 2. Shallow cone configuration

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

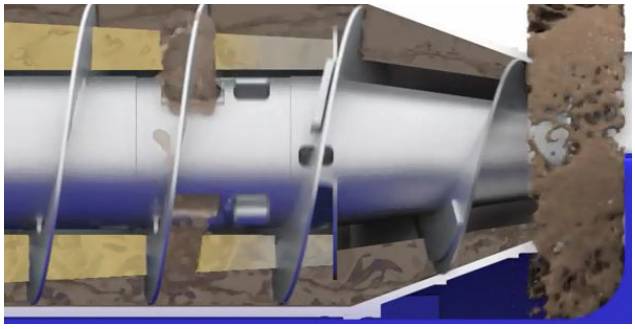


Figure 4. Baffle disc provides higher capacity and drier solids

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.

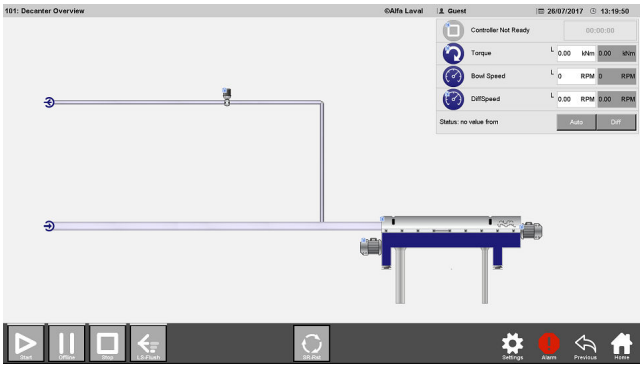
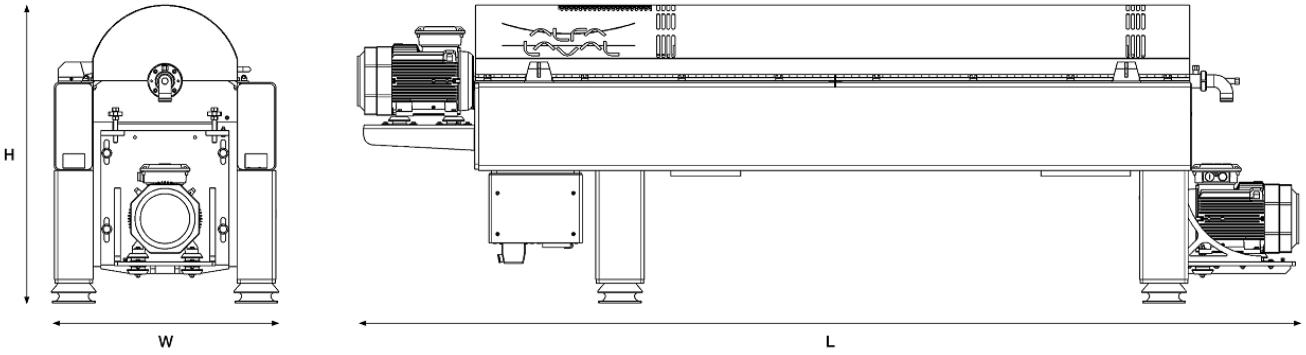


Figure 7. Decanter overview



Technical specifications

Designation	ALDEC 10	ALDEC 20	ALDEC 30	ALDEC 45	ALDEC 75
Length (L)	2150 mm	2936 mm	3216 mm	3998 mm	4749 mm
Width (W)	580 mm	780 mm	780 mm	990 mm	1060 mm
Height (H)	762 mm	930 mm	930 mm	1304 mm	1376 mm
Maximum weight	375 kg	1125 kg	1200 kg	2300kg	3200 kg
Main drive size	4-11 kW	11-18.5 kW	11-18.5 kW	11-22 kW	11-45 kW
Back drive size	3 kW	7.5 kW	7.5 kW	5.5-11 kW	5.5-15 kW
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 (L)	5076 mm	5842 mm	6502 mm	6901 mm
Width (W)	1190 mm	1300 mm	1450 mm	1510 mm
Height (H)	1534 mm	1696 mm	1791 mm	1852 mm
Maximum weight	4900 kg	5000 kg	6500 kg	8600 kg
Main drive size	22–75kW	30-110 kW	37-160 kW	55-250 kW
Back drive size	5.5-22 kW	15- 30 kW	15-30 kW	22-37 kW
Back drive control	VFD*	VFD*	VFD*	VFD*
*Variable frequency drive				

200000334-6-EN-GB

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