COMPACT SETTLING

with the
Johnson Lamella separator

The Johnson Lamella separator – compact, robust, efficient

The Johnson Lamella separator occupies as little as one-tenth of the space required by the equivalent settling pond.

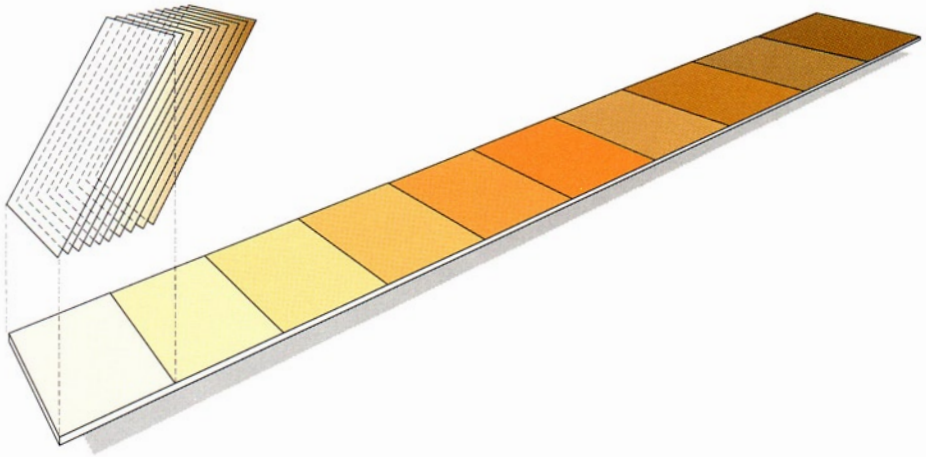
The Johnson Lamella separator is the world leader in sedimentation technology. Its success is due to a number of factors, mainly the unique, patented flow control system, which represents a breakthrough in modern plate separator design and has contributed significantly to the excellent reliability and efficiency of the Johnson unit.

Operating results recorded over the years provide the information on which we base our design, ensuring the correct choice of equipment. If the data base does not contain information on a specific application, the operating conditions are simulated in the laboratory or tested with the aid of pilot equipment.

Compact design is assured by accurate sizing. The space requirement may be reduced by as much as 90% compared with a settling pond. With a Johnson separator, every square metre of floor or ground area provides up to 10 m^2 of settling area, which can be utilised to achieve a high degree of purification even when space is limited, or to increase the capacity of an existing plant.

THE JOHNSON LAMELLA SEPARATOR.

The Johnson Lamella separator is supplied as a complete, easy-to-install unit, reducing installation costs to a minimum. Wear and tear is practically negligible (the unit contains only a few moving parts), minimizing operating and maintenance costs.



The Johnson Lamella separator – principle of operation

The liquid containing the solids to be separated enters the unit through the inlet pipe and flows downward through the inlet chamber in the centre of the unit entering the plates through openings in the sides.

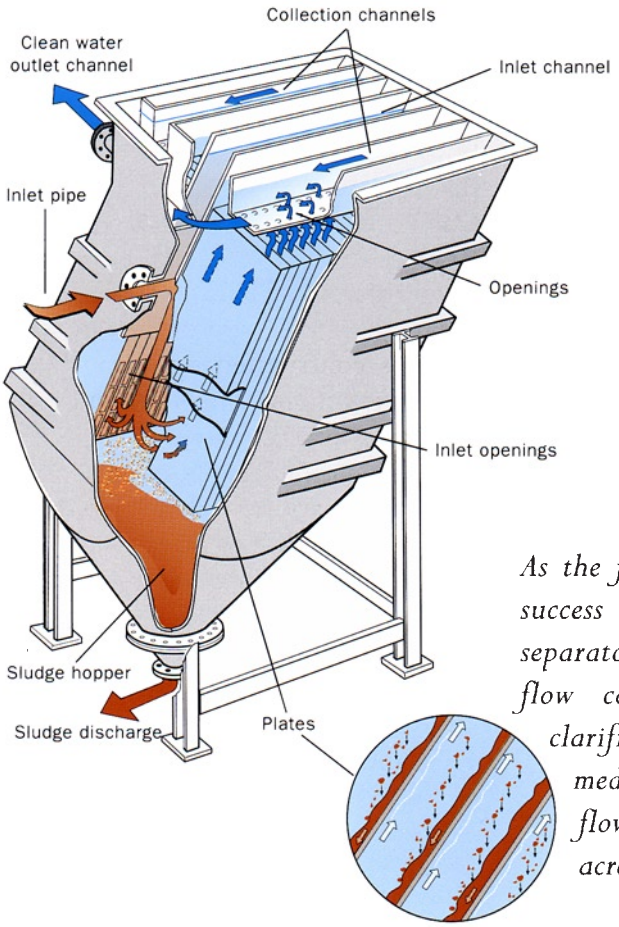
As the liquid flows upward, the solids settle on the inclined, parallel plates and slide into the sludge hopper at the bottom of the unit. In the hopper, the sludge is thickened prior to discharge through the sludge outlet.

