



Belt Press KD 12



Danish Wastewater
Equipment

Belt Press KD 12

The belt presses model KD 12-800 / -1200 constitutes a new generation of presses designed and manufactured by Danish Wastewater Equipment A/S, in order to meet the less requiring needs for capacity at dewatering purposes.

The presses are high-technology quality products, based upon the experiences from the larger belt press series KD10 og KD11.

Some advantages are:

- easy and quick installation
- service friendly
- less investments
- less operating costs
- very low energy consumption



Construction

Danish Wastewater Equipment A/S belt press model KD12 is constructed on a carrying base with a hot-dip-galvanised steel frame. The press rollers are made of stainless steel. This applies to all kinds of material in contact with sludge or water.

The outlet- / reject tray is located at the bottom of the frame construction allowing location of the press directly on the floor above the already embedded reject water pipe.

All bearings are external standard bearings model SKF, or similar, ensuring easy inspection and serviceability. All bearing housings have undergone a surface treatment with paint leading to a corrosion resistance corresponding to HDG steel.

Tightening and guide control of the belts take place automatically by means

of pneumatics, and the belt features stepless speed control by means of frequency control.

The control of the belt press is performed by a PLC with a build-in communications module, and all operations are shown on the display or sent to an existing network. This also applies to alarms or errors, if any.

Both air- and water connections as well as the control board are completely separated from the wet part of the belt press .

The belt press is completely enclosed with doors and easily removable covers of stainless steel. Thus, ventilation may be applied to the press.

Function

The sludge dewatering takes place in three phases.

The gravitation zone

When polymer has been added to the sludge, the sludge is led into the gravitation zone. The gravitation zone is constructed in such a way that the sludge is turned after the first tray and led out on a fresh new belt.

If required, the gravitation zone may be supplied with cone paddles ensuring that the sludge is turned more frequently.

The belt press may be fitted with a high efficient belt thickener, model KD 07, build in the same high standard as the belt press. This makes the gravitational zone approx. twice as long. The belt speed may be adjusted by means of a frequency controlled gearmotor. All monitoring functions are integrated in the control cabinet of the belt press.

The belt thickener is typically fitted whenever the dry-matter content of the sludge is below 2%.

The low / mean pressure zone

When the sludge has passed the gravitational zone, it is pressed between the two belts.

The belts & sludge are led around three large rollers with gradually reduced diameter. The largest roller is perforated allowing dewatering on both sides of the belts.

The high pressure zone

When the belts & sludge has passed the mean pressure zone, the sludge is now ready for the actual pressing which takes place in the high pressure zone. The high pressure zone consists of

three rollers with a smaller diameter, which means the surface pressure on the belts increases. All of these rollers are placed in a way to make sure that the drained water is led away from the belts. This ensures the highest possible dry matter content in the sludge.

Belt cleaning

When the sludge has been removed, the belts are led through a flushing device in which flushing nozzles ensure that the belts are cleaned. It is possible to have a high-pressure flushing device, model KD20, fitted as an option. This is particularly required for treatment plants where for instance iron chloride is used for precipitation.

The high-pressure flushing may take place with closed doors making it possible to add chemicals/acid without risk of noxious vapours for the operating personnel.

Maintenance / service

One of the basic elements has been to design a belt press featuring serviceability and requiring a low level of

maintenance. For that purpose the belt press has been equipped with external bearings which are all standard SKF bearings, or similar.

Bearings, chain as well as sprocket wheels may be fitted with an automatic lubrication device ensuring that the press may operate up to one year without further lubrication. The gears have been supplied with synthetic oil which ensures operation for 4 years before change.

The flushing bars are easy to remove for inspection and cleaning. All nozzles are fitted with click-on devices making it possible to replace them in a matter of minutes without the use of tools. Scrapers may be tipped, thus facilitating cleaning / inspection.

Safety

The belt press features the required emergency stop switches and for extra safety the press has been equipped with two wire emergency switches which may be activated if it is necessary to leave the doors open during service or manual operation.

