

TECHNICAL DATASHEET

HORIZONTAL VACUUM BELT FILTER

THE WASHING MACHINE — 1 TO 58 M², UP TO FIVE WASH STAGES

When the product is in the cake and the wash has to be near-perfect, a horizontal belt filter is the only type that does it properly. The cake sits flat on a moving belt and passes under wash headers in true counter-current sequence, so displacement is close to theoretical and soluble losses fall to a fraction of a percent.

1–58

M² AREA

500–3200

MM BELT

1–5

WASH STAGES

0.3–6

M/MIN

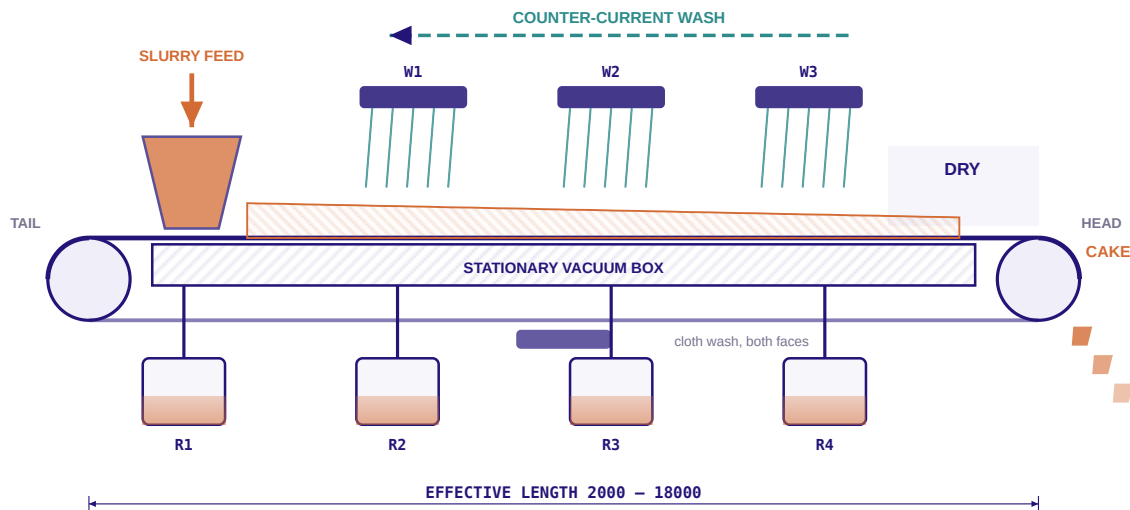


Fig. 1 – Side elevation, feed to discharge

HOW IT WORKS

- 1 A grooved rubber belt runs over a stationary vacuum box; filter cloth runs on top of the belt and carries the cake.
- 2 Slurry is fed at the head end through a distribution box; vacuum applied through the belt grooves draws filtrate into the box and forms the cake.
- 3 Wash headers along the deck apply counter-current wash — the cleanest wash contacts the cake last, and each stage's filtrate becomes the wash for the stage before it.
- 4 A drying zone follows the last wash before the cake is discharged over the head roller, where the small radius cracks the cake free.
- 5 The cloth then passes through a high-pressure wash on both faces and returns under the deck.

OPERATING ENVELOPE

PARAMETER	VALUE
Belt width	500 – 3200 mm
Effective filtration length	2 – 18 m
Filtration area	1 – 58 m ²
Belt speed	0.3 – 6 m/min, VFD
Operating vacuum	300 – 525 mmHg (40 – 70 kPa)
Cake thickness	5 – 100 mm
Wash stages	1 – 5, counter-current
Belt tracking	Automatic, pneumatic steering roller — no manual adjustment
Discharge	Over small-radius head roller, with scraper

SIZE AND SELECTION

Standard build sizes. Filtration areas are calculated from the geometry, not nominal. Intermediate and larger sizes are built to duty — send the slurry, the throughput and the target cake moisture and we will size it against a leaf or pilot test.