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 openings at the top of the plate assembly are designed to create a pressure drop across the collection channels, ensuring that the flow is distributed uniformly between the plates and that the full area is utilised. This is the patented flow control feature.

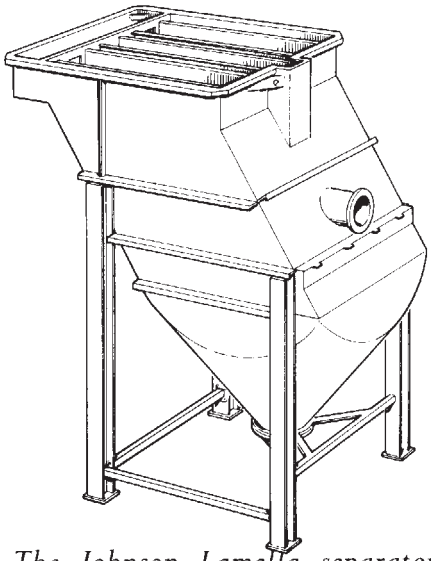
The operational reliability of the separator is increased by using the clarified liquid as the flow control medium, making the unit less sensitive to flow variations and reducing the risk of fouling.

Allowing the feed to enter the plate assembly from the side, rather than from underneath, eliminates the risk of disturbing previously settled material.



As the feature which assured the success of the Johnson Lamella separator, the unique, patented flow control system uses the clarified liquid as the control medium, ensuring that the flow is distributed uniformly across the plate assembly.

The Johnson Lamella separator – applications



The Johnson Lamella separator comprises part of many advanced public and industrial water and effluent treatment systems

The Johnson Lamella separator is part of a range of advanced water and effluent treatment equipment. Including the DynaSand filter, as well as separators and ancillaries, the range covers most industrial and public water and effluent treatment applications.

Typical applications of the Johnson Lamella separator include effluent treatment in the pulp and paper industry, industrial and public water treatment systems, biological purification processes, wash water recirculation systems (for example, in potato and root crop processing), and the treatment of wet scrubber and slaking effluents in the power industry.

Other common applications include clarification and thickening processes in the chemicals, mining and mineral industries, the treatment of effluents in metal finishing, and iron and steel plants.

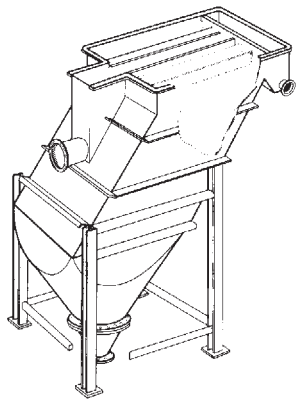
In many instances, the plate separator is also used to clarify the wash water from a DynaSand filter.

SLUDGE THICKENING AND RECIRCULATION IN AN ANAEROBIC BIOGAS PROCESS.