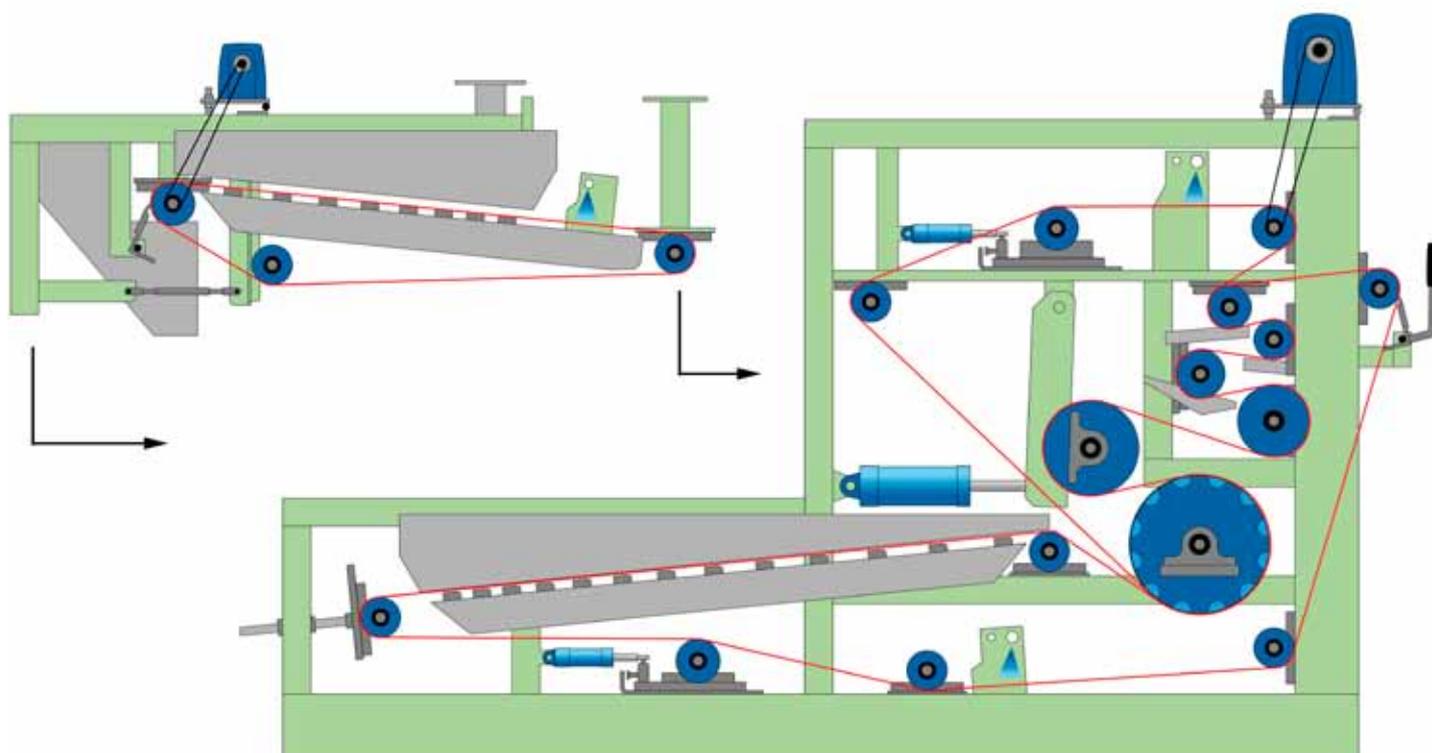
The working environment

The belt press meets the requirements of the Danish board for safety at work. The belt press is also equipped with CE-labelling according to the EU Machine Directive.

