

Tailings dewatering press (TDP)



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FLSmith's experience with belt press equipment dates back to 1979 with its EIMCO® branded belt presses that pioneered the technology. With a long and successful track record in tails management, FLSmidth has taken this proven dewatering technology to the next level.

TDP Advantages

1. Low profile
2. Vertical S-Roll configuration
3. Elimination of cake re-wetting
4. Dual filtration
5. Rack and pinion belt tensioning
6. Lower operating costs

Belt Press Applications

- Mining
- Quarrying
- Industrial minerals
- Chemical production

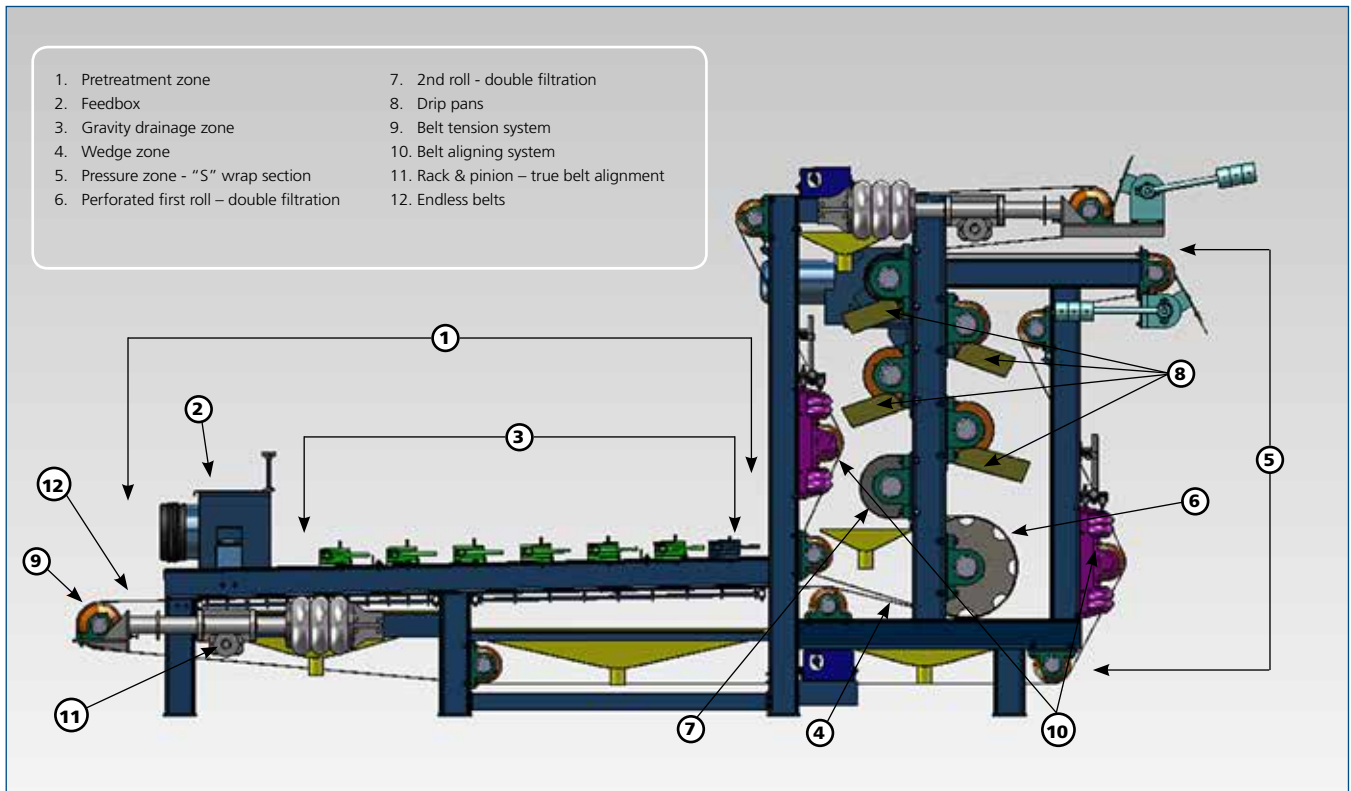
Why FLSmidth?

