

BELT FILTER PRESS



MODERN EQUIPMENT FOR WATER TREATMENT TECHNOLOGIES





APPLICATION

Ecopolymer belt filter presses (EBP) provide the premium process for continuously converting slurry (sludge) into a moist cake. The sludge is processed in three distinct stages: flocculation, gravity drainage, compression and shear. EBP is result of years of work experience in dewatering of different types of sludge and the latest world developments. EBP design is based on kinematic scheme at vertical positioning of press rolls and shafts.





COMPONENTS



Stainless steel pallet is located under whole area of press. This solution excludes the need for concrete baths and reduces the cost of construction and installation work.



Stainless steel flocculator with speed control mechanical mixer. This technical decision aids for better mixing of sludge with and reduce polymer consumption.



Automatic blade feeder with turners in gravity drainage area allow distribute sludge evenly over all width of belt regardless of the viscosity of sludge and improve the outflow of the filtrate.



Control cabinet with special touch panel. Control of belt press work can provide with operational tablet PC, or SCADA system. Any additional equipment can be easy connected.

PROCESS DESCRIPTION

Sludge dosing pump 10 continuously fed sludge into flocculator 4. At the same time, flocculant dosing pump 3 fed polymer from preparation station 2 to flocculator 4.

From flocculator 4 mixed liquor of sludge and polymer going to belt of filter press 1 (gravity drainage area). Evenly distribution of sludge over all width of belt provided by automatic blade feeder with turners. After the gravity drainage area, sludge enters to the wedge area and pressing area, where dewatering of sludge is passes. Efficiency increase of sludge dewatering achieve by special device – additional pressing area, which increase pressure on sludge. The pressure can be regulated. After dewatering, cake is transported by cake removal conveyor 8 into cake storage tank 9. After full filling of tank 9, cake is loading into dump trucks etc. and is taken to the landfill.

Washing of belt is going under pressure through selfcleaning nozzles of a special design. Water for washing is supplied from special pump 6. Filtrate and water after washing are collected in a stainless steel pallet.

Control cabinet 11 provides control of dewatering process. It includes control, signaling and indication units.

TYPICAL PROCESS SCHEME OF MECHANICAL SLUDGE DEWATERING





The press shafts are located close to the vertical plan, each shaft has its own collection tray of filtrate. *This technical decision prevents filtrate going to the previous or next shaft.*



The belt positioning system includes a compressor, pneumatic cylinders, belt position sensors and an air distribution panel. *Technical solution* provides reliable trouble-free operation of equipment and increases the service life of belts.



In the rubber shafts, grooves are made of a spiral shape – provides reliable movement of belts without slipping efficient removal of filtrate.

ADVANTAGES



Additional pressing area provides for high efficiency and stable dewatering pressure. System allows achieving the required degree of sludge dewatering.





EBP available in several modifications and dimensions (each modification of EBP designed for different type of sludge and requirements for end humidity of cake):

- S: standard (without additional built-in thickening zone);
- O: standard with an additional pressing area;
- T: with an additional built-in thickening zone;
- A: with an additional pressing area and built-in thickening zone.

EBP dimensions (by width of belt): 1000, 2000 and 3000 mm. EBP dimension depends on the needed capacity. Optionally, all filter press models can be supplied completed with a filtrate and washing water collection tray. In this case, EBP is mounted on the pallet frame directly on the floor. The pallet height is in the range of 450-510 mm (depend of EBP dimension type)

All elements of EBP (frame, pallet, tray and mixer) are made of AISI 304 (321) stainless steel (optionally, AISI 316 can be used). Shafts are made of carbon steel with corrosion-resistant coating (the main dewatering and drive shafts are rubber-coated, other shafts have RILSAN[®] polyamide coating). Other elements, in contact with sludge and cake, are made of modern polymer materials.

EBP SPECIFICATIONS

Parameter		Unit	Value		
Belt width		m	1000	2000	3000
Maximum hydraulic capacity		m3/h	16	35	52
Capacity, ±20%		kg/h	350	800	1200
Initial humidity of cake	EBP models S and O	%	92 to 96		
	EBP models T and A		96 to 99		
End humidity of cake *1		%	72-80		
Power, max	EBP models S and O with compressor	kW	3,35	4,1	5,9
	EBP models T and A with compressor		3,73	4,6	6,65
	Mixer		0,75 1,1		
Protection of the control system (GOST 14254-2015)		-	IP55*2		
Climatic category (GOST 15150-69)		-	Design for cold climate (4th cat.)		
Dimensions, max width	width	mm	1800	2800	3800
	height, with pallet		2985		3045
	length		5100		
Weight, max*³	EBP models S and O with pallet	kg	3620	5700	8230
	EBP models T and A with pallet		4940	7650	11050
	Mixer			260	300

*1 - Value depends on sludge type and type of polymer applied.

*2 - Optional, IP66 is available.

*3 - Without weight of sludge, filtrate and washing water.

Sludge dewatering process line includes a number of supporting equipment. Our specialists will design complete dewatering package. Sludge dewatering line can also include separate hickener, for increased line capacity, especially for dewatering of sludge with low concentration (5-20 kg DS).

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