Sludge dewatering

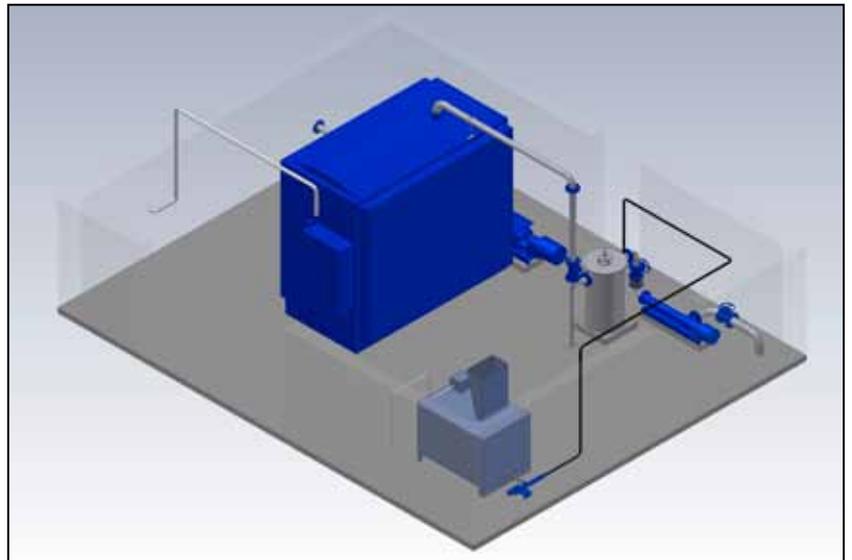
Sludge dewatering undoubtedly gives rise to many questions; how to dewater and which dewatering type to choose: a belt filter press, a decanter, a chamber filter press or another dewatering type?

Irrespective of which type you choose, there will always be advantages and disadvantages. However, the following facts may influence your choice of dewatering type:



Belt filter press:

- + Low energy consumption
- + Low polymer consumption
- + Low noise level
- + Low SS contents in reject water
- + Visual observation of dewatering process
- + Inexpensive service (can be performed locally)
- Achieves lower dry solids in dewatered sludge



Decanter:

- + Space-saving
- + Compact machine
- + High dry solids contents in dewatered sludge (requires high pressure decanter)
- High energy consumption
- High polymer consumption
- High noise level
- Actual dewatering process cannot be observed
- Expensive wearing parts/service cannot be performed locally (requires special equipment and service manpower)



Chamber filter press:

- + Good dry solids amounts in dewatered sludge
- Batch dewatering
- Very space consuming

One single supplier

Using Danish Wastewater Equipment as your supplier will provide you with obvious advantages. DWE is able to perform design and planning, manufacturing, servicing as well as running-in of the complete plant.

We are at your disposal during the design phase or in connection with exchange of existing equipment with advice about space requirements, outlet, etc.

We manufacture the machines ourselves which means that we are familiar with every detail and are therefore able to guarantee optimum equipment.

We install and perform equipment running-in, thereby achieving the necessary sparring between customer and supplier. Furthermore, this ensures knowledge about operation, polymer type, etc.

By choosing Danish Wastewater Equipment A/S, you get a quality supplier!



