

Tube press





Tube Press

The Tube Press is a membrane type filter press designed in cylindrical format and capable of operating at high filtration pressures up to 100 bar.

The use of these high pressures enables a higher degree of separation of the liquid and solid phases.

Principle of operation

Filtration takes place between two concentric cylinders. The outer cylinder is the casing, and the inner, the candle. The process slurry is pumped into the annular space between the filter media and the bladder. Hydraulic fluid, usually water, is then pumped between the bladder and the casing putting the slurry under pressures and causing filtration to take place. When filtration is complete the hydraulic fluid is

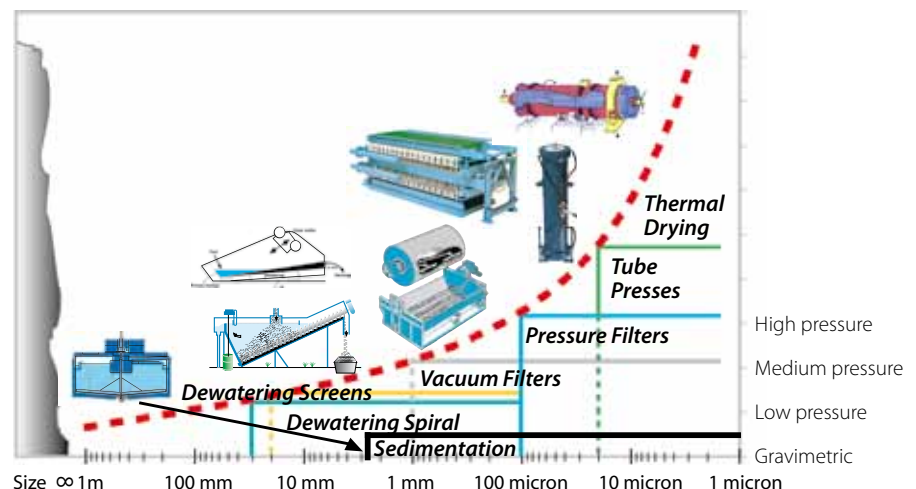
withdrawn from the Tube unit using vacuum until the bladder is dilated against the casing.

The candle is then lowered to the discharge position and a pulse of air is blown between the candle and the filter media. This causes the filter cloth to expand, fracturing the cake which is discharged under gravity. When complete the candle closes to the slurry fill position to repeat the cycle.

Air purge and/or cake wash can be incorporated.

The Tube Press is suitable for applications:

- Alternatives to thermal drying
- Where the process requires very low cake moisture. eg. smelters
- Where cake handleability is critical. e.g. underground slimes
- Where filtrate is a valued product
- Where cake transport costs are significant
- Where cake is to be disposed of to landfill





rated into the cycle. At the completion of the filtration element, air or wash fluid is pumped between the cake and the bladder which is then forced through the cake by a further application of hydraulic pressure to be incorporated into the cycle.

Benefits

- Driest possible cake solids
- Maximum volume reduction
- Exceptionally clear filtrate

Advantages of on-site tube press

Tests will be undertaken on production slurry and will encounter any variability of production feed that occurs during the trial. The client will see the performance and in particular will be able to handle the cake and observe the filtrate clarity.

The client has opportunity to operate the plant.

Contact your Metso representative for further information on these available services.

Reliable support

Metso specialists are experts in a wide range of industrial processes. Our policy is to provide a thorough knowledge of our customers' applications.

Research and development

It is Metso's policy to continue to improve, thus the performance of new materials is assessed with a view to greater efficiency and reliability.

After sales service

Our after sales service provides you with fully detailed operating and maintenance instructions, training, professional start-up services and technical assistance.

Opportunities

In many industries a liquid phase in the process creates the need for liquid/solid separation so that the solids and/or filtrates so produced can be handled or disposed of.

"Traditional" mechanical dewatering often leaves the cake too wet or too sticky to handle effectively and usually demands further treatment such as thermal drying. The Tube Press, because of its unique design, will automatically and economically dewater most slurries to produce a clear filtrate and, without any form of thermal drying, a hard, surface dry cake that is convenient to handle as a product for immediate storage or for disposal.



Applications

Typical filtercake moisture contents (Filtration Pressure 102 BAR).

