



## Belt Press KD 10



Danish Wastewater  
Equipment

# Belt Press KD 10

*The belt press models KD 10-1500 / - 2500 constitute a new generation of high-pressure belt filter presses constructed and produced by Danish Wastewater Equipment 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-clean properties.*



## Construction

Danish Wastewater Equipment A/S Belt Press Model KD 10 is constructed on a carrying base with a hot-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 model SKF ensuring easy inspection and serviceability. All bearing housings have undergone epoxy surface treatment leading to a corrosion resistance corresponding to hot-galvanised steel.

Tightening and guide control of the belts take place automatically by means of hydraulics, and the belt features stepless speed control by means of frequency control. Belt control is by standard performed by a PLC and all operations are shown on a display. This also applies to alarms or errors, if any.

The hydraulic station and the control unit are completely separated from the wet part of the 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 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 motor. All monitoring functions may be integrated in the control cabinet of the belt press.

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

If you would like further information on the pre-dewatering unit, model KD 07, for instance capacity, you are very welcome to contact us.

### The low-/ mean pressure zone

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

### 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 nine rollers with diameters of 168 mm.

All of these rollers are placed in a way to let the water, which drains through the belts, gravitate away from the belts.

This ensures that the sludge achieves the highest possible dry matter content.

### Belt cleaning.

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

As an extra feature, 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 without risk of noxious vapours for the personnel.

### Maintenance/servicing.

One of the basic elements has been to construct a belt press featuring easy 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 gear drive has been supplied with synthetic oil ensuring operation for 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 minutes without any 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 operation.

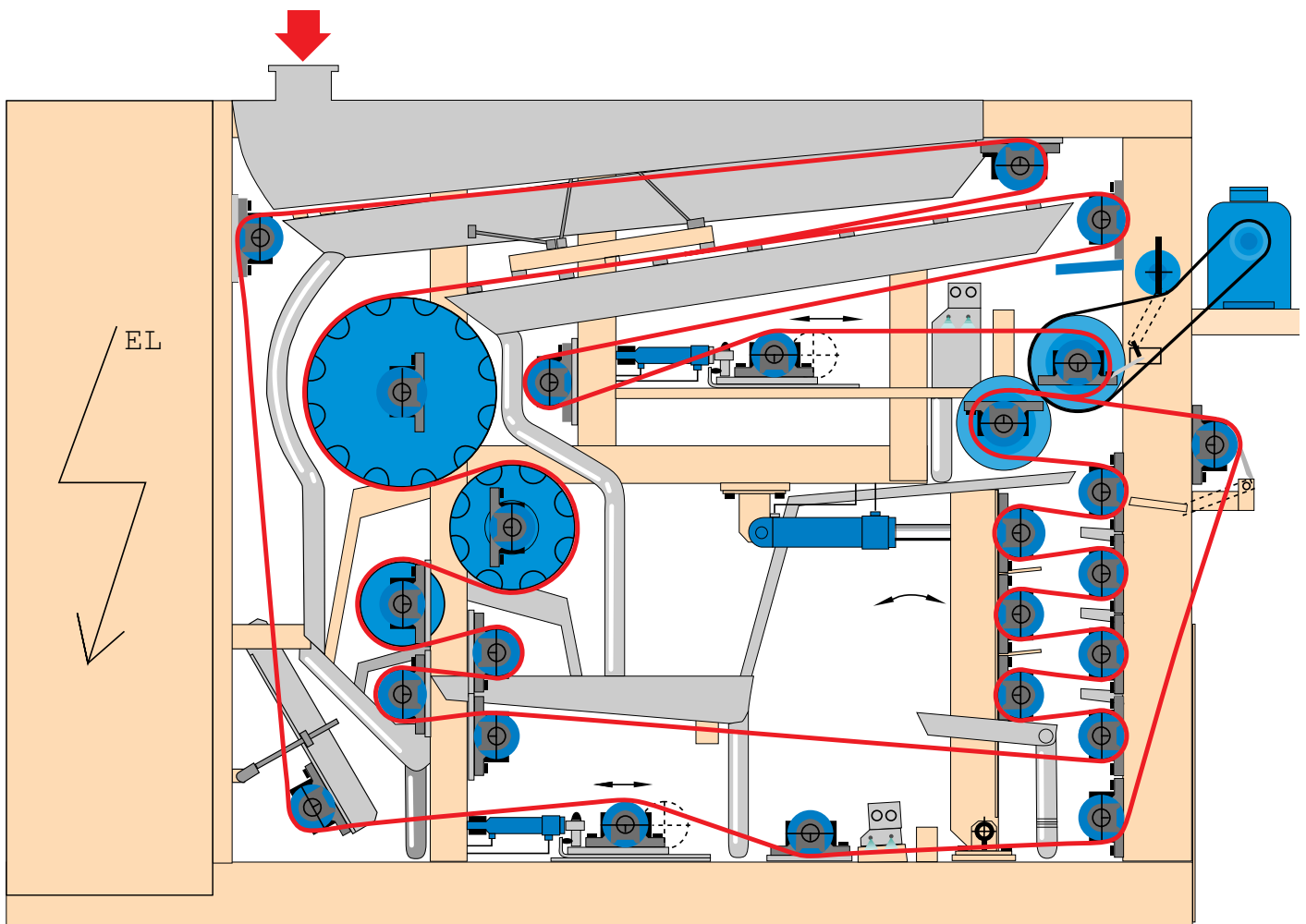
### The working environment.