FLSmith's unparalleled expertise with multiple equipment types in a variety of applications and minerals processing flowsheets means that we can customize processes and provide complete solutions to meet your specific requirements. The TDP has been engineered by combining and modernising all this industry experience together and utilising our innovative design to give comprehensive performance and cost efficiencies in tails dewatering.

The information contained within this brochure represents a sampling of design points and features for the tailings dewatering press. Because our solutions can be tailored to customer space requirements, process flow variations and environmental regulations, speak to your FLSmidth sales engineer to learn more about the benefits of installing TDP equipment.

We listen to our customers to find out specific needs and possible constraints. Our process experts will discuss items such as:

- Review of the mineralogy and chemistry of the feed
- Location of dewatering equipment within the plant
- Upstream equipment supplying the feed to the belt press
- Variations of feed densities
- The specific gravity of solids
- Characterization of particle size distribution
- Uniformity of the slurry feed
- Analysis of the volatile content
- Measurement of ash content, and more.



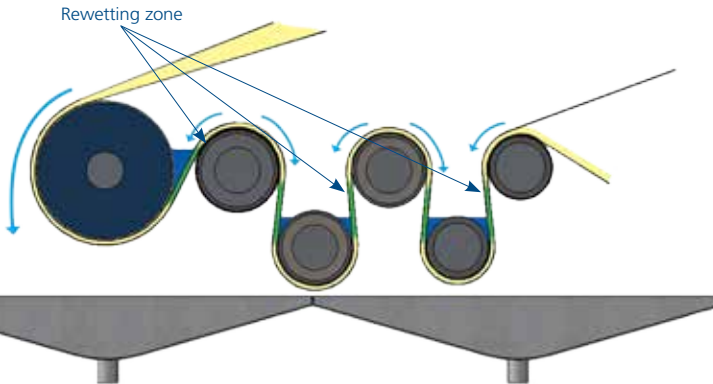
The TDP design offers several distinct operation zones that are applied based on the changing characteristics of the feed material as it passes through the continuous machine.

1. **Pretreatment zone** – inclined solids conditioning zone, flocculation with cationic and anionic flocculants as needed
2. **Feedbox** – distributes the feed evenly over the width of the gravity drainage zone. This reduces the potential for sludge extrusion and enhances production and final cake solids
3. **Gravity drainage zone** – a 10-ft (3.0 m) inclined section with a changeable number of adjustable corrosion resistant polypropylene “plows” that give an overall best set of conditions for enhanced drainage of the pulp by creating pathways for the liquid to drain through the filter belt. Designing the gravity zone at an operator-friendly height makes it easier to inspect and manage maintenance events, and thus maximizes liquid and solids throughput and system uptime
4. **Wedge zone** – provides initial gentle compression for early stages of dewatering of the gravity drained slurry
5. **Pressure zone - “S” wrap section** – 6 rolls maximum with decreasing diameter to provide best pressure profile for dewatering the solids prior to discharge. By pulling the belts through the pressure zone vertically, filtrate pooling and cake re-wetting are eliminated. Roll diameters are (1) 610 mm/24 inch, (1) 356 mm/14 inch, (2) 325 mm/12.8 inch, (2) 274 mm/10.8 inch
6. **Perforated first roll** - Perforated first roll allows filtrate to drain through both sides of the filter belts. This doubles the filtration area for the first S-roll (S1) where the maximum water drainage occurs in the pressure zone. This enhanced throughput results in drier cakes.
7. **Chevron grooved second roll** - the second roll (S2) is chevroned to provide enhanced drainage due to the liquid drainage load.
8. **Drip Pans** – eliminate cake rewetting and produces drier cake, “S” wrap pressure section rolls are vertically arranged allowing drip pans to be located beneath each compression roll, preventing re-wetting of the belts and filter cake
9. **Belt Tension System** - Automatic belt tensioning permits operator-free adjustment with separate controls for upper and lower belt adjustments. The “wrap” of the “S” rolls is adjustable to optimize the usage of the shearing effect (that helps dewatering) occurring when the belts and cake pass through the rolls
10. **Belt Aligning System** - for both top and bottom belts
11. **Rack & Pinion** – true belt alignment
12. **Endless Belts** - Filter belts are of continuous woven mono-filament fabrics with reinforced seams. (Optional item: endless belts and filter media solutions are available)

