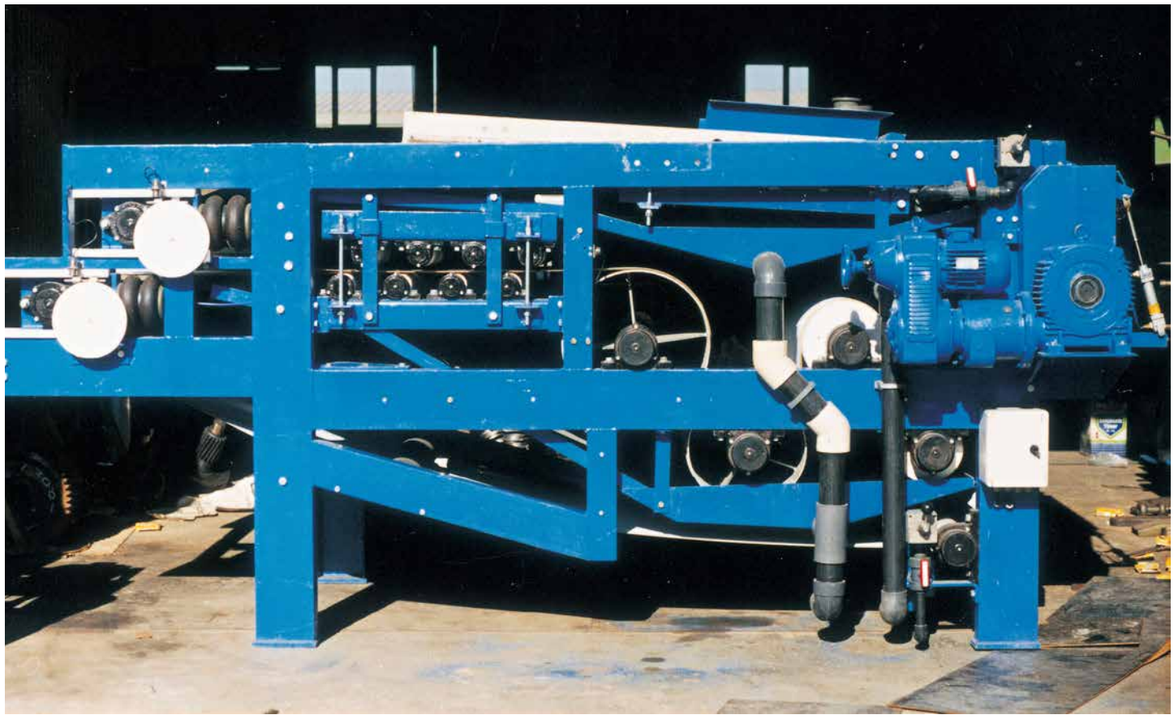
Sismat Uluslararası
Arıtma Makinaları
İnşaat Mühendislik
Sanayi ve Tic. A.Ş.

BELT PRESSES



BELT PRESSES
effective solutions for dewatering

Excess amount of water is still present in sludge thickened and it needs to be removed to have more stable and easy-to-handle sludge in less volume and to make it less expensive for transporting.

Belt presses are the equipment working continuously and used for dewatering of sludge from municipal and industrial wastewater treatment plants as well as water treatment plants in medium and large sizes. They are cost-effective, efficient solutions for dealing with sludge flows in large scales. Main working logic is based on filtering the water by pressing the sludge between belts and drums.

One of the most important points to obtain maximum efficiency from belt presses is the selection of best-fit equipment. Sismat Uluslararası offers the best solution according to the customers' demands. The capacity and performance of belt presses can be defined with regard to the criteria below:

- Belt width
- Pressure applied
- Number of drums
- Pre-dewatering section height

Sismat Uluslararası Belt Presses are mainly made up of pre-dewatering part, cake thickness adjustment part (in MBP and HBP series only), low-pressure dewatering part, high-pressure dewatering part, belt washing part, and cake transportation part.

- **Pre-dewatering part** is where the flocculated sludge leaves a considerable portion of its water content by gravity.

- **Cake thickness adjustment part** (in MBP and HBP series only) is where the cake thickness is adjusted prior to pressing to allow it to spread homogeneously in the pressure zone without overflowing between drums.

- **Low-pressure dewatering** part is where a low level pressure is applied to sludge by large diameter, perforated drums for a long period.

- **High-pressure dewatering part** is where the drum diameters decrease gradually as the discharge section is approached, thus applying higher pressure for shorter periods to the sludge and reducing its water content.

- **Belt washing part** is where an automatic self-cleaning process that increases efficiency, takes place by using the nozzles. The cleaning of automatic self-cleaning nozzles can be started by an operator at determined time intervals, or by additional time control automation.

- **Cake transportation part** is where the cake can be transported by using containers or a conveyor system.

FEATURES AND BENEFITS OF SISMAT ULUSLARARASI BELT PRESSES

- Compact and reliable design
- Robust and durable construction which requires low maintenance
- Continuous dewatering process
- High solids rate obtained
- Trouble-free and noiseless operation
- Easy-to-operate and-maintain
- Long lifetime
- Adjustable belt speed provided
- Low label requirement
- Low energy consumption & High efficient system

APPLICATIONS

- Water treatment plants
- Municipal wastewater treatment plants
- Industrial wastewater treatment plants
  - Coal industry,
  - Iron and steel industries,
  - Paper mills,
  - Fruit juice industry,
  - Wine industry, etc.

