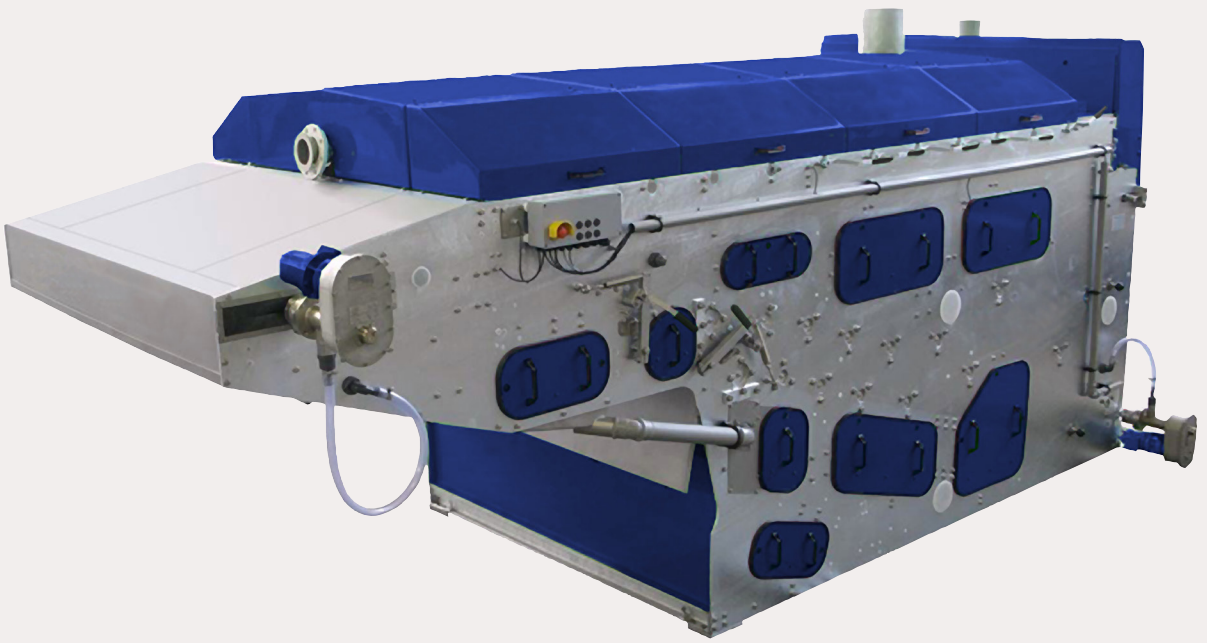
Alfa Laval AS-H Winklepress WPN belt filter press

Sludge dewatering machine



Application

The next generation Alfa Laval AS-H Winklepress WPN belt filter press sets a new industry standard for dewatering today's municipal and industrial wastewater. The unit does exceptionally well with dewatering gelatinous MBR (membrane bioreactor) and BNR (biological nutrient removal) sludges.

Features

The Alfa Laval AS-H Winklepress WPN produces higher dry solids than previous models due to the optimized roller configuration and longer belt path, which together provide a 4% increase in dewatering area. The result is a more gradual and longer press time that achieves higher final dry solids content. Flocculant costs are also reduced due to the gradual pressure process.

The unit also features an upgraded motor that achieves approximately 6% lower energy consumption, which also saves in CO_2 emissions and energy costs. And the enclosed design reduces odor emissions – a popular choice by wastewater plants in more heavily populated areas.

