



ALDEC

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 concrete 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.

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
- Variety of conveyor design depending on type of slurry
- Variety of wear protection of conveyor flights for any demand
- Complete, fully enclosed cleaning-in-place (CIP)
- Floater disc for light particle removal (optional)

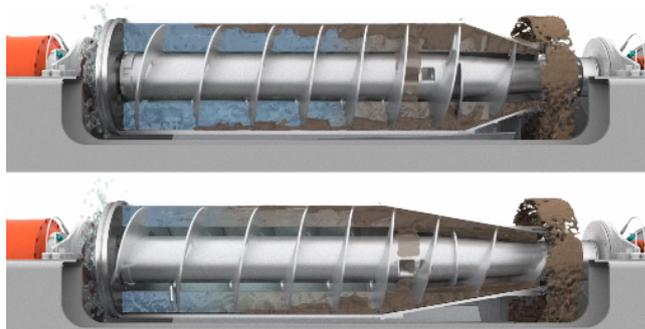
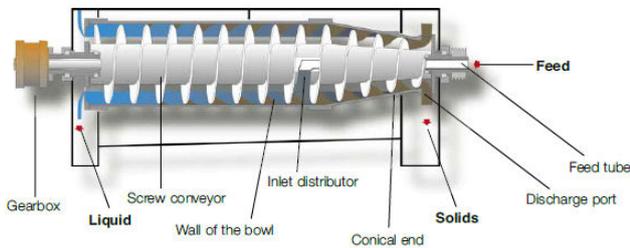


Fig 1. Shallow vs Steep cone configuration

Working principle

Separation takes place in a horizontal cylindrical bowl equipped with a screw conveyor (see drawing). The feed enters the bowl through a stationary inlet tube and is accelerated smoothly by an inlet distributor. The centrifugal force that results from the 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.

Process optimization

ALDEC decanter centrifuges can be adjusted to suit specific requirements by varying

- the bowl speed to obtain the G-force required for the most efficient separation
- the conveying speed for the most efficient balance between liquid clarity and solids dryness
- the pond depth in the bowl for the most efficient balance between liquid clarity and solids dryness

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.

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: conveyor flights protection with flame sprayed hard surfacing, and/or sintered tungsten carbide tiles. The frame is made of mild steel with an epoxy enamel finish.