Capacity (Belt press)	KD 12-800	KD 12-1200
Aerobic acitvated sludge:		
Dry matter	20-40 g/l	20-40 g/l
Sludge load	80-120 kg/h	125-190 kg/h
Dry matter in filter cake	16%	16%
Digested primary sludge:		
Dry matter	40-60 g/l	40-60 g/l
Sludge load	140-170 kg/h	220-270 kg/h
Dry matter in filter cake	32-34%	32-34%
Capacity	3-4 m ³ /h	5-6 m ³ /h
Capacity (Belt press + Thickener)	KD 12+07-800	KD 12+07-1200
Aerobic acitvated sludge:		
Dry matter	5-10 g/l	5-10 g/l
Sludge load	80-120 kg/h	125-190 kg/h
Dry matter in filter cake	16%	16%
Capacity (0,5 – 1% SS)	16 m ³ /h	25 m ³ /h
Capacity (1 – 2 % SS)	12 m ³ /h	19 m ³ /h
Connections & dimensions		
Voltage	3 x 400 V 50Hz	3 x 400 V 50Hz
Power (Belt press)	0,55 kW	0,55 kW
Power (Thickener)	0,55 kW	0,55 kW
Outer dimensions (w x l x h)	1510 x 3605 x 2175 mm	1910 x 3605 x 2175 mm
Belt press	KD 12-800	KD 12-1200
Flush water flow	4 m ³ /h (6 bar)	6 m ³ /h (6 bar)
Reject water	Min. dia. 125 mm	Min. dia. 150 mm
Sludge inlet	DN 80	DN 80
Flush water	DN 50	DN 50
Ventilation	Dia. 150 mm	Dia. 150 mm
Weight	2.200 kg	2.500 kg
Belt press + Thickener	KD 12+07-800	KD 12+07-1200
Flush water flow	6 m ³ /h (6 bar)	9 m ³ /h (6 bar)
Reject water	Min. dia. 200 mm	Min. dia. 250 mm
Sludge inlet	DN 100	DN 100
Flush water	DN 50	DN 50
Ventilation	Dia. 150 mm	Dia. 150 mm
Weight	2.900 kg	3.300 kg
Dewatering lengths		
Gravitation (Belt press)	950 mm	950 mm
Gravitation (Thickener)	1.700 mm	1.700 mm
Mean pressure zone (3 rollers)	1.700 mm	1.700 mm
High pressure zone (3 rollers)	650 mm	650 mm
Effective belt width	750 mm	1.150 mm
Effective belt length (KD 12)	6.125 mm	6.125 mm
Effective belt length (KD 12+07)	7.200 mm	7.200 mm
Component description		
Belts	Scandiafelt / Tamfelt (polyester)	
Bearing / - housings	SKF	
Gear / motor	NORD GEAR / NORD	
Cylinders	Norgren	
Air supply	Customer supply	
Wear guides	PE HD 1000	
Weather strips	PUR	
Control board	Demex	
PLC	Siemens / Allan Bradley	
Frequency controller	NORDAC	
Surface treatment		
Black steel	Hot-dip-galvanised	
Stainless steel	Pickled (by dipping)	
Gear	Paint, corrosion class 3, colour RAL 5003	
Bearings	Paint, colour RAL 5003	



KD 02-04

Screw conveyors model KD 02 and gates model KD 04 are especially designed for transport of dewatered sludge. The conveyors are adjusted to the discharge on the filter belt press and transport sludge both vertically and horizontally and can be equipped with pneumatic, electrical or manual gate model KD 04.



KD 08

In order to stabilize the sludge, lime can be added. KD has developed a special lime/sludge mixer model KD 08 which ensures the most uniform mixture and minimizes the risk of pathogen regrowth.



KD 20

If further cleaning of the filter belts is required, a separate high pressure flushing unit model KD 20 can be installed. A chemical or acid mixture can be added for further cloth cleaning. The result will be improved dewatering ability and improved cloth durability.



KD 26

Service platforms model KD 26 are especially designed for operation of belt filter presses KD 10 and KD 11 with or without belt pre-dewatering unit model KD 07. The platform which is manufactured from aluminium is easily moveable and furthermore allows easy and safe access during operation and service.



KD 28

Static Mixers model KD 28 ensure a good admixture of polymer to the sludge. The mixer is placed on the sludge inlet pipe according to requirements.



KD 29

Flocculators KD 29 are used primarily in connection with sludge which is difficult to dewater. The flocculator ensures mechanical mixing of sludge and polymer and the necessary response time between polymer and sludge. A flocculator can typically reduce polymer consumption by 5-15%.



KD 37

The KD 37 is a highly technological mixing, dosing and feed unit for powder polymers.



KD 38

The KD 38 is a simple yet efficient mixing and feed unit for liquid polymers. The KD 38 is designed for wall mounting.



Suspended solids

The image shows the test run of a high pressure belt filter press.

The sludge being processed here is wash water from a food industry plant. As the image clearly shows the suspended solids percentage can be quite high - in this particular example 45%.