Benefits

- Ideal for applications where the highest dry solids are required
- Low power requirement
- Low polymer cost
- Long product life cycle
- Easy to upgrade in the field with additional pressure zone rollers
- Consistent cake dryness at high throughput

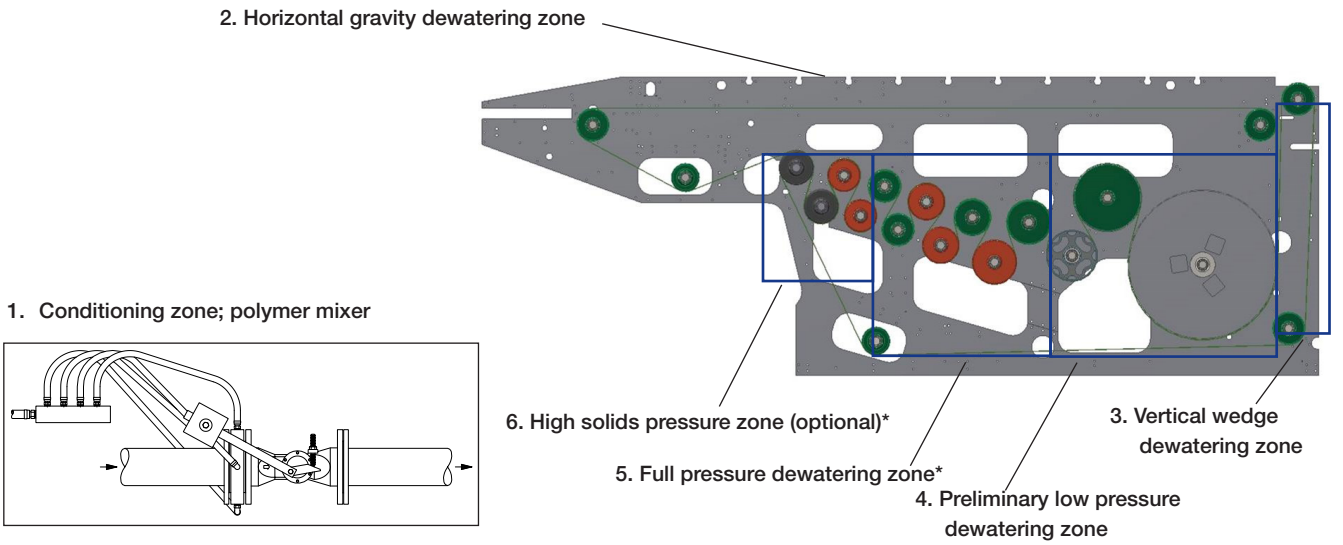
Configurations

- Available with high solids pressure zone to provide maximum cake dryness
- Extended gravity deck is available for dilute sludges

Ashbrook Simon-Hartley

Working principle – optimized zone approach

There are six key zones that allow the new Winklepress WPN to optimize the dewatering process:



1. **Conditioning zone** – optimized dewatering begins with the proper conditioning of the slurry. Each unit is equipped with a proprietary variable orifice in-line polymer mixer that combines polymer and slurry instantly to facilitate rapid flocculation. This design allows the unit to use the lowest dosage of polymer while achieving the highest cake solids.

2. **Horizontal gravity dewatering zone** – multiple rows of chicanes and the belt support grid system quickly removes excess liquids. The chicanes continuously turn the sludge over, freeing up entrapped liquid, and creating an open area to allow the entrapped water to exit to the dewatering belt. The grid system supports the belt, while creating a wiping action on the bottom of the belt to enhance drainage rates. Extended gravity zones are available for more dilute slurries.

3. **Vertical wedge dewatering zone** – allowing for dewatering through both belts as they converge, the system is spring loaded and fully adjustable, even while the machine is in operation.

4. **Preliminary low pressure dewatering zone** – occurring at the dandy roller (a specially designed perforated roller with internal scoops that aids with filtrate removal), a gradual buildup of pressure on the sludge begins, preparing the process for the full pressure zone.

5. **Full pressure dewatering zone*** – pressure levels gradually increase as the sludge moves between the two belts. By progressively reducing the roller diameters, the shear effect and pressure is accelerated. As the amount of pressure applied to the sludge between the dewatering belts increases, the shear action acts to break the cake structure and expose fresh areas to surface pressure. The end product is a uniformly dry sheet of cake that discharges from the machine.

