



Belt Press KD 11



Danish Wastewater
Equipment

Belt Press Model KD 11

The belt presses models KD 11-1200 / -1600 constitute a new generation of high-pressure presses constructed and produced by KD Maskinfabrik A/S. The presses are high-technology quality products designed for achieving a dry matter content as high as possible, even in sludge which is difficult to dewater.

The belt presses have been developed in a close cooperation between our engineers and municipal works managers. Thus, great importance has been attached to designing a reliable press featuring easy-to-operate and easy-to-clean properties.



Construction

KD Maskinfabrik A/S belt press model KD 11 is constructed on a carrying base with a hot-dip-galvanised steel frame. 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.

The press rollers are made of stainless steel. This applies to all components in direct contact with sludge or water.

All bearings are external standard bearings of the make SKF ensuring easy inspection and serviceability. All bearing housings are painted leading to a corrosion resistance corresponding to hot-dip-galvanised steel.

Tightening and control of the belts

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

Belt control is usually performed by a PLC and all operations are shown on a display. This also applies to alarms or errors, if any.

The pneumatic unit and the switchboard are completely separated from the wet part of the belt press and may be operated directly from the floor (no landing, etc.).

The belt press is completely enclosed with rustproof doors equipped with inspection windows. Thus, ventilation may be supplied 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 highly efficient belt pre-dewatering unit of the same high standard design as the belt press. The belt speed may be adjusted by means of a frequency-controlled gear motor. All monitoring functions may be integrated in the control cabinet of the belt press.

The pre-dewatering unit is typically fitted where the dry matter content of the sludge is below 2%.

If you would like further information on the pre-dewatering unit, for instance capacities, do not hesitate to contact us.

The low pressure/mean pressure zone

When the sludge has passed the gravitation zone, it is pressed between the two belts. The belt/sludge is led around three big rollers with diameters of 600 mm, 400 mm and 273 mm respectively. The roller with a diameter of 600 mm is perforated allowing dewatering on both sides of the belts.

The high-pressure zone

When the belt / 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 one roller with a diameter of 170 mm, and two rollers with diameters of 140 mm. All these rollers are placed so that the water, which drains through the belt, is gravitated away from the belt. This ensures that the sludge achieves a content of dry matter which is as high as possible.

Belt cleaning

When the sludge has been removed, the belt is led through a flushing device where flushing nozzles ensure that the belt is cleaned.

As an extra fitting, it is possible to have a high-pressure flushing device, model KD 20, fitted. 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 / servicing

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

For that purpose, the press has been equipped with external bearings which are all standard SKF bearings. Bearings, chain, as well as sprocket wheels may be fitted with an automatic lubrication device model SKF 24H ensuring that the press may operate up to one year without further lubrication. The gears have been supplied with synthetic oil also ensuring operation for up to four 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 less than five minutes without use of tools.

Scrapers may be tipped, thus facilitating cleaning / inspection.

Safety

The belts 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 operation.

