

## LAMELLA SETTLERS

-optimal sedimentation on a minimal footprint



The Lamella Separator by Nordic Water is the world's leading inclined plate settler, initially developed at the Johnson Institute in Sweden in the early 1970-ies. The Lamella Separator is designed to maximise settling efficiency with minimal footprint. Its success is due to a number of factors, such as the unique flow control system, which represents a breakthrough in modern plate separator design and has contributed significantly to the excellent reliability and efficiency of the Lamella by Nordic Water.

# DESIGNED TO PERFORM

Lamella Separators provide excellent separation and clarification performance in a wide variety of water treatment applications, such as:



## MUNICIPAL APPLICATIONS – WATER AND WASTE WATER

- Pre-water Treatment
- Backwash Water Treatment
- Primary and Secondary Settling
- Tertiary Treatment
- Sludge Thickening

## INDUSTRIAL APPLICATIONS

- Industrial Process water
- Chemical industry – purification and thickening
- Pulp & paper industry
- Iron & steel industry, mill scale removal
- Metal finishing – treatment of metal surfaces
- Metal Hydroxide Wastewater
- Pressure/vacuum Filtrate Clarification
- Purification in biological cleaning processes
- Recirculation of water in the potato and vegetable industry
- Treatment of water in power plant dust scrubbers

...and many more, where solids must be separated from fluids by sedimentation



## MATERIALS AND BUILDING DIMENSIONS

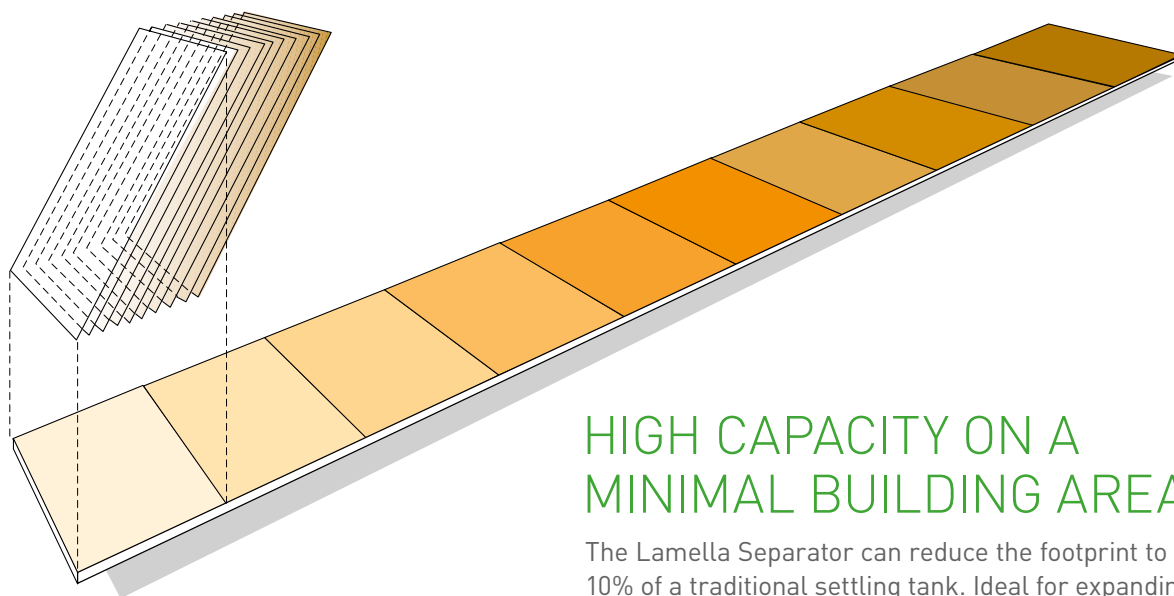
In order to comply with different site requirements and corrosive environments, the Lamella Separators are made from different materials, and in standard or customized sizes. We have delivered installations for flow rates ranging from 2 m<sup>3</sup>/h to 40,000 m<sup>3</sup>/h and free standing units up to 165 m<sup>2</sup> effective area with only 15 m<sup>2</sup> footprint.