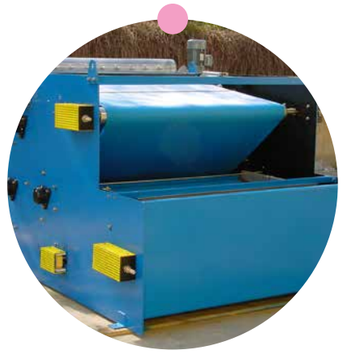
Sismat Uluslararası presents four types of belt presses as follows:

MBP SERIES

HBP SERIES

VSP SERIES

LBP SERIES



CAPACITY UTILIZATION OF SISMAT ULUSLARARASI BELT PRESSES

Beltpresses

Origin of sludge	Model	Solids Loading (kg/m/hr)	Outlet Dry Solid Content (%)
		50 75 100 150 200 250 300 350 400 450 500	10 12.5 15 17.5 20 22.5 25 27.5 30
Mixed fresh municipal sludge 50% primary 50% biological	VSP		
	LBP		
	MBP		
	HBP		
Extended aeration process sludge	VSP		
	LBP		
	MBP		
	HBP		
Digested mixed municipal sludge 50% primary 50% biological	VSP		
	LBP		
	MBP		
	HBP		
Physical-Chemical sludge	LBP		
	MBP		
	HBP		

MBP SERIES OF BELT PRESSES

MBP model belt presses provided by Sismat Uluslararası are the excellent choice to make the sludge more thickened and less moist. They are used in dewatering sludge with inorganic content. Sismat Uluslararası MBP Series of Belt Presses provides high quality with an economic solution for a strong construction and robust design. The frame is manufactured with an open structure to allow easy access and intervention. It can be modified with the addition of a lid that can easily be dismantled. For increase capacity, the belt length can be extended with the addition of drums. As a result, a cake output with higher solid content can be obtained.

In MBP series of belt presses, dewatering takes place in four steps:
- Pre-dewatering operation
  (To have further information about pre-dewatering process, please see Pre-dewatering Belts brochure.)
- Cake thickness adjustment and preparation for pressing
- Low-pressure operation
- High-pressure operation

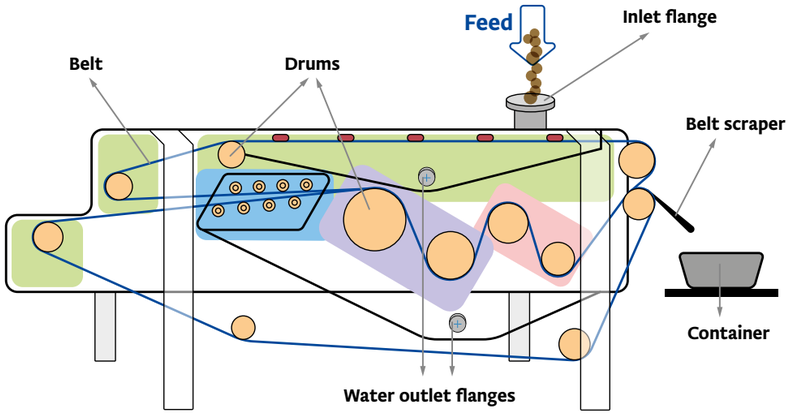
Sismat Uluslararası MBP Series of Belt Presses are mainly made up of drums, belt, trays, nozzles and drive unit.

OUR MBP SERIES OF BELT PRESSES SPECIFICATIONS

Specifications					
Model	**MBP10**	**MBP15**	**MBP20**	**MBP25**	**MBP30**
Belt width	1000 mm	1500 mm	2000 mm	2500 mm	3000 mm
Length	4020 mm				
Width	1800 mm	2300 mm	2800 mm	3300 mm	3800 mm
Height	1900 mm				
Motor power	1.1 kW	1.5 kW	2.2 kW		
Belt speed	1 m/min - 4 m/min				
Wash water requirement	7 m^3/hr	11 m^3/hr	14 m^3/hr	18 m^3/hr	21 m^3/hr
	6 bar				
Air requirement	100 L/min				
	8 bar				
Belt tension	Pneumatic				
Belt alignment	Pneumatic				
Sludge scraping	Pneumatic				
Belt protection	with Proximity Limit Sensor				
Washing nozzles	Self-cleaning				
Number of cake thickness adjustment drums	8				
Number of perforated drums	2				
Number of press drums	2				

WORKING PRINCIPLE

Sismat Uluslararası MBP Series of Belt Presses are mainly composed of pre-dewatering zone, cake thickness adjustment and preparation for pressing zone, low-pressure operation zone and high- pressure operation zone. In this type of belt press, the sludge to be dewatered is fed to the pre-dewatering zone where the solid-liquid separation is achieved with the help of gravity. The pre-dewatered sludge passes through the cake thickness adjustment zone to be prepared for the pressing zones. After that process, the sludge is pressed between the belts tensioned and a series of drums which their sizes are gradually decreased to have an efficient dewatering process. During the operation, excess amount of water is collected on the trays and sent from the system through the water outlet pipes. The dewatered sludge cake is discharged into a container or conveyor by means of a scraper. In MBP series, a pneumatic mechanism is used for belt tension, belt alignment and sludge scraping.



