



Manufacturer of Dewatering Systems

Model 3DP™ Belt Filter Press

www.bdpindustries.com



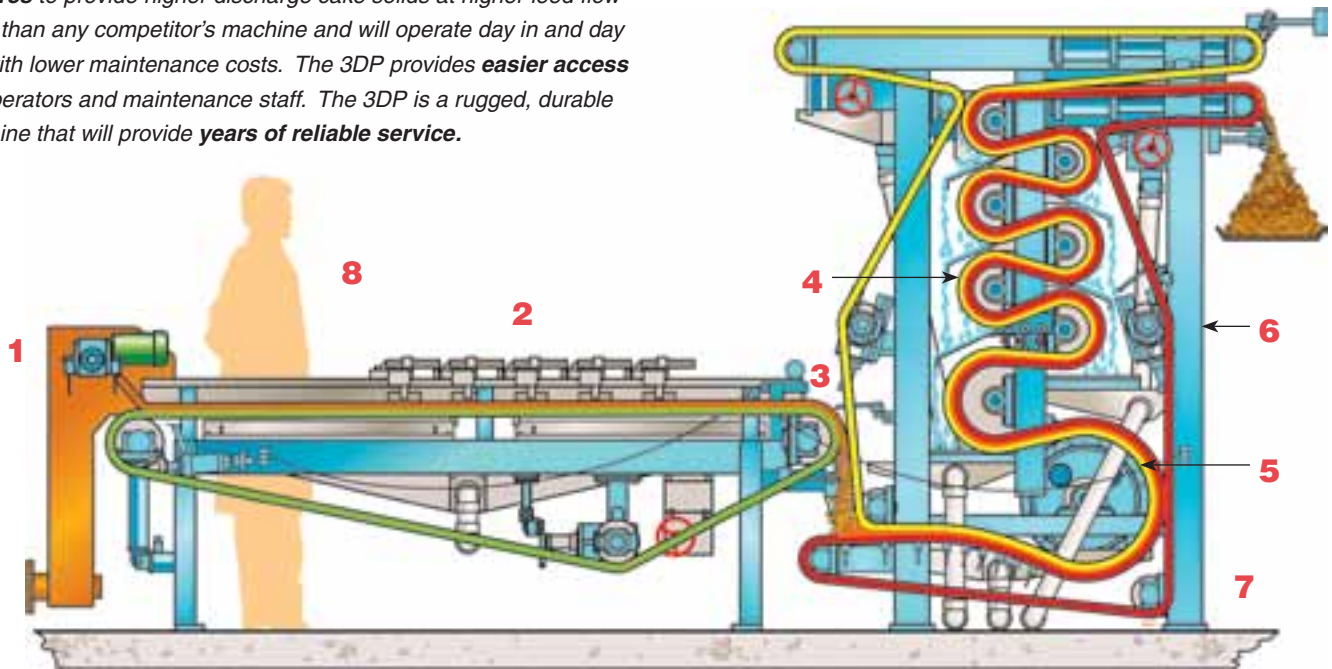
Industry Leader in Design and Manufacture of Filtration Equipment

Model 3DP Belt Filter Press

Higher Cake Solids and Feed Rate

— with LOWER Maintenance Costs.

BDP Industries' **Model 3DP Belt Press** was designed with **unique features** to provide higher discharge cake solids at higher feed flow rates than any competitor's machine and will operate day in and day out with lower maintenance costs. The 3DP provides **easier access** for operators and maintenance staff. The 3DP is a rugged, durable machine that will provide **years of reliable service**.