6. **High solids pressure zone (optional)*** – designed to provide maximum cake dryness, this section increases the time under pressure and adds shear to deliver approximately a 10 – 20% dryer cake.

**Zones five and six are upgraded from previous models with select larger diameter rollers (shown in red) that provide longer press time, resulting in higher final dry solids content.*

Performance features

- The Alfa Laval AS-H Winklepress WPN is fitted with lifetime rated bearings. Each bearing is protected from contaminates with a triple labyrinth seal and specially designed shaft mounted splash guards. Lubrication is only required every six months of operation time.

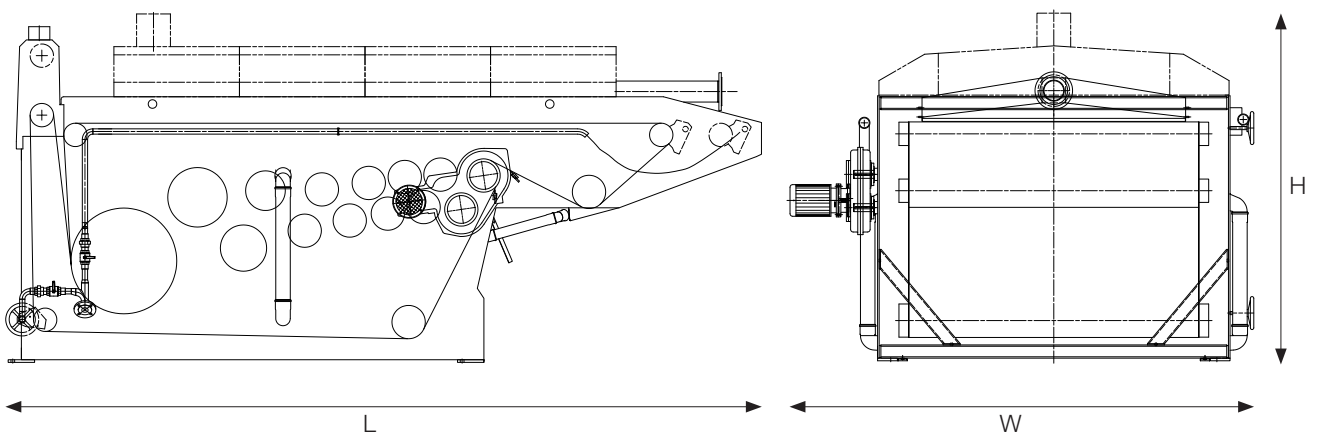
- Featuring a fully live belt alignment and tensioning system, the unit incorporates a pressure compensated variable flow pump. This advanced system only requires a 3.8 liter (1 gallon) fluid reservoir. The entire system comes mounted to the machine pre-piped and pre-wired – eliminating civil work and the need to run any additional lines.

- The sludge/polymer mixer valve used instantly combines the polymer and slurry. This non-clog, static mixer is known for its mixing precision and adjustable throat, which allow direct control of mixing energy. The design optimizes polymer effectiveness and minimizes polymer consumption.

- The Alfa Laval AS-H Winklepress WPN design and drain pan configurations simplify cleanup procedures and increase access to key areas. Clean operation is enhanced by the patented scraper blade design that places even edge loading across the blade with springs and operator levers on both ends of the blade. Also, the cake side of the belt never runs against the roller face, minimizing material transfers.

- The shape and location of inspection openings are strategically placed for optimum accessibility and convenient maintenance and cleaning.

- Upper and lower belts are the same length, making spare parts inventory more flexible.



Dimensions

Model	Length		Width		Height	
	mm	inches	mm	inches	mm	inches
1.0	5,600	220	2,476	97	2,695	106
1.5	5,600	220	3,020	119	2,695	106
2.0	5,600	220	3,520	139	2,695	106

**Dimensions of standard WPN and WPN with optional high solids pressure zone are the same. Weights will vary.*

How to contact Alfa Laval
Contact details for all countries are continually updated on our website. Please visit www.alfalaval.com to access the information directly.