Pre-dewatering stage

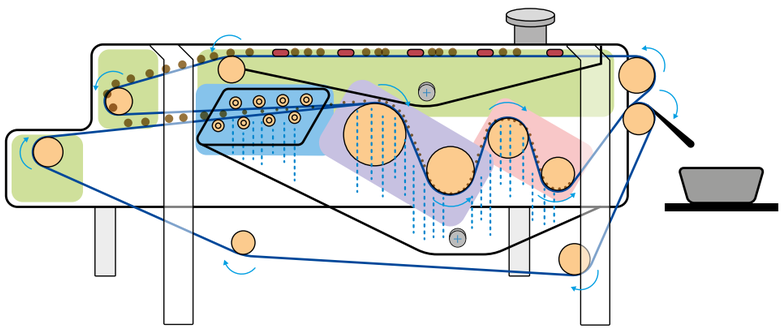
Cake thickness adjustment stage

Low-pressure stage

High-pressure stage

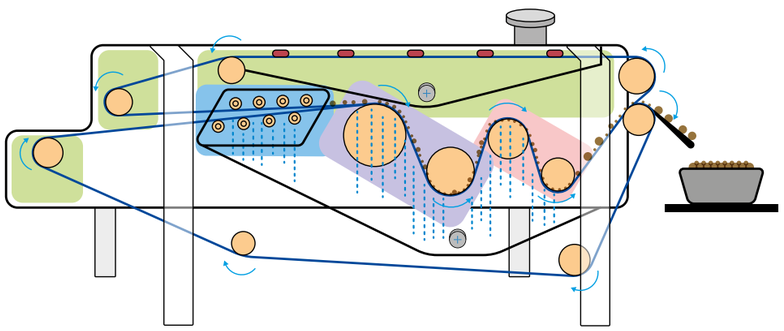
1

Sludge is fed to the pre-dewatering zone firstly.



2

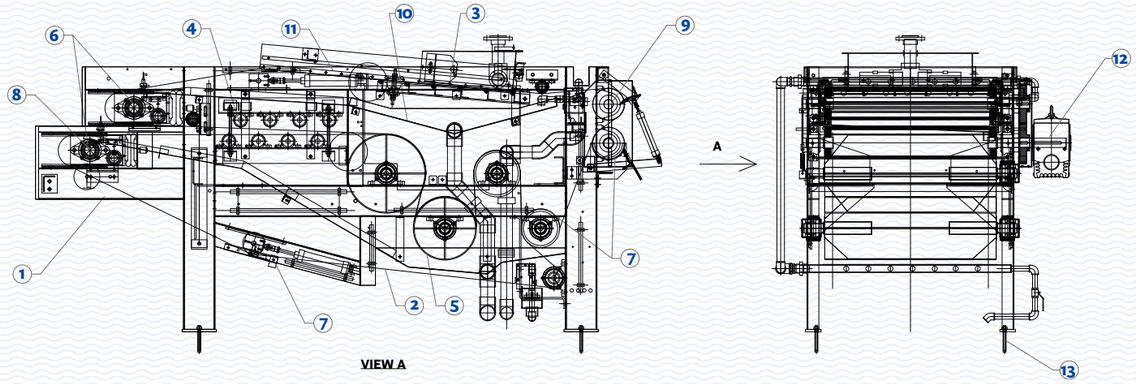
After pre-dewatering process, the sludge passes through the cake thickness adjustment zone, and then it is pressed between the belts tensioned and series of drums.



3

At the end, the sludge cake obtained is discharged from the system into a container or conveyor with the help of a scraper.

Typical MBP Series Of Belt Presses & Components



Typical drawings are for information only.

OUR MBP SERIES OF BELT PRESSES COMPONENTS

	MBP Series of Belt Presses Components	Materials Available
1	Frame	Carbon steel or stainless steel grade, AISI304, AISI304L, AISI316, AISI316L, AISI316Ti, DUPLEX or SUPER DUPLEX
2	Belt	Polyethylene, Polyether sulfone, Polypropylene, Polyester
3	Cake thickness adjustment drums	Rilsan thermoplastic coated carbon steel
4	Press drums	Rilsan thermoplastic coated carbon steel
5	Perforated drums	Carbon steel or stainless steel grade, AISI304, AISI304L, AISI316, AISI316L, AISI316Ti, DUPLEX or SUPER DUPLEX
6	Tension drums	Rilsan thermoplastic coated carbon steel
7	Belt alignment drums	Rubber coated carbon steel
8	Guide drums	Rilsan thermoplastic coated carbon steel
9	Drive drums	Rubber coated carbon steel
10	Tray	Carbon steel or stainless steel grade, AISI304, AISI304L, AISI316, AISI316L, AISI316Ti, DUPLEX or SUPER DUPLEX
11	Nozzles	AISI304, AISI316
12	Drive unit	-according to norm of manufacturer
13	Fasteners	8.8, A2, A4

HBP SERIES OF BELT PRESSES

HBP model belt presses provided by Sismat Uluslararası are the good options for dewatering the sludge and reducing its volume. They are utilized in dewatering of sludge from large scale biological and chemical wastewater treatment plants. They yield a cake with a solid content 3-6% higher than the cakes obtained from the other belt press series. They are highly preferred especially in cases where the solid content of the output cake will be increased by the addition of lime, as they lower lime consumption. Sismat Uluslararası HBP Series of Belt Presses offers a robust and durable design to achieve well-dewatered sludge. A perforated plate with an adjustable inclination angle helps to adjust cake thickness in preparation for pressing. The belt length can be extended with the addition of drums for increasing the capacity. In these models, a cake output with higher solid content can be obtained. If required, the openings on the sides of the belt press frame can be closed with the addition of standard units. The pillow blocks utilized in the pre-dewatering section ensure the continuous mixing of the sludge leading to the easy release of its free water.

