



Inclined Plate Settlers

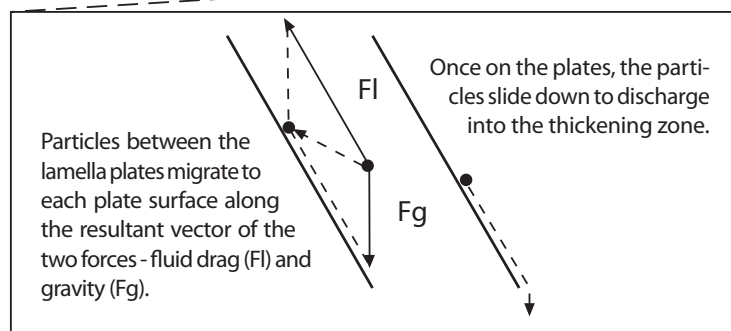


The Lamella Principle

The two basic criteria for gravity settling equipment are good clarity of the overflow liquid and maximum density of the underflow solids discharge.

The area required to clarify a suspension is often greater than that needed for thickening. This means that in a cylindrical thickening tank, the lower section with rakes and drive mechanism can be oversized.

The lamella principle uses several parallel inclined plates to maximise the available settling area for any available floor area. In this way, the size and cost of the gravity settler can be minimised by matching the clarifying and thickening requirements more closely.



Installation of a Svedala LTC Combi lamella clarifier next to a conventional round thickener with approximately the same clarification area.

Inclined Plate Settler

The Inclined Plate Settler (IPS) consists of two main components, the upper tank containing the lamella plates inclined at 55° and the lower conical or cylindrical sludge tank.

The feed for the IPS enters through vertical chambers on either side of the lamella packs and passes into each plate gap through slotted feed ports. Clarification takes place above the suspension inlet so there is no mixing of the clarified fluid with the incoming feed.

Above each pack is a full-length overflow launder fitted with throttling holes to create a slight hydraulic back pressure on the incoming feed stream. This method of feed control guarantees equal distribution to all lamella chambers with minimum turbulence at the entry points.

The solids settle onto and slide down each lamella plate to the sludge tank where the solids are further thickened and compressed with the assistance of the raking system.

Advantages

- Heavy duty construction of tank, sludge hopper and lamella plate packs, as well as the rake system. Rake lifting mechanism as option
- Positioning of specifically designed feed ports for optimum ratio between clarification and thickening area
- Wide spacing of lamella plates to handle high density feed pulps and coarse solid particles
- No short circuiting or surface turbulence
- Integrated flocculator with variable speed stirrer

Lower installation costs

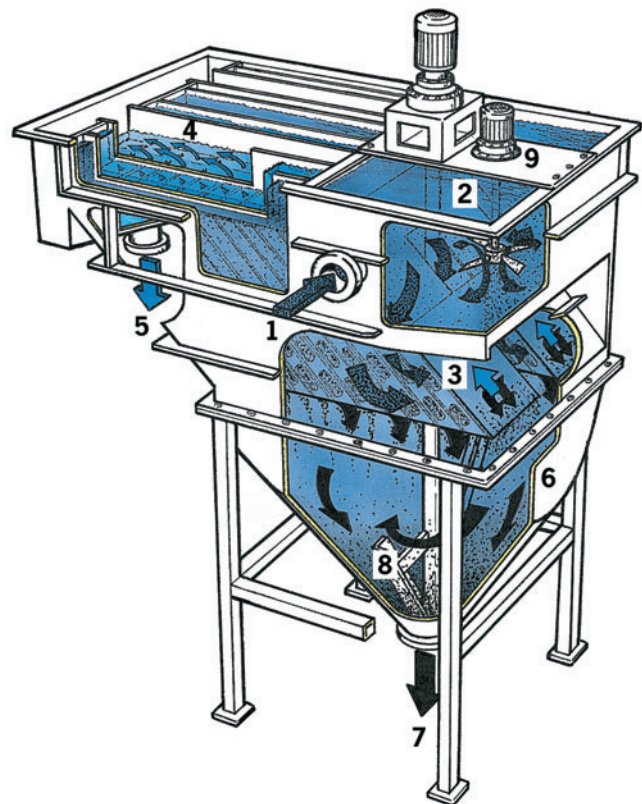
- Delivered as one-piece unit or in prefabricated sections
- Smaller foundations
- less floor space
- Square outline for easier planning and construction

Flexibility for plant changes or extensions

- Can be installed in any system
- Easy to relocate to adapt to process changes

Simplified in-plant installation

- Shorter pipework runs
- High level installation for gravity feed to downstream processes
- Easier supervision



- | | |
|-------------------------|--------------------------|
| 1. Feed inlet | 6. Sludge hopper |
| 2. Flocculation chamber | 7. Underflow outlet |
| 3. Lamella plate packs | 8. Rake with drive unit |
| 4. Overflow launders | 9. Flocculation agitator |
| 5. Overflow outlet | |

Small internal volume and surface area

- Easily insulated against heat loss or toxic fume emissions
- Evaporative losses are minimised.