### Free standing units:

- Stainless steel: up to 165 m<sup>2</sup> settling area
- FRP: up to 100 m<sup>2</sup> settling area

### Lamella plate packs for installation in basins:

- Stainless steel or FRP for any flow required



## HIGH CAPACITY ON A MINIMAL BUILDING AREA

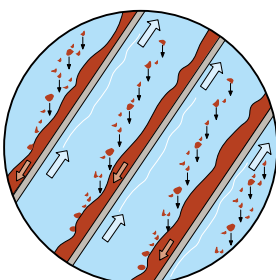
The Lamella Separator can reduce the footprint to as little as 10% of a traditional settling tank. Ideal for expanding capacity in existing plants or whenever space is scarce or costly.

## WIDE RANGE FOR MAXIMUM FLEXIBILITY

The Lamella Separator is available as free standing models or plate packs, in different sizes and plate distances. All models can be customized for various needs. Whether used in a concrete basin or a steel tank, equipped with a sludge scraper or combined with a flocculation tank, the Lamella separator will meet your process and application requirements. It is easy to install and with the few moving parts the operating and maintenance costs are very low.

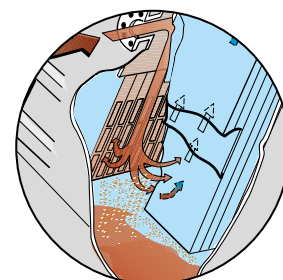
### Enhanced Separation

The well proven flow control feature and excellent hydraulic design ensure equal flow distribution over the lamella plates to enhance separation.



### Uninterrupted settling

By allowing the liquid to enter the plate assembly through the side, rather than underneath, the settled material is not disturbed.





# FREE STANDING MODELS

All free standing models can optionally be equipped with one or more flocculation tank(s) with agitator and rapid mixer to improve flocculation and sedimentation.

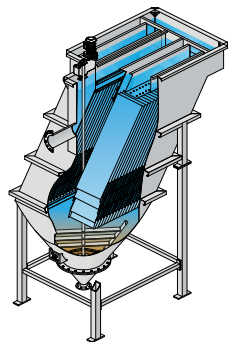


The feed enters the unit through the feed pipe and flows through the inlet chamber in the centre of the unit and in between the plates through openings in the sidewall. As the liquid flows upward between the plates, the solids settle on the inclined, parallel plates and slide into the sludge hopper at the bottom of the unit. In the hopper, the sludge is thickened prior to discharge through the sludge outlet. The clarified liquid leaves the plate assembly through openings at the top and is discharged into collection channels leading to the clarified water outlet.

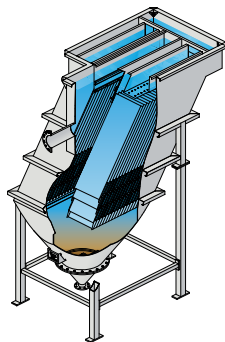
The even distribution of the flow to each plate ensures optimal operation at a high capacity. The side entry of the fluid prevents the solids that have settled from being carried away with the entering fluid.

### LS – Lamella Settler

The LS model is available in a number of standard sizes. It consists of a Lamella Plate Separator and a conical sludge hopper in a single tank. The sludge is removed via hydrostatic pressure by opening a valve. Optional items include flocculation tanks with rapid flush mixer and agitator, and a rotating sludge scraper in the hopper.



Lamella LS with a sludge scraper

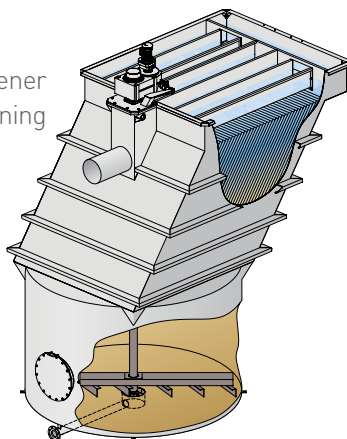


Lamella LS without sludge scraper



Lamella LS is a Lamella Settler with sludge thickening bottom hopper

Lamella LT plate thickener with a sludge thickening bottom tank.