In HBP series of belt presses, dewatering takes place in four steps:
- Pre-dewatering operation
  (To have further information about pre-dewatering process, please see Pre-dewatering Belts brochure.)
- Cake thickness adjustment and preparation for pressing
- Low-pressure operation
- High-pressure operation

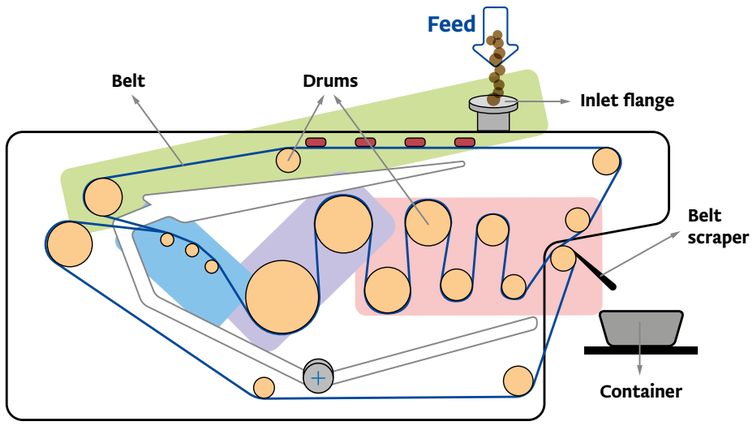
Sismat Uluslararası HBP Series of Belt Presses are mainly made up of drums, belt, trays, nozzles and drive unit.

OUR HBP SERIES OF BELT PRESSES SPECIFICATIONS

Specifications				
Model	**HBP10**	**HBP15**	**HBP20**	**HBP25**
Belt width	1000 mm	1500 mm	2000 mm	2500 mm
Length	4020 mm			
Width	1900 mm	2400 mm	2900 mm	3400 mm
Height	1920 mm			
Motor power	3 kW			
Belt speed	1.8 m/min - 5.6 m/min			
Wash water requirement	7 m^3/hr	11 m^3/hr	14 m^3/hr	18 m^3/hr
	6 bar			
Air requirement	125 L/min			
	10 bar			
Belt tension	Pneumatic			
Belt alignment	Pneumatic			
Sludge scraping	Pneumatic			
Belt protection	with Proximity Limit Sensor			
Washing nozzles	Self-cleaning			
Number of perforated drums	2			
Number of press drums	5			

WORKING PRINCIPLE

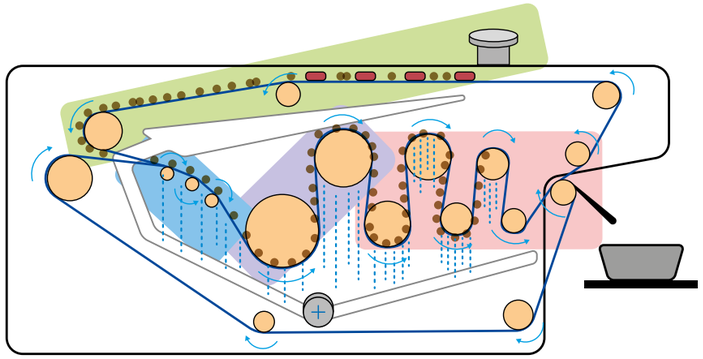
Sismat Uluslararası HBP Series of Belt Presses are mainly composed of pre-dewatering zone, cake thickness adjustment and preparation for pressing zone, low-pressure operation zone and high-pressure operation zone. In this type of belt press, the sludge to be dewatered is fed to the pre-dewatering zone where the solid-liquid separation is achieved with the help of gravity. The pre-dewatered sludge passes through the cake thickness adjustment zone to be prepared for the pressing zones. After that process, the sludge is pressed between the belts tensioned and a series of drums which their sizes are gradually decreased to have an efficient dewatering process. During the operation, excess amount of water is collected on the trays and sent from the system through the water outlet pipes. The dewatered sludge cake is discharged into a container or conveyor by means of a scraper.
In HBP series, a pneumatic mechanism is used for belt tension, belt alignment and sludge scraping.



Pre-dewatering stage
Cake thickness adjustment stage
Low-pressure stage
High-pressure stage

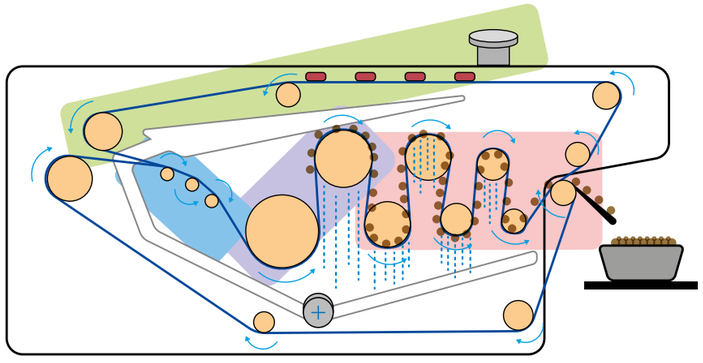
1

Sludge is fed to the pre-dewatering zone firstly.