Fig 2. 360° solids discharge, free from blocking

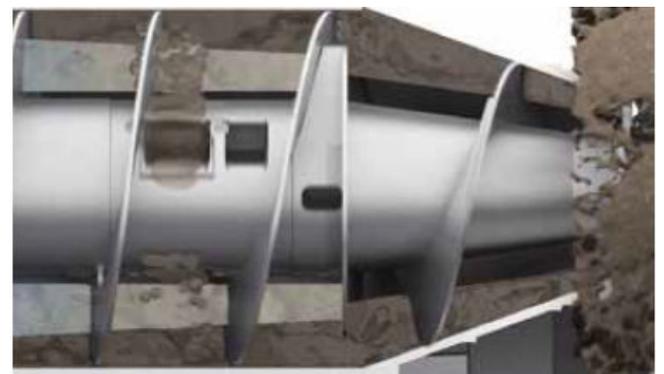


Fig 3. Baffle disc provides higher capacity and drier solids



Fig 4. Sintered tungsten carbide tiles as wear protection for conveyor flights

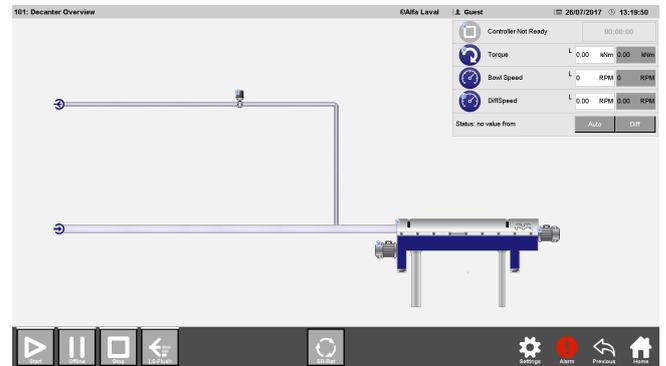


Fig 5. Flame sprayed tungsten carbide wear protection on conveyor flights

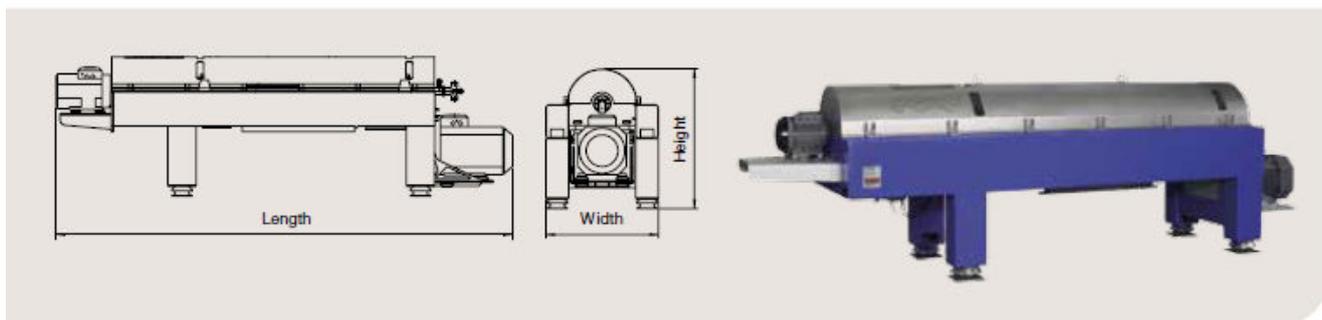
The BASIC Control Package

Each decanter centrifuge in the ALDEC range equipped with a variable frequency drive (VFD) as standard is delivered with the

BASIC control package. This control package is capable of fully controlling the decanter operation, 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.



Technical Specification



Designation	Length	Width	Height	Max. Weight	Typical Main Drive	Typical Back drive	Start method
	mm (inches)	mm (inches)	mm (inches)	kg (lbs)	Size kW (HP)	Size kW (HP)	
ALDEC 10	2,150 mm (85 inches)	580 mm (23 inches)	762 mm (30 inches)	375 kg (830 lbs)	4-11 kW (5-15HP)	3 kW (4 HP)	Star-delta VFD*
ALDEC 20	2,936 mm (116 inches)	780 mm (31 inches)	930 mm (37 inches)	1,125 kg (2,459 lbs)	11-18.5 kW (15-25 HP)	7.5 kW (10 HP)	Star-delta, VFD
ALDEC 30	3,216mm (127 inches)	780 mm (31 inches)	930 mm (37 inches)	1,200 kg (2,660 lbs)	11-18.5 kW (15-25 HP)	7.5 kW (10 HP)	Star-delta, VFD
ALDEC 45	3,998 mm (168 inches)	990 mm (39 inches)	1,304 mm (51 inches)	2,300kg (5,071 lbs)	11-22 kW (15-30 HP)	5.5 kW (7 HP)	Star-delta, VFD
ALDEC 75	4,959 mm (195 inches)	1,060 mm (42 inches)	1,376 mm (54 inches)	3,200 kg (7,050 lbs)	11-55 kW (50 HP)	5.5-11 kW (7 HP)	Star-delta, VFD
ALDEC 95	5,682mm (224 inches)	1,150 mm (45 inches)	1,601 mm (63 inches)	4,500 kg (9,000 lbs)	18.5-90 kW (25-125 HP)	11-22 kW (15-30 HP)	VFD
ALDEC 105	5,842 mm (230 inches)	1,300 mm (51 inches)	1,696 mm (67 inches)	5,000 kg (1,1023 lbs)	30-132 kW (40-200 HP)	22 kW (30 HP)	VFD
ALDEC 115	6,502 mm (256 inches)	1,450 mm (57 inches)	1,791 mm (71 inches)	6,500 kg (14,300 lbs)	37-160 kW (50-200 HP)	15-30 kW (20-40 HP)	VFD
ALDEC 125	6,901 mm (264 inches)	1,510 mm (60 inches)	1,852 mm (73 inches)	8,600 kg (18,959 lbs)	55-250 kW (75-350 HP)	22-37 kW (30-50 HP)	VFD

*Variable frequency drive

Different materials of construction are available according to needs.

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