### LT – Lamella Thickener

The Lamella Thickener is a Tank model available in several standard sizes. It is supplied with a sludge thickening tank equipped with a rotating sludge scraper. The tank volume is higher than the hopper. These units are designed for flows and applications with high solids content and thickened underflow. Optional items include a flocculation tank with rapid flash mixer and agitator.

### Flocculation tank

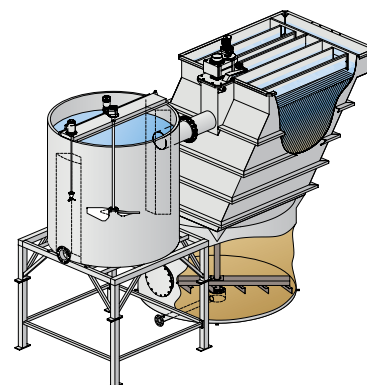
Both models (LS and LT) can be equipped with a flocculation tank with an agitator. The tank can be equipped with a rapid flash mixer for good mixing of the flocculation agents.



Lamella Settler and DynaSand filter – a complete range of water and effluent products by Nordic Water



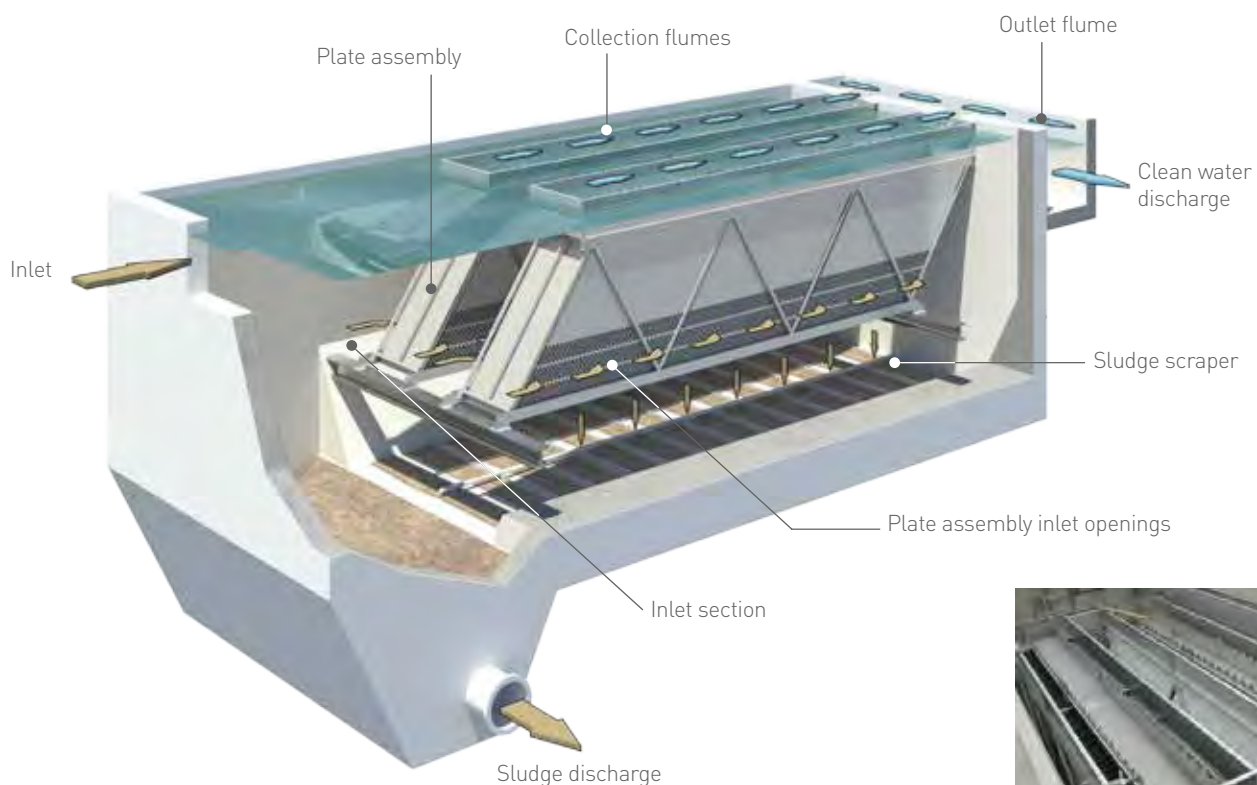
Installation of Lamella Settlers and six 19m³ flocculation tanks in the UK