Design Features

- 1 Feed Distributor:** Unique, variable speed paddle wheel provides full belt-width distribution and uniform thickness .
- 2 Independent Gravity Zone:** Allows for higher production capacity as well as higher cake solids. *Available in standard lengths from 6 - 16 ft in 2 ft intervals.*
- 3 Spiral Wedge:** Applies increasing cake pressure over the entire length for effective expressing of filtrate with excellent cake retention.
- 4 Vertical Pressure Rolls:** Vertical arrangement allows for filtrate pans under each roll to keep filtrate from falling on adjacent rolls. This eliminates reabsorption of filtrate and improves discharge cake solids. Discharge height adequate for conveyor without raising press. *Up to 12 pressure rolls are available.*
- 5 Perforated Roll:** Unique design and stainless steel construction improves dewatering and structural strength of roll.
- 6 Tubular Frame Construction:** Provides superior structural strength over channel and I-beam construction. Enhanced cleanliness. Hot-dip galvanized coating inside and out affords maximum corrosion resistance. *Also available in stainless steel.*
- 7 Machined Mounting Pads:** All bearing and structural bolted connections are machined, tapped pads which are welded to frame. This enhances structural strength and corrosion resistance.
- 8 Overall Layout:** Gravity zone and controls located at operator level simplifies process optimization and eliminates costly platforms.

Unique Features and How They Work

Standard two belt technology employed by most manufacturers forces a compromise in either through-put capacity or discharge cake solid concentration, because belt speed in the two zones must be the same. Three belt technology used by BDP overcomes this limitation by allowing independent speed control in each zone.

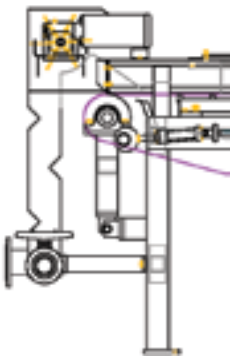
In addition significant improvements in feed distribution, wedge zone pressure gradation and effectiveness and elimination of filtrate pooling/rewetting in the pressure zone *MAXIMIZES PERFORMANCE*. The unique low profile gravity zone, tubular steel frame, machined mounting pads for bearings, and bolted connections all provide easier access for maintenance. In photo at right: notice the unique layout and lack of platforms, allowing easy access for maintenance.

The unique designs of the Gravity and Pressure Zones provide *MAXIMUM PERFORMANCE*.



3DP Belt Filter Press

Upflow Adjustable Speed Paddle Wheel Feed Box



This unique design produces extremely uniform slurry distribution. Sludge enters horizontally at floor level, then transitions to vertical in the upflow conditioning tank and spreads to

full belt width. Then the slurry overflows the vertical tank into the paddle wheel distributor weir trough. The adjustable speed paddle wheel pushes the slurry out of the weir trough onto the belt.

Pictured (at right) is 3.5% concentration anaerobically digested sludge; notice the even, full width distribution immediately upon leaving the feed distributor.



Feed box side view



Paddle wheel



Uniform slurry distribution

Model 3DP Belt Filter Press

Independent Gravity Zone

The Model 3DP improves solids loading rate and cake solids with "Independent Gravity Zone Technology".

Conventional two-belt press designs use a gravity zone and pressure zone with a common belt fabric and drive. Belt speed and belt fabric porosity selections are compromised in an attempt to suit both gravity zone thickening and pressure zone dewatering, reducing effectiveness.

BDP has solved this problem.

The 3DP "Independent Gravity Zone Technology" uses separate gravity and pressure zones. This allows "optimizing" the porosity of the belt fabric and belt speed for the gravity and pressure zones rather than being forced to make a trade-off as explained below.

By increasing belt speed through the gravity zone, a thinner cake is applied to the belt. Resistance to filtrate flow is reduced exponentially as cake thickness is reduced. More filtrate is removed, less volume is sent to the pressure zone.

Filtrate removal in the pressure zone increases as the length of time cake is under pressure increases. The independent drive and reduced volume allow the pressure zone belt speed to be reduced for optimal filtrate removal.

Result: The Model 3DP provides higher hydraulic throughput and cake solids.



Independent Gravity Zone

Spiral Wedge

The problem with existing wedge layouts is that the top belt doesn't contact and apply pressure to the cake until typically 2/3 of the way through the zone. By curving the wedge profile the top belt immediately pressurizes the cake making the entire length of the zone effective. In addition, the spiral profile provides a gradual increase in pressure through the zone and forces an encapsulation of the cake to resist extrusion out the side.



