



ROTARY VACUUM DRUM FILTER

CONTINUOUS VACUUM FILTRATION, 2.6 TO 82 M²

Continuous dewatering of industrial slurries at 2 to 40 wt% solids. A cloth-covered drum divided into compartments rotates through a stirred vat; an automatic valve applies vacuum to each compartment in turn, so that cake pick-up, dewatering, washing and discharge happen simultaneously at different points on the drum.

2.6–82

M² AREA

0.2–3

RPM

53–87

KPA VACUUM

2–40

WT% FEED

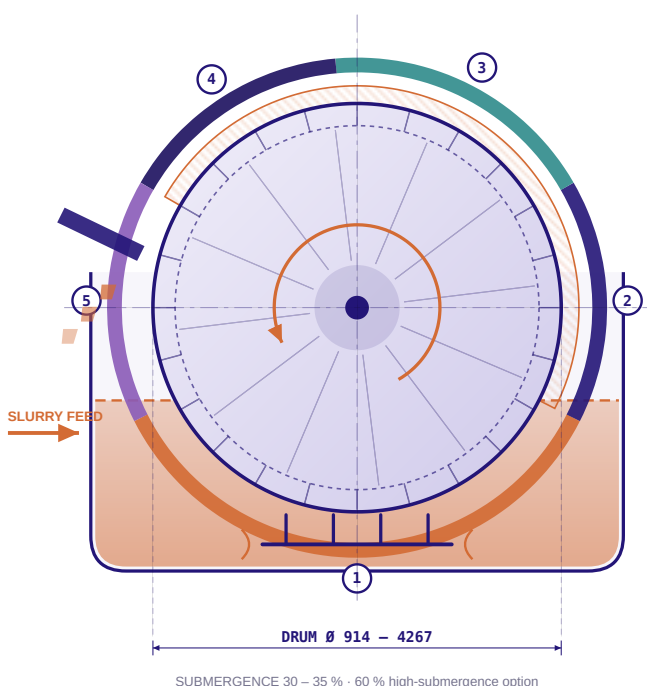


Fig. 1 – Sectional end elevation, filtration cycle

FILTRATION CYCLE

- 1 FORM**
Submerged arc. Vacuum draws filtrate through the cloth; cake builds on the face.
- 2 DEWATER**
Cake leaves the vat. Drying vacuum displaces entrained liquor.
- 3 WASH**
Optional displacement wash, counter-current, 1 to 3 arcs.
- 4 DRY**
Final drying vacuum to the target cake moisture.
- 5 DISCHARGE**
Snap blow releases the cake to the scraper; cloth wash follows.

0.2 – 3 rpm
drum speed, VFD

53 – 87 kPa
operating vacuum

2 – 40 wt%
feed solids

3 – 40 mm
cake thickness

HOW IT WORKS

- The drum face is divided into circumferential compartments, each piped through the trunnion to one port of the automatic valve.
- Over the submerged arc the valve connects the compartment to form vacuum. Filtrate is drawn through the cloth and cake builds on the face.
- As the compartment leaves the vat the valve holds it on drying vacuum; entrained liquor is displaced and cake moisture falls.
- An optional wash arc applies displacement wash before the cake reaches the discharge point.
- At discharge the valve cuts vacuum and applies a snap blow of air, releasing the cake to a scraper, belt, string or roll take-off.

OPERATING ENVELOPE

PARAMETER	VALUE
Filtration area	2.6 – 82 m ² standard; larger to enquiry
Drum speed	0.2 – 3 rpm standard, VFD; to 6 rpm on fast-filtering duty
Submergence	30 – 35 % standard vat; 40 – 60 % high-submergence vat
Operating vacuum	400 – 650 mmHg (53 – 87 kPa) below atmosphere
Feed solids	2 – 40 wt%
Cake thickness	3 – 40 mm, duty dependent
Cake discharge	Scraper (knife) · belt · string · roll · precoat
Drive	Helical-bevel geared motor, 415 V 3-ph 50 Hz, VFD controlled
Agitator	Oscillating rake, variable stroke, independent drive