Advantages of the TDP

Maximum cake dryness with vertical S-roll design

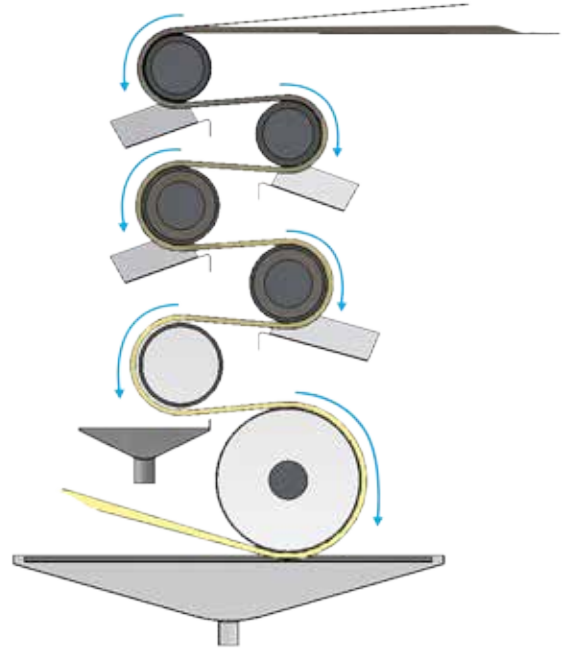
Traditional horizontal S-roll design



Traditional roll patterns run horizontally. This leads to pooling between the rolls resulting in rewetting of the belts.

In order to avoid these rewetting issues the TDP has been configured in a vertical S-roll configuration. The belt travels upwards and each roll's filtrate runs into its own drip tray thus avoiding any pooling or rewetting, this produces a drier cake than the traditional horizontal design.

New vertical TDP S-roll design



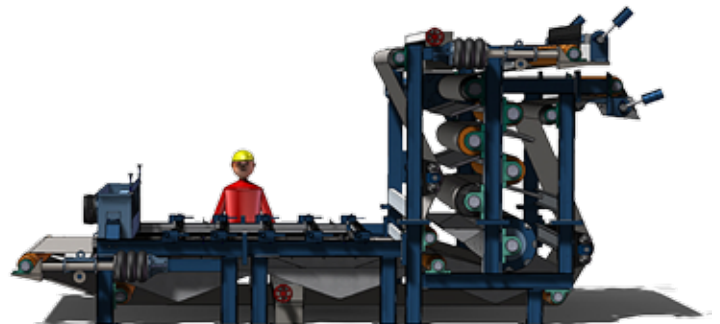
Increased safety with low profile gravity drainage zone

Traditional high profile gravity drainage zone



Safety is at the top of our priorities. With the new TDP design it is no longer required to use a ladder or build expensive platforms for the purpose of inspecting the gravity drainage

New TDP low profile gravity drainage zone



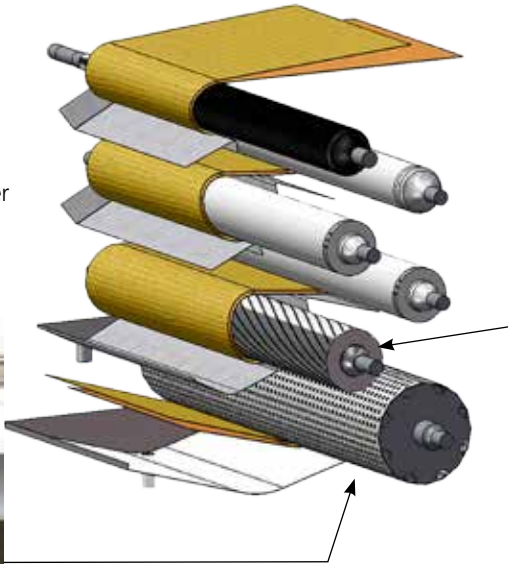
zone as on traditional designs. This reduces the heights hazard by allowing operators to inspect this area from a standing level

Optimized roll designs for dual filtration

Perforated bottom roll and chevron grooved roll

Perforated bottom roll

Rather than use a solid roll on the first S-roll (S1), we have opted for a perforated roll that allows for dual filtration while avoiding pooling and rewetting. The perforations allow water to be removed through both belts as it drains into the drip tray below.