Coal fines and shales	19%	Magnesite	23%
Calcium carbonate precipitates	30%	Dyestuffs/Pigments	20%
Gypsum residues	14-18%	Para-goethite	27%
China clay	15%	Metal Sulphides	13%
Iron oxide fume	28%	BOS Sludge	15%
Quarry clay slimes	19%	Oxalates	14%
Seawater magnesia	27%	Molybdenum	8 - 10%
Lead chromate retrieval	22%	Zinc Concentrate	12%
Zeolites	41%	Copper Concentrate	12%
Furnace/Converter	15-18%	Tin Concentrate	10%
Ferrites	14%	Gold Concentrate	21%
Jarosite	22%	Nickel Concentrate	10%
Titanium Dioxide	20%	Silica Dioxide	50%



Mobile test plant rig

Superior performance

Porosity and cake moisture contents are significantly lower than those obtained with low pressure filters, consequently filtrate recovery is high.

Filtration is conducted at a pressure level where the cake is produced as a hard surface dry, lump solid. Cake handling procedures are greatly simplified compared with those for low pressure filter cakes, which are typically plastic or paste-like and frequently surface wet.

Available data indicates that Tube Press output rates, in terms of dry solids per unit filter area, are much higher than for either vacuum or plate filter presses. This results both from the pressure dependence of filtration rates and the operational flexibility of the Tube Press which allows a closer approach to the optimum. Filtrate solids concentrations are generally zero, allowing immediate disposal or direct recycling.

Laboratory and rental service

Metso can filter your product on both a preliminary feasibility or on a full-scale production basis with either a lab-size unit or a production size Tube Press.

With well equipped laboratories, our experienced technicians will return a report, plus a small filter cake and filtrate sample to the customer for inspection.

It is essential that any sample provided for testwork is accompanied by details of its Safe Handling Requirements. If in doubt, the laboratory undertaking the tests will provide details of what is required under these regulations.

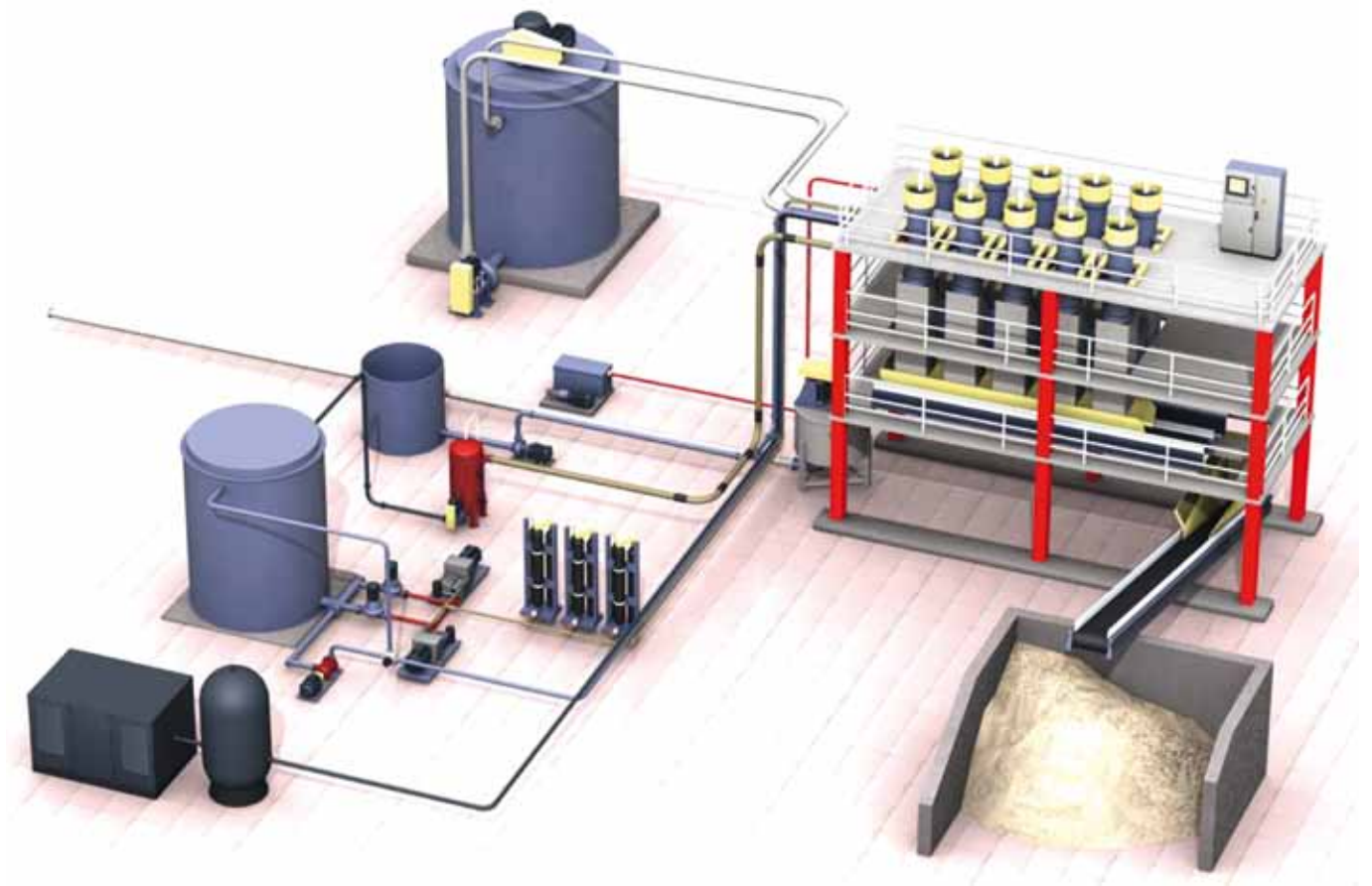
We can also provide Tube Press rental units for in plant testing. Each rig is essentially a fully operational single Tube Press plant, based around either a 500-series Tube Press unit.