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	DRUM Ø (FT)	FACE (FT)	DRUM Ø (MM)	FACE (MM)	AREA (M ²)	DRUM DRIVE (KW)	AGITATOR (KW)	DRY WT (T)
FRD-3x3	3	3	914	914	2.6	1.0	1.0	1.6
FRD-4x4	4	4	1219	1219	4.7	1.5	1.0	2.3
FRD-6x6	6	6	1829	1829	10.5	3.0	1.0	4.2
FRD-8x8	8	8	2438	2438	18.7	4.0	1.5	7.1
FRD-8x12	8	12	2438	3658	28.0	5.0	2.0	10.4
FRD-10x10	10	10	3048	3048	29.2	5.5	2.0	10.8
FRD-10x14	10	14	3048	4267	40.9	6.5	2.5	15.1
FRD-12x12	12	12	3658	3658	42.0	7.0	2.5	15.5
FRD-12x16	12	16	3658	4877	56.0	8.0	2.5	20.7
FRD-12x20	12	20	3658	6096	70.0	9.5	3.0	25.9
FRD-14x20	14	20	4267	6096	81.7	10.5	3.5	30.3

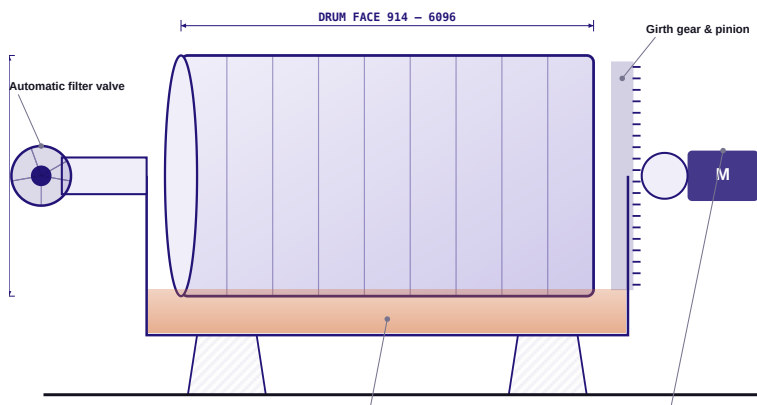


Fig. 2 – Side elevation general arrangement

MATERIALS OF CONSTRUCTION

COMPONENT	OPTIONS
Drum shell and heads	IS 2062 mild steel · MS rubber lined · SS 304 · SS 316 / 316L
Drum segments	SS 304 · SS 316L · polypropylene
Drainage grid	Polypropylene · SS 304
Vat	Mild steel · MS rubber lined · SS 316L · FRP
Agitator	SS 304 · SS 316L · rubber lined MS
Automatic valve	Cast iron body with SS wear plate and UHMWPE bridge blocks
Scraper blade	UHMWPE · PTFE-faced
Trunnion liner	Cast iron · leaded bronze
Filter media	Polyester · polypropylene monofilament / multifilament
Caulking	PP rope · SS wire with PVC core

SCOPE OF SUPPLY

- Drum assembly — shell, heads, trunnions, segments, drainage grids, caulked filter cloth
- Vat with oscillating agitator and independent drive
- Automatic filter valve with wear plate, bridge blocks and timing adjustment
- Drum drive — helical-bevel geared motor with VFD, girth gear and pinion
- Cake discharge assembly to the selected method
- Cake wash header with spray nozzles (where specified)
- Filtrate receiver and moisture trap with sight glass and level switch
- Interconnecting vacuum and filtrate piping within the equipment envelope
- Structural supports, platform, walkway and handrail
- Local control panel with VFD, ammeter and 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
High-submergence vat	Raises submergence to 60 % for high-capacity, fast-filtering duties
Precoat arrangement	Precoat tank, advancing knife with micrometer feed for polishing duties
Multi-stage cake wash	Two to four counter-current wash arcs with independent receivers
Cloth wash	High-pressure oscillating spray, both faces, with timer
Steam hood	Insulated hood for hot filtration and reduced cake moisture
Rubber lining	Full MSRL on drum, vat and agitator for chloride and acid service
Vacuum package	Liquid ring pump, separator and seal water system, skid mounted
Filtrate pump	Self-priming or barometric leg arrangement
PLC / HMI	Automatic valve timing, cake thickness trending, remote enable

APPLICATIONS

- Chemical — sodium sulphate, gypsum, soda ash, pigments, calcium carbonate
- Mineral processing — concentrate dewatering, tailings, clay
- Pulp and paper — brown stock washing, lime mud
- Pharmaceutical and food — starch, corn steep, crystalline intermediates
- Effluent — biological sludge, neutralisation sludge, recovery duties

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

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.

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.

TALK TO US

sales@filcare.in

+91 94441 18723

26, Adjacent to Aachi Institute, Ayanambakkam, Chennai – 600 095

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/FRD/01 · Rev 0 · Sep 2026.