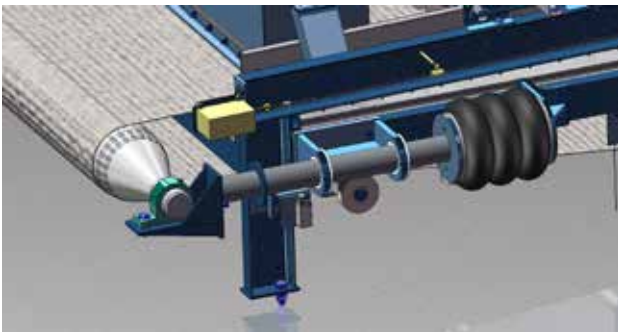


Chevron grooved roll

Just like tire treads pump water away from the center of the tire on a wet road, the chevron grooved roll pumps water away from the center of the cloth and off the edges to allow for dual filtration on the second roll (S2).



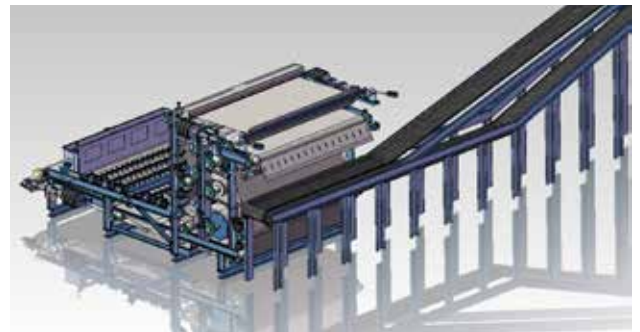
Extended belt life



Rack and pinion

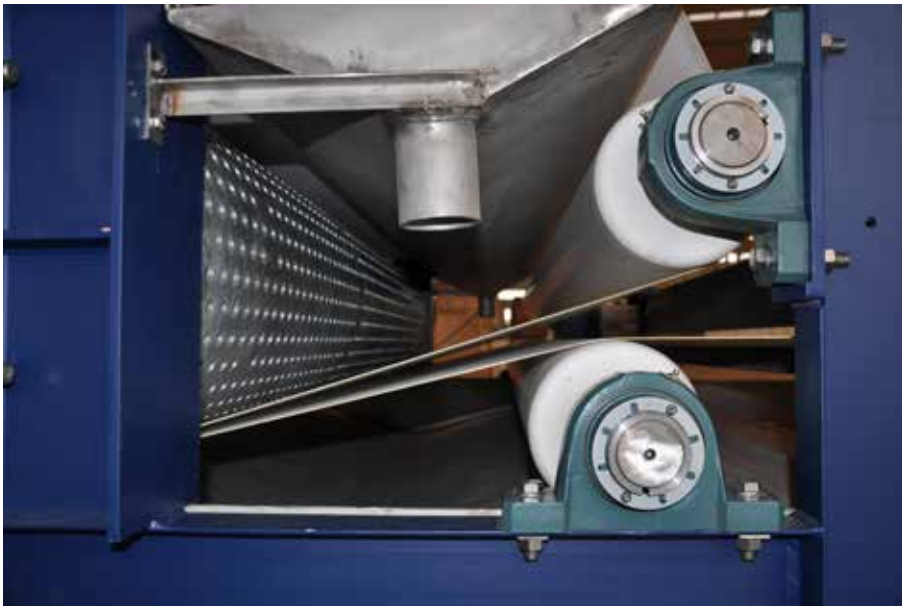
A rack and pinion on both belt take-up ensures there is no misalignment of the belt which will increase belt life.