2

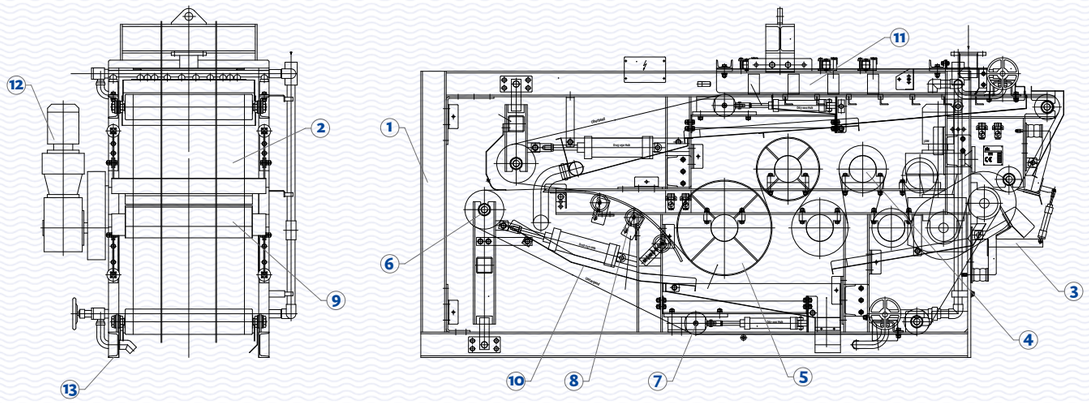
After pre-dewatering process, the sludge passes through the cake thickness adjustment zone, and then it is pressed between the belts tensioned and series of drums.



3

At the end, the sludge cake obtained is discharged from the system into a container or conveyor with the help of a scraper.

Typical HBP Series Of Belt Presses & Components



Typical drawings are for information only.

OUR HBP SERIES OF BELT PRESSES COMPONENTS

	HBP Series of Belt Presses Components	Materials Available
1	Frame	Carbon steel or stainless steel grade, AISI304, AISI304L, AISI316, AISI316L, AISI316Ti, DUPLEX or SUPER DUPLEX
2	Belt	Polyethylene, Polyether sulfone, Polypropylene, Polyester
3	Cake thickness adjustment drums	Rilsan thermoplastic coated carbon steel
4	Press drums	Rilsan thermoplastic coated carbon steel
5	Perforated drums	Carbon steel or stainless steel grade, AISI304, AISI304L, AISI316, AISI316L, AISI316Ti, DUPLEX or SUPER DUPLEX
6	Tension drums	Rilsan thermoplastic coated carbon steel
7	Belt alignment drums	Rubber coated carbon steel
8	Guide drums	Rilsan thermoplastic coated carbon steel
9	Drive drums	Rubber coated carbon steel
10	Tray	Carbon steel or stainless steel grade, AISI304, AISI304L, AISI316, AISI316L, AISI316Ti, DUPLEX or SUPER DUPLEX
11	Nozzles	AISI304, AISI316
12	Drive unit	-according to norm of manufacturer
13	Fasteners	8.8, A2, A4

LBP SERIES OF BELT PRESSES

LBP model belt presses provided by Sismat Uluslararası are the qualified equipment preferred for dewatering of sludge.
They are utilized in biological and chemical wastewater treatment plants.
The equipment structure with closure prevents the splatter of sludge and filtrate water as well as ensuring operational security.
Sismat Uluslararası LBP Series of Belt Presses are the economic solutions for low energy consumption and high solid-liquid separation efficiency. They have long lifetime and require low maintenance.

In LBP series of belt presses, dewatering takes place in three steps:
- Pre-dewatering operation
  (To have further information about pre-dewatering process, please see Pre-dewatering Belts brochure.)
- Low-pressure operation
- High-pressure operation

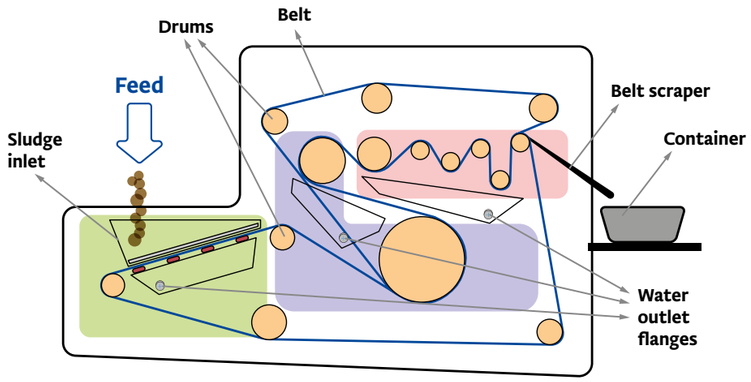
Sismat Uluslararası LBP Series of Belt Presses are mainly made up of drums, belt, trays, nozzles and drive unit.