Spiral Wedge



Vertical Pressure Zone

Vertical Pressure Zone

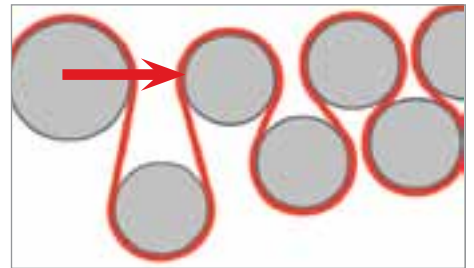
There is no pressure on the filter cake between tangent points of adjacent rolls in the pressure section of a belt press. Therefore, in a horizontal pressure roll configuration, filtrate expressed by each roll runs down the filter cloth to the lower roll and is reabsorbed (*pictured below*) decreasing discharge cake solids.

BDP has the answer.

With the the Vertical configuration of the Pressure Zone in the model 3DP, (*shown left*) filtrate expressed at each roll drips from the tangent point into a diversion pan; eliminating rewetting.



BDP's vertical arrangement eliminates the problem of filtrate running off upper rolls and pooling around lower rolls.



Perforated Roll



Superior Perforated Roll Construction

The highest frequency of roll failures for belt presses is the perforated roll. Typical construction of perforated rolls makes them susceptible to stress fatigue failure of the steel shell where it is welded to inner stiffening rings. BDP Industries' design eliminates the potential for shell failure as the stress load is carried by a solid inner roll. This revolutionary design is the strongest in the industry.

Model 3DP Belt Filter Press

Frame Construction

Channel or I-Beam frame construction are problematic in that corners and ledges are created that are difficult to clean. The tubular frame of the 3DP model provide a flat easy to clean surface.

All bearings are mounted on machined pads welded to the fabricated frame. These pad are precision machined and drilled and tapped for installation of all bearings and bolted frame components.

With channel or I beam, the frame is drilled and weakened at every mounting point. The 3DP frame, on the other hand, is strengthened by tubular steel and machine mounted bearing pads.

Vent holes are strategically placed so that when the frame is hot dip galvanized, it is coated inside and out.

Bottom line: The Model 3DP is stronger, more corrosion resistant, and easier to clean than other machines.



Machined Mounting Pads/Tubular Steel Frame

Overall Layout

Most other belt press designs require the belt press to be elevated due to the low cake discharge point. This requires costly platforms to provide observation of the feed distributor and gravity zone (*see below*).

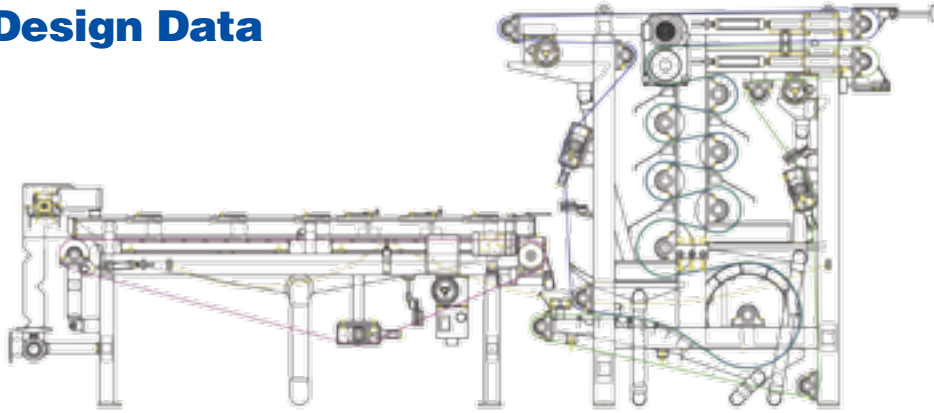


The layout of the model 3DP allows for gravity zone and controls to be located at operator level. This simplifies the process and eliminates platforms (*see right*).