High cake discharge



The high cake discharge feature of the TDP lowers installation costs as the filter is placed on ground level and the conveyor if installed on floor level. Traditional designs require that special platforms for the filters and conveyors be built to accommodate the below ground level discharge which increases installation costs. The TDP avoids these capital expenses and subsequently lowers operating costs as all areas of the filter and conveyor are openly accessible for future maintenance.

Mechanical points



With a design that can be factory assembled and delivered in one piece, the frame provides a rigid structure that will withstand maximum anticipated stresses and provide the best geometry for cloth tracking, which will extend cloth life.

All support bearings are self-aligning, anti-friction, with TRIDENT® seals with triple-lip nitrile seals, with L-10 life that exceeds industry accepted standards, and are easily accessible.

Belt tensioning is by a pneumatic cylinder with a rack and pinion system that ensures equal travel of the belt from side to side thus eliminating belt bias.



Controls

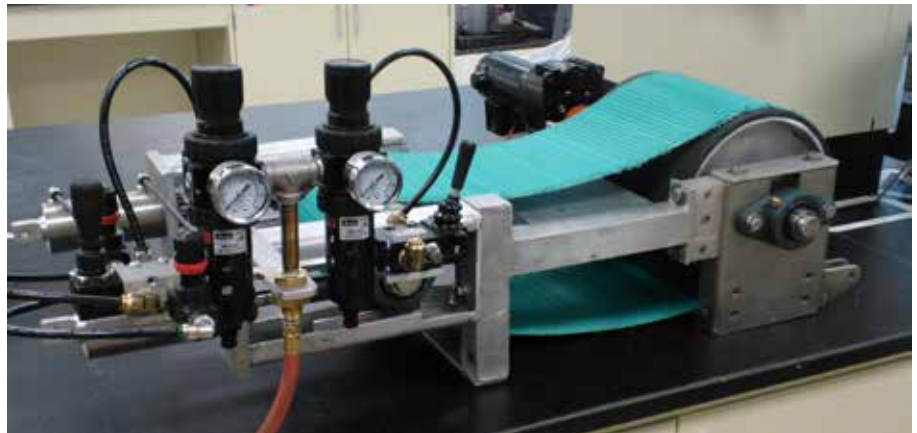
Specific variables within the tails dewatering process need to be monitored and controlled. FLSmidth can provide automated solutions ranging from panels for controlling local dewatering equipment to large plant-wide control system solutions.

We deliver state-of-the-art technology solutions for cost-effective operation and increased plant availability which are accompanied by comprehensive modernization, optimization and maintenance services.



Testing, service & maintenance

FLSmidth equipment and system designs are continuously improved using the latest available process and design technologies, combined with a detailed understanding of specific process requirements which are supported by database, bench, and pilot scale testing. We can provide on-site testing with a bench scale testing apparatus which is calibrated to the pressure profile of the TDP to provide accurate scale-up design information.



This on-site testing capability is backed by regional FLSmidth facilities, as well as the global minerals testing and development center in Salt Lake City, USA. We hold over 80 years of valued experience in metallurgical testing services for precious metals, base metals and industrial minerals. Additionally, FLSmidth now offers ore characterization labs including services for ore amenability, process development, flowsheet layout and plant design.

Service and Maintenance

Our associates work closely with customers to provide top quality equipment and exceptional services. The company employs over 16,000 employees worldwide and is known locally in many countries with technical sales, customer services and support staff located throughout North and South America, Australia, Europe, Africa, Russia, China, India and the Middle East.

We recently introduced the FLSmidth Supercenter as a partnership with our customers, and with the local community. Strategically located close to mining plant operations, Supercenters provide localized services to ensure timely delivery and support. Each Supercenter houses world-class personnel to assist with customers' specific requirements. They also house parts warehouses, conference rooms, office space, testing facilities and training centers. With all of these features and services, it is clear how an FLSmidth Supercenter can give our customers the competitive advantage they're looking for.