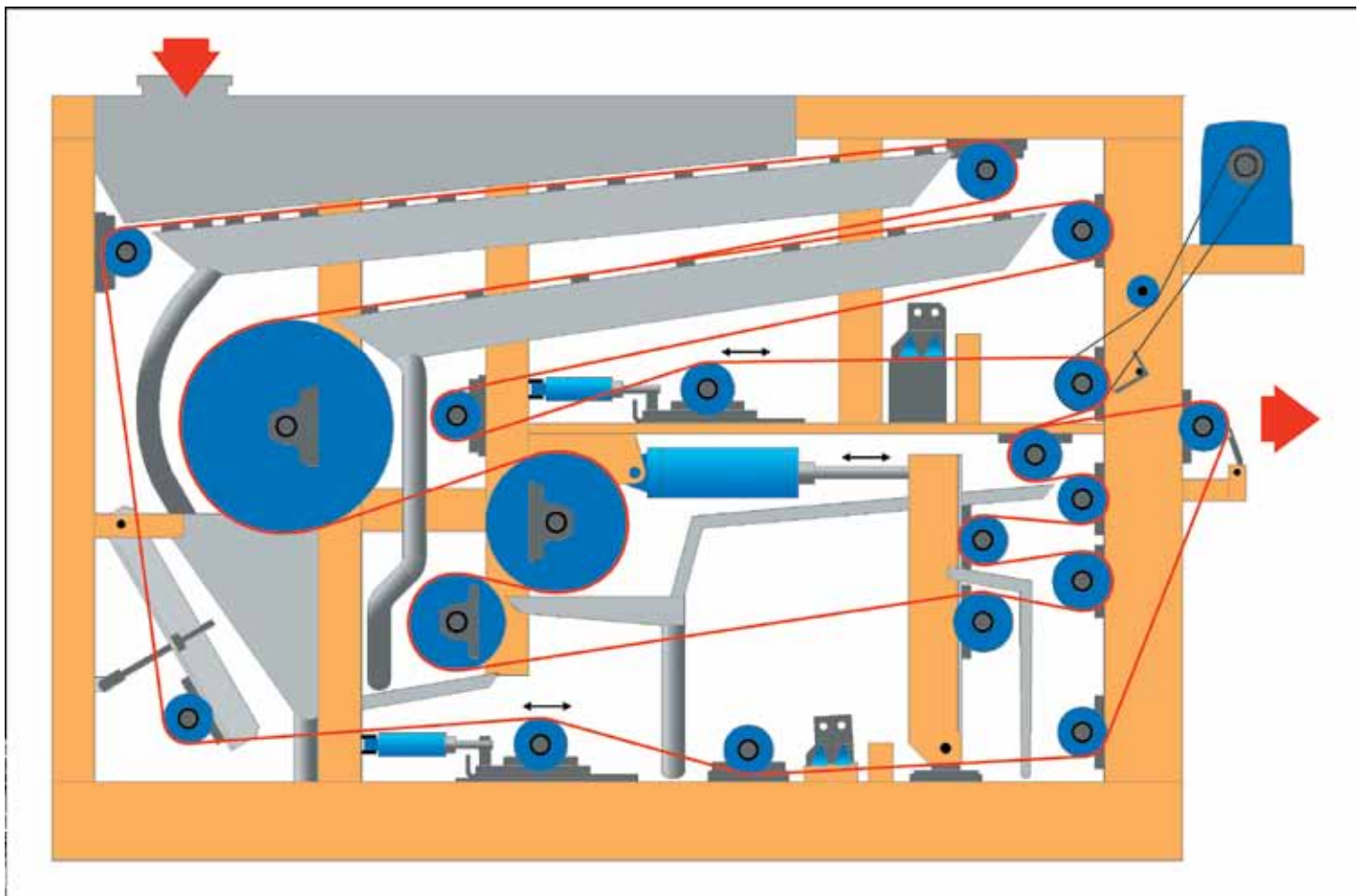
The working environment

The belt press meets the requirements of the Danish Environment Service for safety at work. The belt press has also achieved 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:

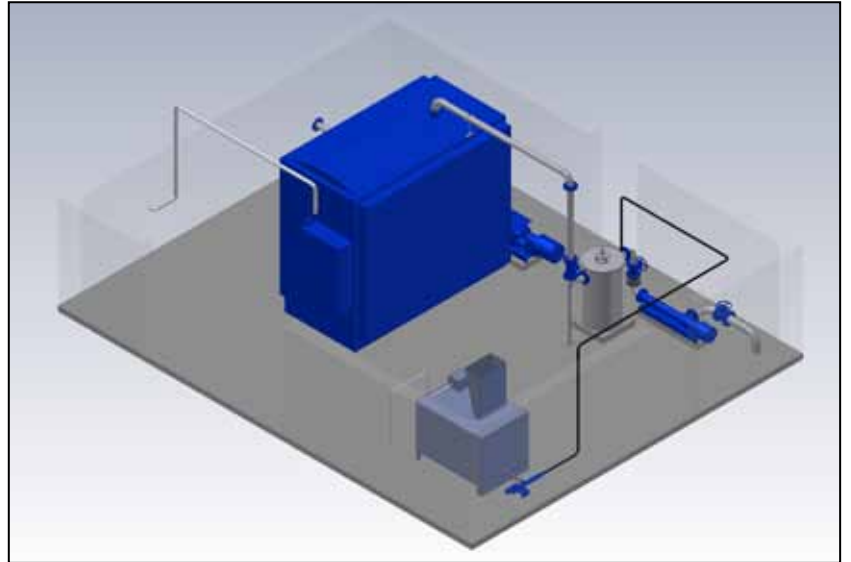


Belt filter press:

- + 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)



3D Layout - Laos Brewery WWTP

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!



KD 10-2000 under production



2 x KD 10-1500 - Brest WWTP

Dewatering capacities	KD 11-1200	KD 11-1600
Aerobic activated sludge:		
Dry matter	2 – 4 %	2 – 4 %
Sludge load	200 – 300 kg/h	250 – 400 kg/h
Dry matter in filter cake	16 – 22 %	16 – 22 %
Digested primary sludge:		
Dry matter	4 – 6 %	4 – 6 %
Sludge load	350 – 500 kg/h	450 – 650 kg/h
Dry matter in filter cake	30 - 36 %	30 – 36 %
Capacity	8 – 12 m ³ /h	10 – 16 m ³ /h
Capacity with KD 07 Pre-dewatering unit		
Inlet dry matter (pre-dewatering unit)		
0.5 – 1 %	50 m ³ /h	65 m ³ /h
1 – 2 %	30 m ³ /h	45 m ³ /h
Connections and dimensions		
KD 11-1200		
KD 11-1600		
Voltage	3 x 400 V 50Hz	3 x 400 V 50 Hz
Power	2.2 kW (only belt press)	2.2 kW (only belt press)
Flushing water	6.0 m ³ /h at 6 bar	7.5 m ³ /h at 6 bar
Reject water	Min. dia. 150 mm	Min. dia. 200 mm
Sludge in	DN80	DN100
Flushing water	DN50	DN50
Ventilation	Dia. 200 mm	Dia. 200 mm
Outer dimensions (w x l x h)	1745 x 3835 x 2250 mm	2145 x 3835 x 2250 mm
Weight	2,500 kg	3,000 kg
Dewatering lengths		
KD 11-1200		
KD 11-1600		
Gravitation 1	2.25 m	2.25 m
Gravitation 2	2.0 m	2.0 m
Mean zine press lenght (3 rollers)	2.25 m	2.25 m
High-pressure press length (4 rollers)	1.0 m	1.0 m
Effective belt width	1.15 m	1.45 m
Effective belt length	11.2 m	11.2 m
Component description		
Belts	Tamfelt	
Bearing housings	SKF	
Bearings	SKF	
Gear	Nord Gear	
Motor	Nord	
Cylinders belt tightening	Norgren Martonair	
Cylinders belt guide	Norgren Martonair	
Air supply	Customer delivery	
Wear guides	PEHD 1000	
Weatherstrips	PUR	
Control board	Demex	
PLC	Siemens	
Frequency control	Nord	
Surface treatment		
Black steel	Hot-galvanised	
Stainless steel	Totally pickled (dipped)	
Gear / cylinders	Corrosion class 3, colour RAL 5010	
Bearings	DELTA-treated, colour RAL 5010	



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%.