Model 3DP Belt Press

Design Data



Typical Performance Results Municipal Sludge Dewatering Spectrum for 3DP

Sludge Type	Feed Consistency	Solid Loading Rate	Cake Dryness	Polymer Consumption
	%	lbs/hr, m	%	lbs/dt
Aerobically Digested	1 - 3	600 - 900	17 - 22	12 - 18
Waste Activated	.7 - 1.5	600 - 900	16 - 20	10 - 15
Anaerobically Digested	2 - 5	900 - 1500	18 - 25	8 - 12
Primary + WAS	3 - 5	900 - 1800	18 - 27	6 - 10
Primary + WAS + RBC	3 - 5	1000 - 2000	20 - 27	10 - 18
Primary + WAS + Tricking Filter	3 - 5	1000 - 2200	22 - 28	10 - 16
Primary + RBC	4 - 6	1200 - 2500	22 - 30	8 - 15
Primary + Tricking Filter	4 - 6	1200 - 2500	24 - 30	6 - 14
Raw Primary	4 - 8	2500 - 3500	28 - 35	3 - 5
SBR	1 - 1.5	600 - 800	15 - 18	10 - 15
MBR	.8 - 1	500 - 700	15 - 18	10 - 15

* Polymer consumption is based on 100 percent active ingredients

Because influents, processes and operation vary greatly, processing results have a wide range. The ratio of blends will also have an impact on dewatering. The above represent the ranges that might be expected.

3DP Machine Data

Size	Overall Approx. Dimensions inches (mm)			Operating Weight	Belt Width
	Length	Width	Height	lbs (kg)	m
0.5	258 (6,553)	60 (1,524)	98 (2,489)	7,500 (3,400)	0.6
0.75	258 (6,553)	70 (1,778)	98 (2,489)	9,000 (4,082)	0.9
1.0	258 (6,553)	80 (2,032)	105 (2,667)	12,500 (5,670)	1.2
1.5	276 (7,010)	100 (2,540)	118 (2,997)	19,000 (8,618)	1.7
2.0	290 (7,366)	120 (3,048)	120 (3,048)	23,000 (10,433)	2.2
2.5	290 (7,366)	140 (3,556)	126 (3,200)	27,000 (12,247)	2.7
3.0	290 (7,366)	164 (4,165)	132 (3,353)	35,000 (15,876)	3.2

* Custom sizes and designs available upon request

3DP Machine Data

Size	Dry Weight	Belt Width	Belt Wash Water (80psi boost)					
			Grav.	Pres.	Feed Box Drive	Volume	Pressure	Motor
m	lb (kg)	m	hp	hp	hp	gpm	psi	hp
0.5	7,000 (3,180)	0.6	1	1	0.33	26	120	5
0.75	8,000 (3,630)	0.9	1	2	0.33	42	120	7.5
1	9,700 (4,400)	1.2	1	2	0.33	53	120	7.5
1.5	17,300 (7,855)	1.7	2	3	0.33	75	120	10
2.0	24,000 (10,900)	2.2	3	5	0.33	98	120	10
2.5	28,000 (12,715)	2.7	5	7.5	0.33	120	120	15
3.0	36,300 (16,480)	3.2	5	10	0.33	142	120	15

Note: These numbers are preliminary only and based on 10ft long gravity zone.

A Leader in Solids Dewatering.

BDP Industries is an OEM supplier of solids dewatering equipment for several prestigious Fortune 500 companies. With a 40,000 sq. ft. manufacturing facility and the most hands on experience in the industry, BDP has evolved into one of the most modern and complete solids dewatering suppliers in the world.



BDP Industries produces a range of high quality products and services:

- Gravity Belt Thickeners
- Belt Presses
- Screw Presses
- Rotary Drum Concentrators
- Lime Stabilization Systems
- Polymer Systems
- Compost Turning Equipment
- Pulp & Paper Stock Thickeners
- Plate & Frame Presses
- Conveyors
- Process Control Panels
- Equipment Restoration
- On-Site Service
- Mobile Dewatering Demonstrations



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1.5m 3DP mobile trailer unit

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