Simple construction of sheet steel and standard profiles

- Special materials and coatings can easily be incorporated
- Easy to maintain

Model LT

The LT model is designed for total projected settling areas of 15 to 500m² and is suitable for the following applications:

- Small to medium solids flow rate
- Slurries containing coarse fractions

Options:

- Extended sludge hopper
- Flocculator with variable drive stirrer
- Automatic rake lifting device
- Automatic underflow control



Model LTS

The LTS model combines a circular sludge tank and rake mechanism with the clarification capability of the LT lamella plate pack system in a single compact unit. The rakes, together with the larger sludge tank, give:

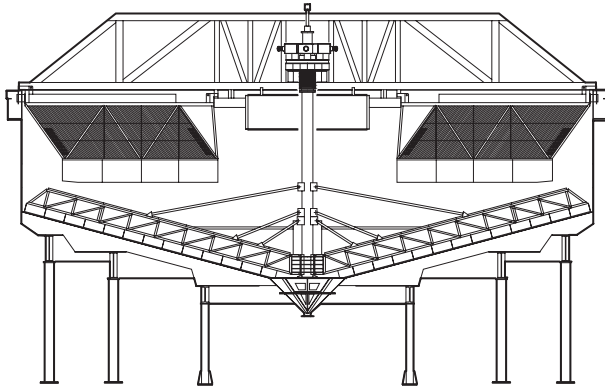
- Increased sludge thickening capacity
- Positive sludge discharge
- Greater sludge storage and surge capacity



Model LTK

The LTK is similar in design to the LTS model but is fitted with a larger diameter sludge tank. The LTK model is used when long retention times are required to achieve the required underflow density and the solids loading is beyond the range of the LTS unit.





Heavy duty IPS with radially placed lamella packs.

Model LTC

The LTC model consists of a number of lamella plate packs installed in a conventional cylindrical thickener tank with a standard centre-drive rake mechanism to remove the thickened sludge.

The compact prefabricated lamella packs of the LTC design allows the use of very large clarification areas installed in a fraction of the floor area required for a conventional thickener without lamella packs.

The LTC system allows a substantial reduction in the overall investment cost.

In some applications, the LTC can also be used as a classifier; changing the number of lamella packs in use varies the classification cut point.

LTC lamella packs can also be fitted to existing thickeners and clarifiers in order to enlarge the useful clarification area. This also applies to rectangular clarification basins.

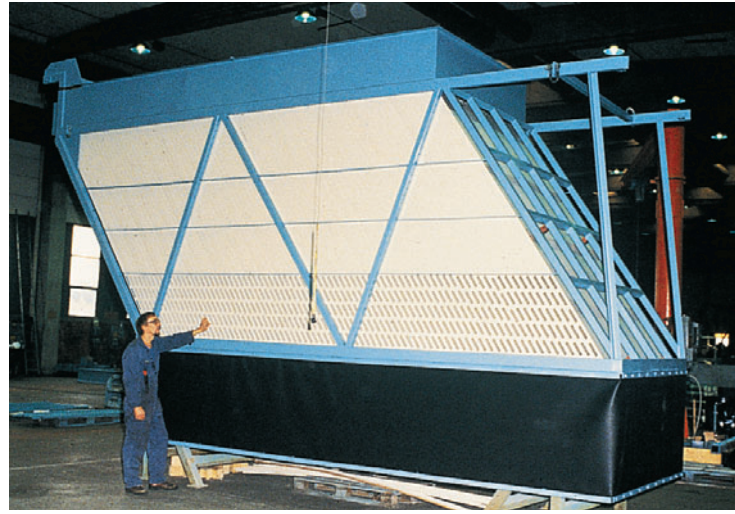
Model LTE

For higher thickening rates and greater sludge buffer capacity, Metso now offer a specially modified system.

The LTE model has a cylindrical tank mounted on a concrete foundation. The heart of the system is the lamella packs which gives maximum clarification area from minimum floor space. This could minimise or eliminate the need for flocculants.

Waste water or slurry streams from sand and gravel washing plants, soil treatment plants, coal plants and other mineral processing systems can be cleaned advantageously using the model LTE, returning clean water to the treatment process.

The LTE model can also be delivered with a conical sludge hopper used at lower solid loads or for coarser particles.



Prefabricated lamella pack.

This model, the LTE/C has the same upper section and settling area as the LTE model.

The IPS plants which use these machines in combination with appropriate dewatering systems are described in separate technical bulletines.



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Metso Minerals (Brasil) Ltda.

Av. Independência, 2.500 Éden
18087-050 Sorocaba
SP
Brazil
Phone: +55 15 219 1300
Fax: +55 15 219 1699

Metso Minerals (Chile) SA

Avda Vitacura 4380, 5th floor
Vitacura, Santiago
Chile
Phone: +56 2 3702000
Fax: +56 2 3702039

Metso Minerals Industries Inc.

P.O. Box 15312, York
Pennsylvania, 17405-7312
USA
Phone: +1 717 843 8671
Fax: +1 717 845 5154

Metso Minerals (Sala) AB

SE-733 25 Sala
Sweden
Phone: +46 224 570 00
Fax: +46 224 169 50

Metso Minerals Canada Inc.

1197 Ballantry Road
Oakville, ON L6H 5M7
Canada
Phone: +1 905 337 8811
Fax: +1 905 337 8827

Metso Minerals (UK) Ltd

Stocks House
North Street
Leatherhead, Surrey KT22 7AX
United Kingdom
Phone: +44 1372 81 43 00
Fax: +44 1372 81 43 05

Metso Minerals (Johannesburg) (Pty) Ltd

Private Bag X2006
Isando, Johannesburg, 1600
South Africa
Phone: +27 11 397 5090
Fax: +27 11 397 5826

Metso Minerals Asia Pacific

Locked Bag 10,
Blacktown BC, NSW 2148
Australia
Phone: +61 2 8825 1600
Fax: +61 2 8825 1799

www.metsominerals.com

E-mail: minerals.info@metso.com