The belt press meets the requirements of the danish working 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)

#### Chamber filter press:

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

#### One single supplier

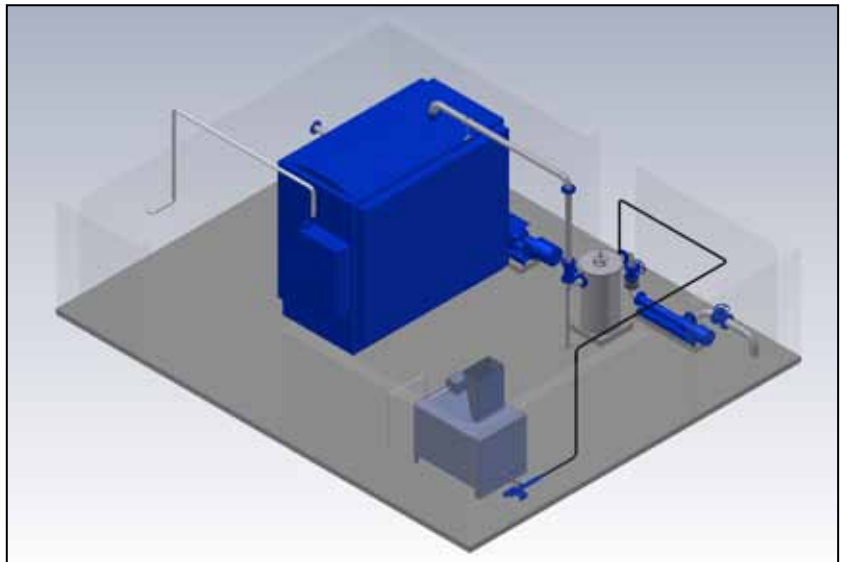
Using Danish Wastewater Equipment as your supplier will provide you with obvious advantages. DWE is able to perform design and planning, manufacturing, servicing as well as running-in of the complete plant.

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!



<b>Dewatering capacities</b>	<b>KD 10 - 1500</b>	<b>KD 10 - 2000</b>	<b>KD 10 - 2500</b>
<b>Aerobic activated sludge</b>			
Dry matter	2 – 4 %	2 – 4 %	2 – 4 %
Sludge load	300 – 500 kg/h	500 – 700 kg/h	700 – 900 kg/h
Dry matter in filter cake	18 – 26 %	18 – 26 %	18 – 26 %
Digested primary sludge:			
Dry matter	4 – 6 %	4 – 6 %	4 – 6
Sludge load	600 – 750 kg/h	850 – 1000 kg/h	1000 – 1200 kg/h
Dry matter in filter cake	32 – 38 %	32 – 38 %	32 – 38 %
Capacity	13 – 19 m <sup>3</sup> /h	17 – 25 m <sup>3</sup> /h	21 – 31 m <sup>3</sup> /h
<b>Capacity with KD 07 pre-dewatering unit</b>			
<b>Inlet dry matter:</b>			
0.5 – 1 %	60 m <sup>3</sup> /h	75 m <sup>3</sup> /h	90 m <sup>3</sup> /h
1 – 2 %	40 m <sup>3</sup> /h	50 m <sup>3</sup> /h	60 m <sup>3</sup> /h
<b>Connections and dimensions</b>			
Voltage	3 x 400 V 50 hz	3 x 400 V 50 hz	3 x 400 V 50 hz
Power	5.5 kW (press only)	5.5 kW (press only)	5.5 kW (press only)
Flushing water	7.5 m <sup>3</sup> /h (6 bar)	10 m <sup>3</sup> /h (6 bar)	12.5 m <sup>3</sup> /h (6 bar)
Reject water	Min. dia. 210 mm	Min. dia. 260 mm	Min. dia. 310 mm
Sludge in	DN 80	DN 100	DN 100
Flushing water	DN 50	DN 50	DN 50
Ventilation	Dia. 200 mm	Dia. 200 mm	Dia. 200 mm
Outer dimensions (w x l x h)	2045 x 4130 x 2650	2545 x 4130 x 2650	3045 x 4130 x 2650
Weight (approx.)	6,000 kg	7,500 kg	9,000 kg
<b>Dewatering lenght</b>			
Gravitation 1	2,300 mm	2,300 mm	2,300 mm
Gravitation 2	2,200 mm	2,200 mm	2,200 mm
Mean zone press length (3 rollers)	2,200 mm	2,200 mm	2,200 mm
High – pressure press length ( 9 rollers)	1,950 mm	1,950 mm	1,950 mm
Effective belt width	1,350 mm	1,850 mm	2,350 mm
Effective belt length	15,400 mm	15,400 mm	15,400 mm
<b>Component description</b>			
Belts	Tamfelt		
Bearings	SKF		
Bearing housings	SKF		
Gear drive	NORDGEAR		
Motor	NORD		
Cylinders belt tightening	LJM		
Cylinders belt control	LJM		
Hydraulic station	AVN		
Wear guides	PEHD 1000		
Weatherstrips	PUR		
Control board	DEMEX		
PLC	SIEMENS		
Frequency control	NORDAC		
<b>Surface treatment</b>			
Carbon steel	Hot-dip-galvanised		
Stainless steel	Dip- pickled		
Gear / cylinders	Paint corrosion class 3, color RAL 5010		
Bearings	epoxy surface treatment , color 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%.