OUR LBP SERIES OF BELT PRESSES SPECIFICATIONS

Specifications		
Model	**LBP10**	**LBP15**
Belt width	1000 mm	1500 mm
Length	2600 mm	
Width	1746 mm	2246 mm
Height	1500 mm	
Motor power	1.1 kW	1.5 kW
Belt speed	1 m/min – 3.3 m/min	1 m/min – 3.4 m/min
Wash water requirement	7 m³/hr	11 m³/hr
	6 bar	
Air requirement	100 L/min	
	8 bar	
Belt tension	Pneumatic	
Belt alignment	Pneumatic	
Sludge scraping	Pneumatic	
Belt protection	with Proximity Limit Sensor	
Washing nozzles	Self-cleaning	
Number of perforated drums	2	
Number of press drums	5	

WORKING PRINCIPLE

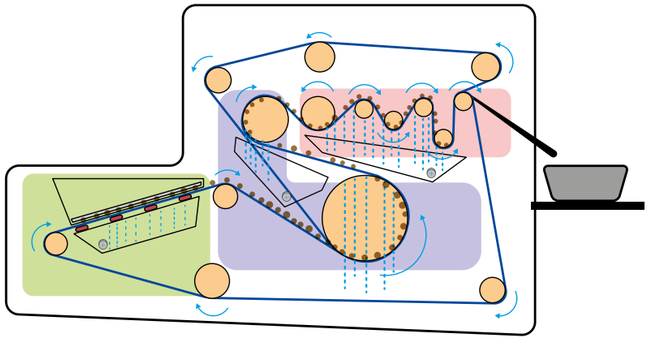
Sismat Uluslararası LBP Series of Belt Presses are mainly composed of pre-dewatering zone, low-pressure operation zone and high- pressure operation zone.
In this type of belt press, the sludge to be dewatered is fed to the pre-dewatering zone where the solid-liquid separation is achieved with the help of gravity. After that process, the pre-dewatered sludge is pressed between the belts tensioned and a series of drums which their sizes are gradually decreased to have an efficient dewatering process. During the operation, excess amount of water is collected on the trays and sent from the system through the water outlet pipes. The dewatered sludge cake is discharged into a container or conveyor by means of a scraper.
In LBP series differently from VSP series, a pneumatic mechanism is used for belt tension, belt alignment and sludge scraping.



Pre-dewatering stage
Low-pressure stage
High-pressure stage

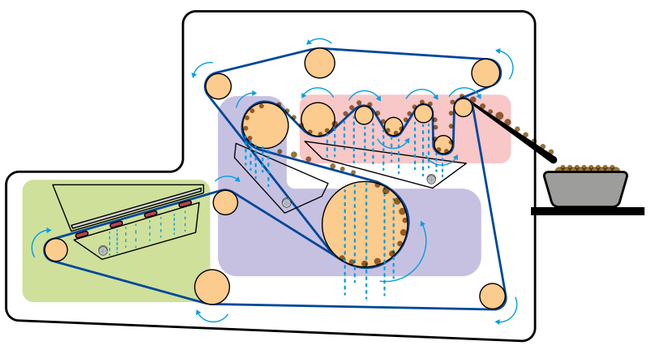
1

Sludge is fed to the pre-dewatering zone firstly.



2

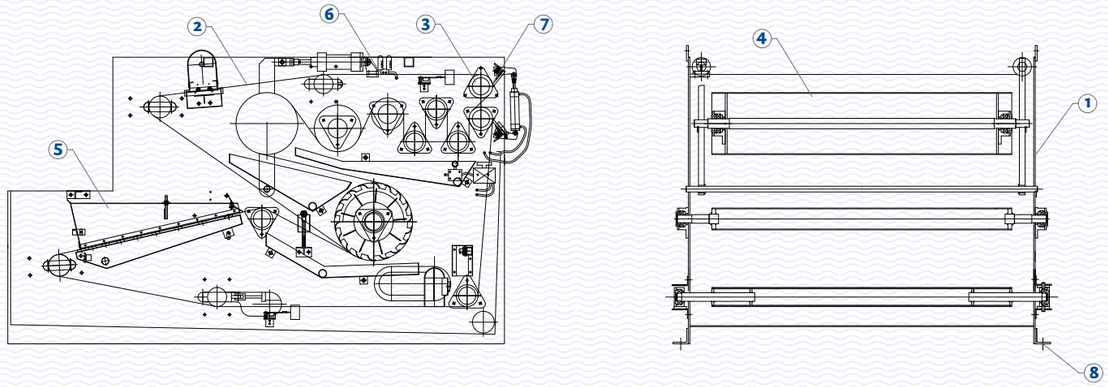
After pre-dewatering process, the sludge is pressed between the belts tensioned and series of drums.



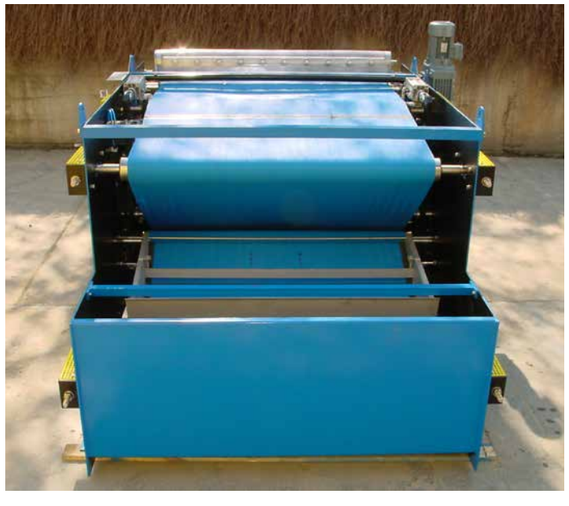
3

At the end, the sludge cake obtained is discharged from the system into a container or conveyor with the help of a scraper.