Lamella LT with flocculation tank

# PLATE PACKS

The models LP and LPS Plate Packs are made for installation in steel tanks or concrete basins. These plate packs are mainly used in large municipal plants but may also be successfully installed in smaller plants. The LP and LPS models offer significant cost savings and are particularly well suited for retrofitting to increase the capacity in existing basins. The Plate Packs are ideally combined with a Zickert Bottom Sludge Scraper.



## LP – Lamella Plate Pack Assembly

The LP model comes in several standard sizes. The Lamella Plate Packs feature fully submerged plates with a central collection flume. The central collection flume comes with v-notch weirs for collection of clarified liquid that is discharged through an embedment flume. The versatile LP model is easily fitted into most sedimentation basins, and is well suited for waste water treatment.

## LPS – Lamella Plate Pack Assembly with Side Flumes

The LPS model has flumes located on the sides of the plates and incorporates v-notch weirs. The plates extend above the water surface and are individually removable. This solution is a very cost-effective per square foot of projected area, and is especially well suited for drinking water treatment.



The clarified water collected in the V-notch weirs is transported to the outlet flume

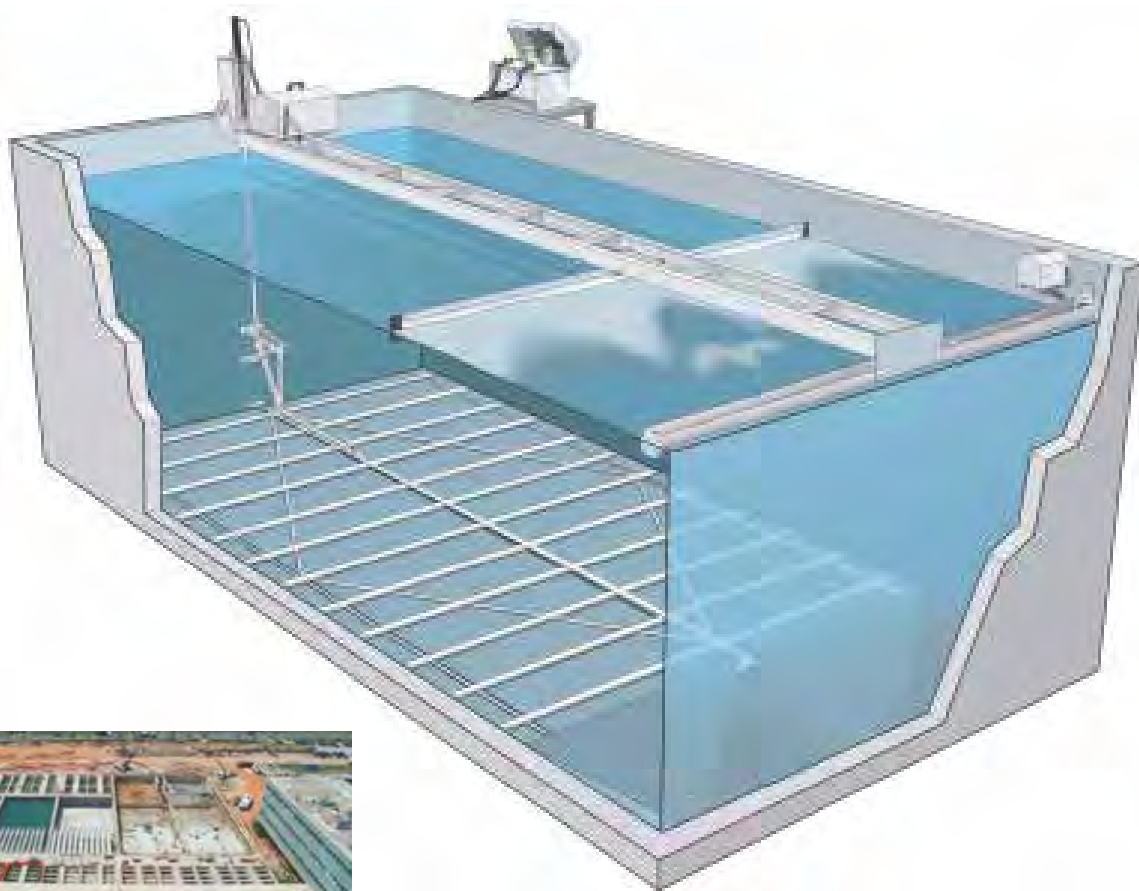


Lamella plate pack in a concrete tank and with Zickert bottom sludge scraper

## LP AND LPS WITH ZICKERT BOTTOM SLUDGE SCRAPER

The Zickert Sludge Scraper is ideal for installation underneath lamella packs due to its very low profile. It is specially designed for continuous sludge thickening and removal without disturbing the sludge blanket or interrupting the sedimentation process. Since it is fully

customized to meet varying tank widths, lengths and geometry, it can be adapted to meet widely varying needs for municipal and industrial applications. More information is available in the Zickert sales material and on our home page.



Expansion of Lamella Plate Packs and Zickert sludge scrapers installation in Franklin, U.S.A.



LP Plate Packs can be supplied ready for installation



Installation costs are reduced by minimal handling