FLSmidth is a proven source to improve the performance of existing operations and provide peace of mind and tailor made solutions for increasing our client's return on investment, while safely achieving the scheduled design capacity of your plant.



Top: TDP lab unit

Upper middle: FLSmidth Separations Lab

Lower middle: Repair and maintenance crew and facilities

Bottom: FLSmidth Regional Supercenter

One Source, many solutions

www.flsmidth.com

Manufacturing

A global procurement strategy allows FLSmidth to source equipment and materials competitively, thus creating more opportunities for reduction of cost and optimization of delivery schedules.

No other belt press manufacturer has as much experience, competency, and capacity as FLSmidth in providing total one source solutions in minerals processing globally.

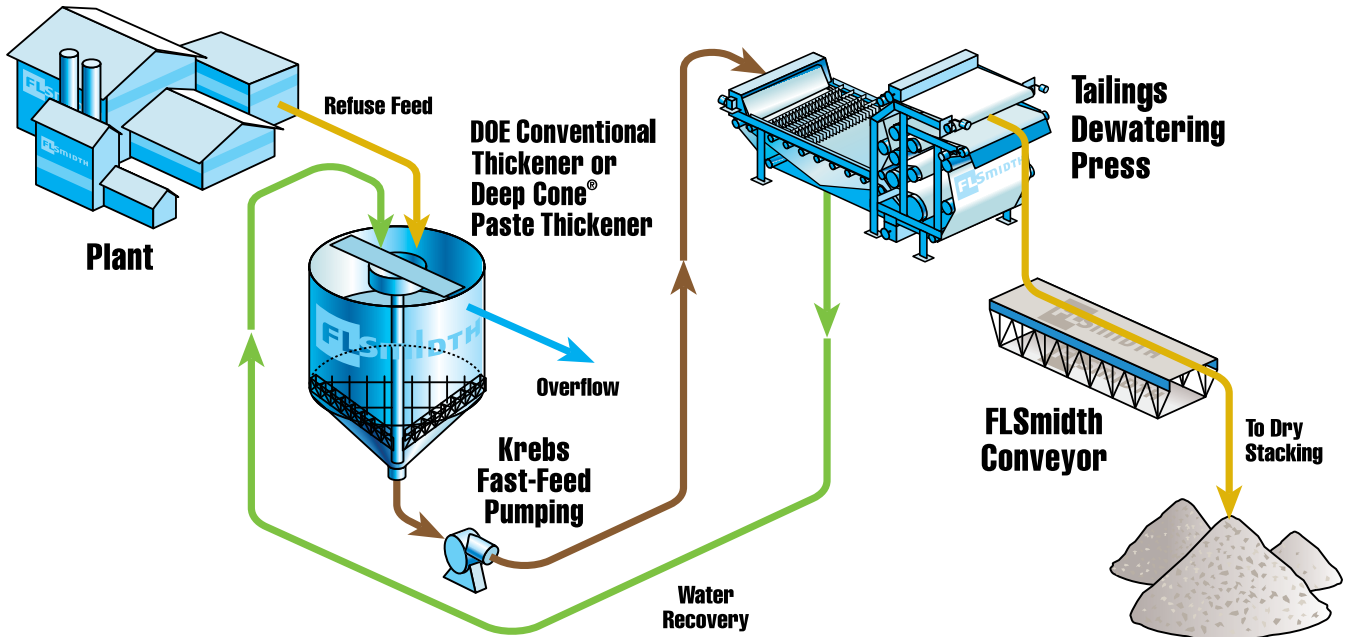
One Source

The FLSmidth Tailings Dewatering Press can be supplied as a standalone dewatering filter or as part of a complete tails dewatering system which may include slurry thickening, polymer storage and mixing, instrumentation and fully automated process control.

Solutions

FLSmidth is a world leader in comprehensive unit operation based solutions, as well as One Source solutions, including integrated multiple unit operations for either a section of a plant or a complete plant. Choose FLSmidth and choose the expertise of more than a century of experience with exceptional technology, products and services.

Tailings dewatering package concept



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