Typical LBP Series Of Belt Presses & Components



Typical drawings are for information only.



OUR LBP SERIES OF BELT PRESSES COMPONENTS

	LBP Series of Belt Presses Components	Materials Available
1	Frame	Carbon steel or stainless steel grade, AISI304, AISI304L, AISI316, AISI316L, AISI316Ti, DUPLEX or SUPER DUPLEX
2	Belt	Polyethylene, Polyether sulfone, Polypropylene, Polyester
3	Press drums	Carbon steel or stainless steel grade, AISI304, AISI316
4	Perforated drums	Carbon steel or stainless steel grade, AISI304, AISI304L, AISI316, AISI316L, AISI316Ti, DUPLEX or SUPER DUPLEX
5	Tray	Carbon steel or stainless steel grade, AISI304, AISI304L, AISI316, AISI316L, AISI316Ti, DUPLEX or SUPER DUPLEX
6	Nozzles	AISI304, AISI316
7	Drive unit	-according to norm of manufacturer
8	Fasteners	8.8, A2, A4

VSP SERIES OF BELT PRESSES

VSP model belt presses provided by Sismat Uluslararası are the equipment used to reduce sludge volume. Main purpose of this equipment is to obtain sludge in low volume which is manageable and easy-to-transport.
They are generally preferred as an alternative to filter presses in small and medium scale biological wastewater treatment plants. They serve as the most economical sludge dewatering solutions. The equipment structure with closure provides a clean operation environment.
Sismat Uluslararası VSP Series of Belt Presses provides continuous operation, long lifetime, low maintenance requirement and economic solution for sludge dewatering.

In VSP series of belt presses, dewatering takes place in three steps:
- Pre-dewatering operation
  (To have further information about pre-dewatering process, please see Pre-dewatering Belts brochure.)
- Low-pressure operation
- High-pressure operation

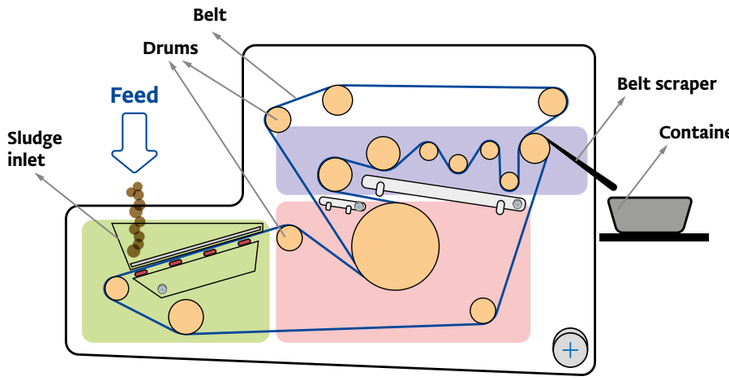
Sismat Uluslararası VSP Series of Belt Presses are mainly made up of drums, belt, trays, nozzles and drive unit.

OUR VSP SERIES OF BELT PRESSES SPECIFICATIONS

Specifications	
Model	**VSP10**
Belt width	1000 mm
Length	1500 mm
Width	1675 mm
Height	1300 mm
Motor power	0.75 kW
Belt speed	1.31 m/min -3.95 m/min
Wash water requirement	7 m^3/hr
	6 bar
Air requirement	100 L/min
	8 bar
Belt tension	Mechanic
Belt alignment	Pneumatic
Sludge scraping	Mechanic
Belt protection	with Proximity Limit Sensor
Washing nozzles	Self-cleaning
Number of perforated drums	1
Number of press drums	6

WORKING PRINCIPLE

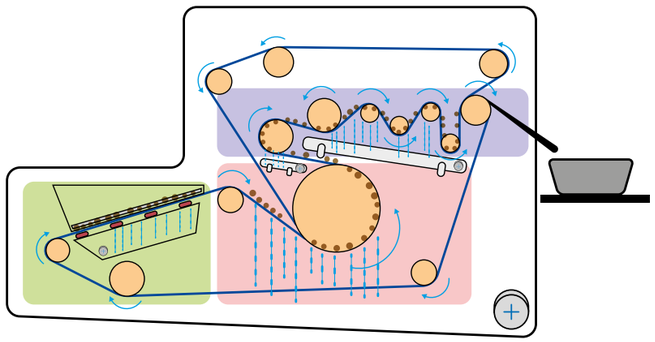
Sismat Uluslararası VSP Series of Belt Presses are mainly composed of pre-dewatering zone, low-pressure operation zone and high- pressure operation zone.
In this type of belt press, the sludge to be dewatered is fed to the pre-dewatering zone where the solid-liquid separation is achieved with the help of gravity. After that process, the pre-dewatered sludge is pressed between the belts tensioned and a series of drums which their sizes are gradually decreased to have an efficient dewatering process. During the operation, excess amount of water is collected on the trays and sent from the system through the water outlet pipes. The dewatered sludge cake is discharged into a container or conveyor by means of a scraper.
In VSP series, belt tension and sludge scraping mechanisms are mechanically operated as well as a pneumatic mechanism is used for belt alignment.