All rental units are complete with support structure, together with skid-mounted pallet, for ease of shipment and installation, containing the functional services required for operation. The control system on each rig will allow for automatic and manual operation.

Conventional filtration processes require continuous supervision and maintenance. The Metso Tube Press, however, is fully automatic which will yield big savings in manpower costs.

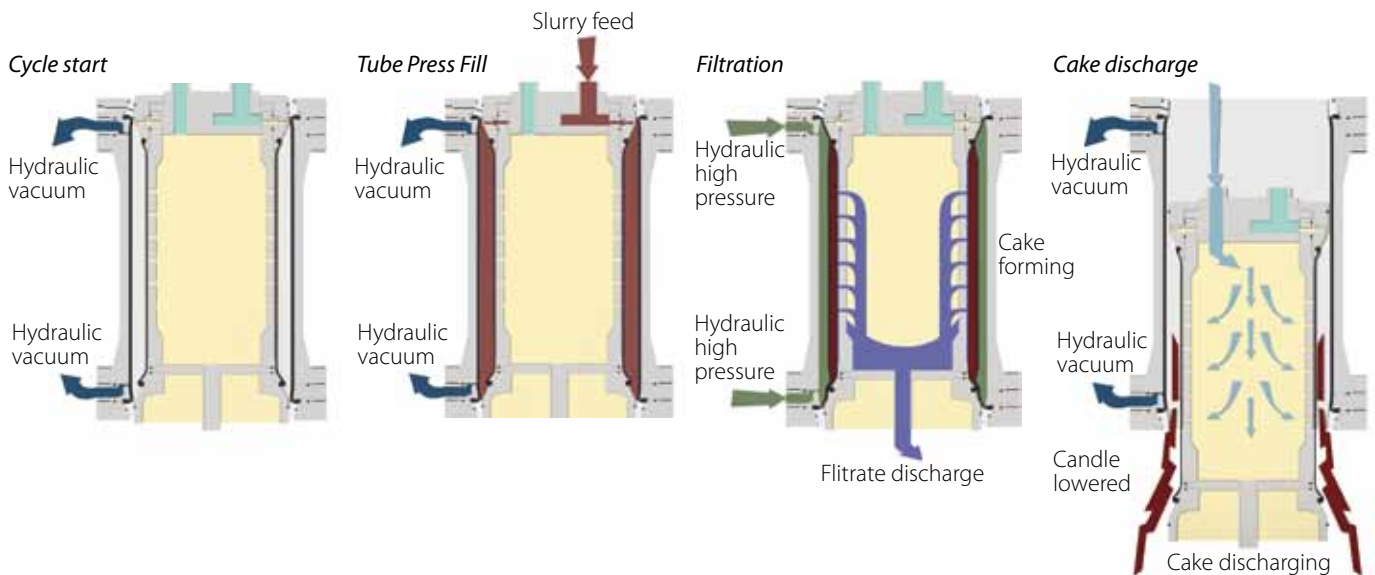
The Tube Press saves energy, lowers environmental impact and makes your process productive.

