

# Combined Belt Thickener & Belt Filter Press Unit Model: HTE3-2000L

For Municipal and Industrial Sludge Dewatering



## 1. Machine Overview

The HTE3-2000L is a fully integrated unit that combines a **gravity belt thickener** and **belt filter press** to provide efficient sludge dewatering for a wide range of sludge types. Its compact design, energy efficiency, and automation features make it ideal for both municipal and industrial applications.

### Working Principle

#### 1. Polymer–Sludge Mixing

Raw sludge is mixed with a flocculant in a pre-dosing and mixing tank equipped forming flocs that facilitate water release.

#### 2. Gravity Thickening

The flocculated sludge is distributed onto a gravity belt, where free water drains through the moving porous belt via gravity, concentrating the solids.

#### 3. Belt Press Dewatering

The thickened sludge is conveyed to the press section and compressed between two belts across 11 rollers, producing a dewatered sludge cake with high dry solids (DS) content.

#### 4. Automatic Belt Cleaning

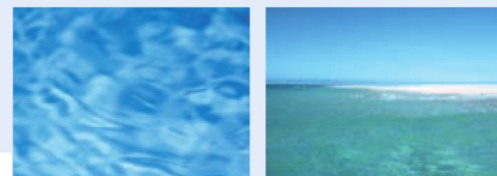
A high-efficiency water spray system continuously cleans the belts via flush nozzles within a closed pipeline. No mechanical brushes are used.

## 2. Features & Benefits

- **Fully Integrated System** – One compact unit for thickening and dewatering.
- **CE**, Manufactured with compliance with CE safety regulation
- **Low Polymer Consumption** – Polymer added only once; no secondary dosing.
- **Low Wash Water Consumption** – Single high-efficiency pump (14 m<sup>3</sup>/h).
- **High Capture Efficiency** – ≥90% solids retention.
- **High Cake Solids** – 16–20% DS depending on sludge type and characteristics like VSS of sludge as well as polymer flocculant efficiency
- **Low Filtrate Solids** – 10–30 mg/L from the thickening section.
- **Durable Belts** – Woven polyester monofilament belts with long lifespan.
- **Pneumatic Belt Control** – Automatic alignment and tensioning using pneumatic components.
- **Easy Maintenance** – Roller access and belt replacement designed for quick service.
- **Robust Frame** – Coated carbon steel or stainless steel (SS304/316) as per order of customer
- **Quality Drive Components**

Press Section Drive: Nord (Germany)

Thickener & Agitator Drive: SITI (Italy)



**Enviroflex GmbH**  
Sterngasse 3/2/6, 1010 Vienna, Austria  
<https://enviroflex.at>

@ [office@enviroflex.at](mailto:office@enviroflex.at)  
+43 1 532 01 80-635  
+43 1 532 01 80-235

### 3. Technical Data

Parameter	Value
Belt Width	2000 mm
Thickener Belt Length	8.15 m
Dewatering Belt Length (Upper)	11.0 m
Dewatering Belt Length (Lower)	11.4 m
Belt Speed (Thickener)	3.84 – 19.2 m/min (10–50 Hz)
Belt Speed (Press)	1.38 – 6.9 m/min (10–50 Hz)
Number of Press Rollers	11 (10 pieces SS304 + 1 polymer coated roller)
Expected Cake Dryness	16–20% DS
Solids Capture Rate	≥ 95%
Filtrate Solids (Thickener)	20–50 mg/L
Mixing Tank Motor	0.75 kW, 46 rpm (SITI, Italy)
Thickener Belt Drive Power	1.1 kW – SITI, Italy
Press Belt Drive Power	1.5 kW – Nord, Germany
Total Electric Power	3.35 kW
Wash Water Pump	14 m³/h @ 4–6 bar
Compressed Air Requirement	0.1 m³/min @ 5 bar
Pneumatic Components Brand	AIRTAC
Belt Material	Woven Polyester Monofilament
Roller Material	Stainless Steel 304
Frame Material	SS304 / Coated Carbon Steel (as per order ogf customer)
Package Dimensions (Press Unit)	See drawing
Package Weight (Press Unit)	5000–6000 kg
Mixing Tank Dimensions	1500 × 1500 × 1700 mm
Mixing Tank Weight	85 kg

#### Sludge Feed Rate vs. Concentration

Sludge	Concentration	Kg/DS/h	Feed Rate (m³/h)
Low DS	0.4–0.8% DS	240-500	57–88
Like Waste Activated Sludge (WAS)			
Medium DS	0.8–1.5% DS	400-800	47.5-66

Note: Actual capacity varies based on sludge characteristics, VSS of the sludge and polymer flocculant efficiency.

### 4. Applications

#### Municipal Wastewater Plants

Waste Activated Sludge (WAS)  
Primary Sludge  
Aerobic Sludge  
Anaerobic Digested Sludge

#### Industrial Wastewater Sludge

Food & Beverage Production  
Pulp & Paper Industry  
Textile Industry  
Chemical Processing  
Sludge of steel and metal factories  
Mining Sludge

#### Other Sludge Sources

Sludge from DAF Units  
Septage & Grease Sludge  
Biogas Digestate



**Enviroflex GmbH**  
Sterngasse 3/2/6, 1010 Vienna, Austria  
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@ [office@enviroflex.at](mailto:office@enviroflex.at)  
+43 1 532 01 80-635  
+43 1 532 01 80-235