MODEL	BELT WIDTH (MM)	EFFECTIVE LENGTH (MM)	AREA (M ²)	OVERALL LENGTH (MM)	DRIVE (KW)	DRY WT (T)
FHB-500	500	2000	1.0	4900	1.5	1.4
FHB-1000	1000	4000	4.0	8000	3.5	2.5
FHB-1500	1500	6000	9.0	11100	6.5	4.4
FHB-2000	2000	8000	16.0	14200	10.0	7.1
FHB-2500	2500	12000	30.0	20400	15.5	12.6
FHB-3200	3200	18000	57.6	29700	25.0	23.5

MATERIALS OF CONSTRUCTION

COMPONENT	OPTIONS
Filter belt	Rubber, flat or ripple-curb profile, multiple grades to duty
Belt curb profile	Flat · ripple · moulded side curb
Vacuum box	SS 316L · polypropylene · MS rubber lined
Wear strips	UHMWPE
Deck and frame	Mild steel epoxy · SS 304
Wash headers and nozzles	SS 316L
Filter cloth	Polyester · polypropylene monofilament
Rollers	Rubber lagged MS · SS 316L

SCOPE OF SUPPLY

- Rubber filter belt with drainage grooves and curb profile
- Stationary vacuum box with UHMWPE wear strips and drainage ports
- Drive and tail rollers, snub and steering rollers with pneumatic tracking
- Belt drive — geared motor with VFD
- Slurry feed distribution box
- Counter-current wash headers with spray nozzles and isolation valves
- Filter cloth with high-pressure two-face cloth wash
- Filtrate receivers, one per zone, with moisture traps
- Cake discharge chute and belt scraper
- Frame, deck, walkway and handrail
- Local control panel with VFD and tracking interlocks

NOT INCLUDED

- Civil foundation, grouting, anchor bolts and civil works
- Erection, alignment and commissioning supervision unless separately quoted
- Slurry feed pump, vacuum pump and filtrate pump unless listed in scope
- Power, air, water and effluent lines up to the equipment terminal points
- Instrumentation beyond the items listed in scope of supply
- Any statutory approvals, insurance or third-party inspection charges

OPTIONS

OPTION	WHAT IT DOES
Additional wash zones	Up to five counter-current stages with separate receivers
Steam or hot-air hood	Reduces final cake moisture on hygroscopic products
Cake compression roller	Mechanical dewatering before the drying zone
Indexing (fixed-belt) arrangement	For duties needing a stationary vacuum seal
Acid-resistant build	Rubber lined box, Hastelloy nozzles, PP deck
Vacuum package	Liquid ring pump per zone, skid mounted
PLC / HMI	Zone vacuum, wash ratio and belt speed control

APPLICATIONS

- Gypsum from phosphoric acid — the classic belt filter duty
- Hydrometallurgical leaching — copper, nickel, zinc, uranium
- Fertiliser and speciality chemical washing
- Flue-gas desulphurisation gypsum
- Food and starch dewatering

UTILITIES AT BATTERY LIMIT

PARAMETER	VALUE
Power	415 V ± 10 %, 3-phase, 50 Hz, 4-wire
Control supply	240 V AC 1-phase / 24 V DC
Instrument air	6 bar (g), oil-free, dew point –20 °C
Vacuum	By Filcare-supplied pump or client system, at battery limit
Wash water	Client supply at 3 bar (g), free of suspended solids > 200 µm

INSPECTION AND TEST

- Material test certificates (EN 10204 3.1) for all pressure-retaining and wetted plate
- Dye-penetrant examination of wetted welds
- Hydrostatic / leak test of vat, drum and filtrate lines
- Dimensional inspection against approved GA drawing
- No-load trial run at works: rotation, valve timing, agitator sweep
- Drive and gearbox test certificates from the OEM

PAINTING AND FINISH

Surface preparation to SA 2½, two coats epoxy primer (2 × 40 µm DFT) and two coats epoxy finish (2 × 50 µm DFT). Stainless steel parts supplied pickled and passivated, unpainted.

TO RECEIVE AN OFFER

Send us:

Slurry description and solids concentration · required throughput · target cake moisture · wash requirement · slurry temperature and pH · materials already proven in your plant.

TALK TO US

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Offers are prepared by Mr. T. Srikanth. Machine down? The same number takes breakdown calls.

Filcare reserves the right to alter specifications in the course of development. Dimensions, weights and powers in this datasheet are for selection and budget purposes; certified data is issued with the approved general-arrangement drawing. Document FIL/DS/FHB/01 · Rev 0 · Sep 2026.