Typical tube press flowsheet



Two tube module inclusive of ancillary pumps and hydraulic water systems.

The tube press process





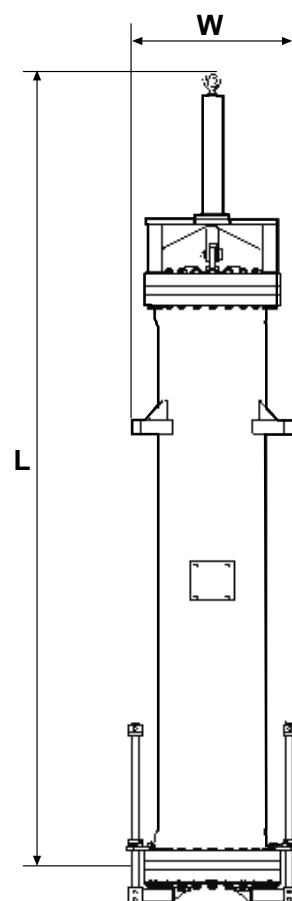
Tube press – Sizes

The Tube Press 500 series is available mainly in two different sizes.

500 series. Casing diameter 500 mm. Nominal lengths available 1 500 mm and 3 000 mm. Maximum pressure 100 bar (1 450 psi).

Model	500 Series 1.5 m	500 Series 3 m
Filtration pressure - max. (bar)	100	100
Length of candle (mm)	1 500	3 000
Candle diameter (mm)	389	389
Filter area (m ²)	1.75	3.47
Effective volume (litres)	100	200
Candle weight (kg)	580	1 100
Total weight (kg)	2 000	3 000
Crane height (m)	6.17	9.17

Model	L mm (inch) tube length	W mm (inch)	Weight (empty) ton	Filter area m ² (ft ²)	Max op. pressure bar (psi)
SC 500-1,2	3 500 (138)	860 (34)	1.8	1.35 (14.5)	100 (1 450)
SC 500-1,5	3 800 (150)	860 (34)	2	1.73 (18.6)	100 (1 450)
SC-500-3,0	5 200 (205)	860 (34)	3	3,45 (37.1)	100 (1 450)



- **Metso Minerals (Sweden) AB**
Norrängsgatan 2, SE-733 38 Sala, Sweden, Phone: +46 224 374 00, Fax: +46 224 169 50
- **Metso Minerals Industries, Inc.**
2715 Pleasant Valley Road, York, PA 17402, USA, Phone: +1 717 843 8671
- **Metso Minerals (South Africa) (Pty) Ltd.**
Private Bag X2006, Isando, Johannesburg, 1600, South Africa, Phone: +27 11 961 4000, Fax: +27 11 397 2050
- **Metso Minerals (Australia) Ltd.**
Level 2, 1110 Hay Street, West Perth, WA 6005, Australia, Phone: +61 8 9420 5555, Fax: +61 8 9320 2500
- **Metso Minerals (India) Pvt Ltd**
1th floor, DLF Building No. 10, Tower A, DLF Cyber City, Phase - III, Gurgaon - 122 002, India, Phone: +91 124 235 1541, Fax: +91 124 235 1601
- **Metso Perú S.A.**
Calle 5 Nro. 144, Urb. Industrial Vulcano, Ate, Lima 03, Peru, Phone: +51 1 313 4366, Fax: +51 1 349 0913
- **Metso Minerals (Chile) S.A.**
Av. Los Conquistadores 2758, - Piso 3, Providencia, Santiago, Chile, Phone: +56 2 370 2000, Fax: +56 2 370 2039
- **Metso Brasil Indústria e Comércio Ltda.**
Av. Independência, 2500 Éden, 18087-101 Sorocaba-SP - Brazil, Phone: +55 15 2102 1300



www.metso.com
E-mail: minerals.info@metso.com