Installation of a treatment plant consisting of a special plate separator and DynaSand filters



LPS Plate Packs are economically transported in flat packs "Ikea-style"



## PILOT UNIT AND SEDIMENTATION TESTS

We can offer simple sedimentation tests on site or in our laboratory to verify the settling ability and the requirements for dosage of coagulants or poly-electrolytes to improve settling speed or effluent quality. This normally provides good initial

understanding and sizing information. We can also provide a pilot unit to conduct appropriate tests on site in order to identify the optimal equipment needs for the actual setup and environment.

## OTHER PRODUCTS FROM NORDIC WATER:

- DynaSand Filters
- DynaDisc Disc Filters
- DynaDrum Drum filter
- Zickert Sludge Scrapers and basin equipment
- Meva Screens and screenings treatment equipment
- Soby TD Bandfilter

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### Sweden Head Office

Nordic Water Products AB  
Sisjö Kullegata 6  
SE-421 32 Västra Frölunda  
Sweden  
Tel: +46 31 748 54 00  
Fax: +46 31 748 54 10  
info@nordicwater.com

### Service and Spare Parts

Nordic Water Products AB  
Frykdalsbacken 3  
SE-123 43 Farsta  
Sweden  
Tel: +46 8 524 409 00  
Fax: +46 8 520 173 25  
info@nordicwater.com

### Benelux

Nordic Water Benelux BV  
De Scheysloot 47  
2201 GN Noordwijk  
The Netherlands  
Tel: +31 71 763 06 21  
Fax: +31 71 763 06 22  
info.nl@nordicwater.com

### Brazil

Nordic Water Brazil & Latam  
Rua Domingos Rodrigues, 341  
cj.54 Lapa  
CEP: 05075-000 São Paulo - SP  
Brazil  
Tel: +55 11 4371 1152  
info.br@nordicwater.com

### China

Nordic Water  
Products (Beijing) Co., Ltd.  
Room 611, Interchina  
Commercial Building No. 33  
Dengshikou Str. Dong Cheng District  
100006 Beijing  
China  
Tel: +86 10 85 118 120  
Fax: +86 10 85 118 121  
info@nordicwater.com.cn

### Germany

Nordic Water GmbH  
Hansemannstraße 41  
414 68 Neuss  
Germany  
Tel: +49 2131 3106 0  
Fax: +49 2131 3106 10  
info.del@nordicwater.com

### Norway

Nordic Water Products AB  
Drengsrudbekken 4  
1383 Asker  
Norway  
Tel: +47 66 75 21 10  
Fax: +47 66 75 21 11  
info.no@nordicwater.com

### Spain

Nordic Water Tecnología Ibérica  
Plaça del Gas 4, 1 - 2,  
08201 Sabadell  
Spain  
Tel: +34 937 276 007  
Fax: +34 933 969 480  
info.es@nordicwater.com