Pre-dewatering stage
Low-pressure stage
High-pressure stage

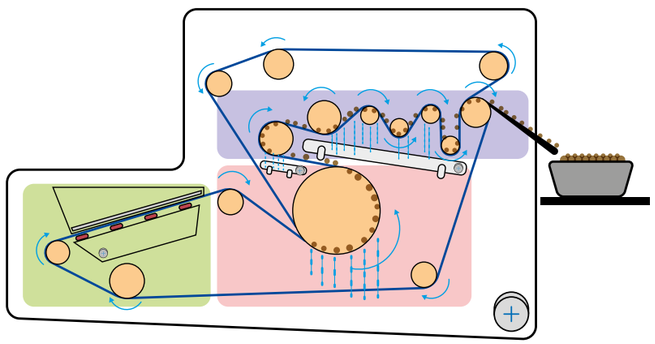
1

Sludge is fed to the pre-dewatering zone firstly.



2

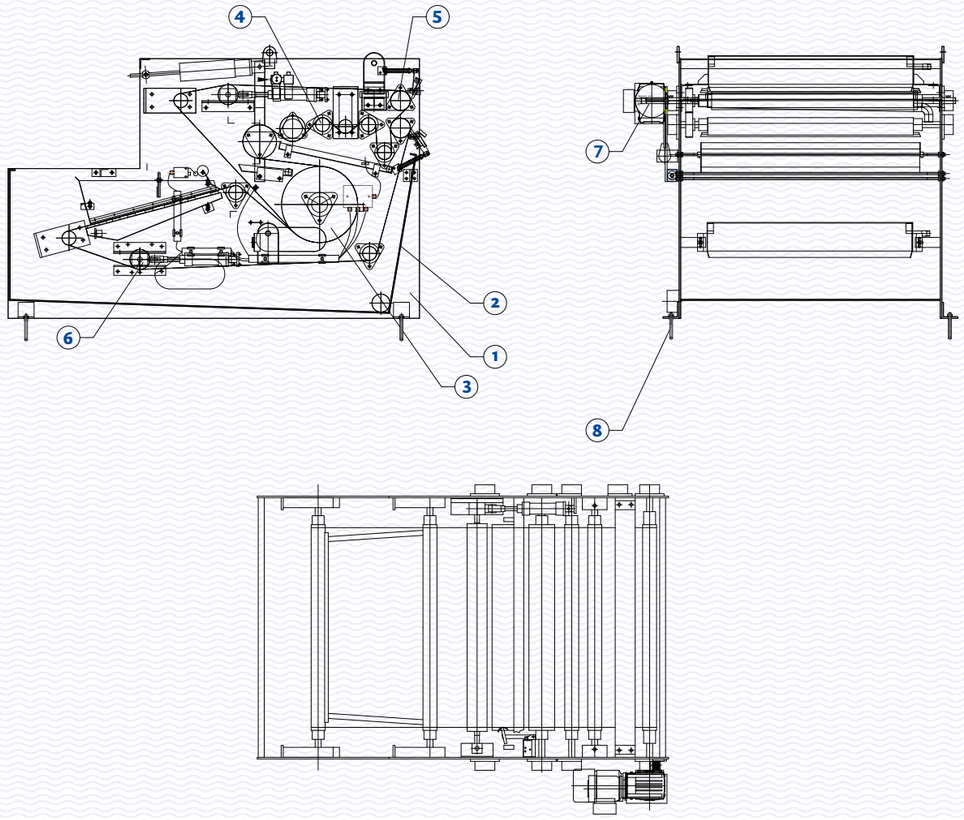
After pre-dewatering process, the sludge is pressed between the belts tensioned and series of drums.



3

At the end, the sludge cake obtained is discharged from the system into a container or conveyor with the help of a scraper.

Typical VSP Series Of Belt Presses & Components



Typical drawings are for information only.

OUR VSP SERIES OF BELT PRESSES COMPONENTS

	VSP Series of Belt Presses Components	Materials Available
1	Frame	Carbon steel or stainless steel grade, AISI304, AISI304L, AISI316, AISI316L, AISI316Ti, DUPLEX
2	Belt	Polyethylene, Polyether sulfone, Polypropylene, Polyester
3	Press drums	Carbon steel or stainless steel grade, AISI304, AISI316 Rilsan thermoplastic coated carbon steel
4	Perforated drums	Carbon steel or stainless steel grade, AISI304, AISI304L, AISI316, AISI316L, AISI316Ti, DUPLEX
5	Tray	Carbon steel or stainless steel grade, AISI304, AISI304L, AISI316, AISI316L, AISI316Ti, DUPLEX
6	Nozzles	AISI304, AISI316
7	Drive unit	-according to norm of manufacturer
8	Fasteners	8.8, A2, A4

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İnşaat Mühendislik San. ve Tic. A. Ş.
Address: Gebze Güzeller Organize Sanayi Bölgesi (GGOSB)
Fatih Sultan Mehmet Cd. 5/1 Gebze/Kocaeli/Türkiye
Telephone : +90 262 751 12 54
Fax: +90 262 751 12 56