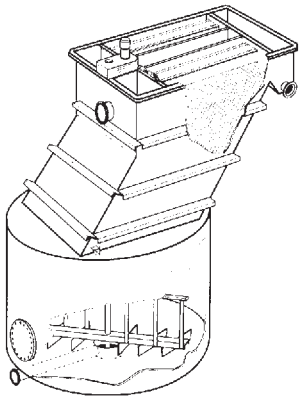
RESTORATION OF A HEAVILY CONTAMINATED INLAND LAKE.

THE JOHNSON LAMELLA SEPARATOR AND DYNASAND FILTER – A COMPLETE RANGE OF WATER AND EFFLUENT TREATMENT PRODUCTS.

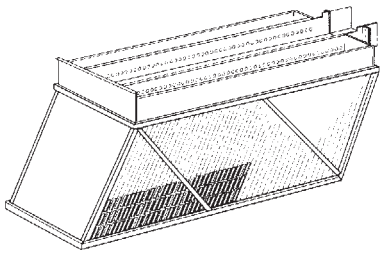
The Johnson Lamella separator – standard range



MODEL LS PLATE SEPARATOR.



MODEL LT PLATE SEPARATOR.



MODEL LP PLATE PACK ASSEMBLY.

The Johnson Lamella separator is available in three different basic versions (which comprise the standard range) and in special versions for particular applications.

Since finished CAD production drawings are available for standard separators, these units can be supplied more quickly and at lower cost, while the choice of equipment is also facilitated by the existence of a considerable quantity of operating data from earlier contracts. The separators are manufactured in various grades of steel and in plastic.

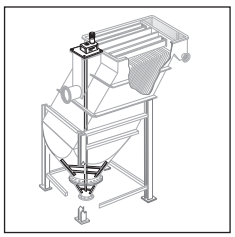
The LS has a conical sludge hopper and can be equipped with a sludge discharge scraper. Designed for flows of up to 180 m^3/h, the model provides 25 to 120 m^2 of settling area and requires a floor area of 1.5 x 3.0 m to 2.9 x 4.4 m.

The LT is a combined separator and sludge thickening unit designed specifically for liquids with high sludge contents and for applications in which the dry solids content of the sludge must be maximized. For this purpose, the model is provided with a sludge thickener, equipped with a discharge scraper, underneath the plate assembly. The LT is designed for flows of up to 150 m^3/h (settling area 15-100 m^2) and occupies a floor area of 1.8 x 3.0 m to 3.2 x 4.4 m.

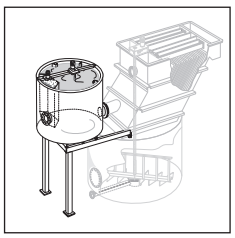
Like the LT, the LS can be equipped with a flocculation tank upstream of the separator inlet. The flocculant is added in a separate mixing compartment and the liquid is then agitated, forming larger flocs which are easier to remove in the plate separator.

The LP is a plate pack assembly design for installation in either a concrete or steel tank. The pack can also be installed in an existing settling pond to increase its capacity. The largest standard pack is designed for flows of up to 300 m^3/h. The settling area is 190 m^2 and the overall dimensions are 10.1 x 1.1 x 2.6 m. A number of standard packs can be combined in a single enclosure.

The availability of finished CAD production drawings for the standard range of plate separators ensures faster delivery at lower cost.

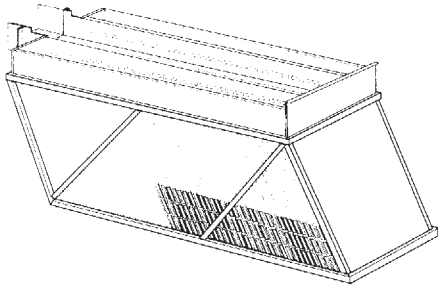


THE LS CAN BE EQUIPPED WITH A SLUDGE DISCHARGE SCRAPER.



BOTH THE LT (ILLUSTRATED) AND LS CAN BE EQUIPPED WITH A FLOCCULATION TANK.

The Johnson Lamella separator in concrete tank



Despite the modest overall dimensions of the installation, a plate separator in a concrete tank provides a large settling area.

Concrete tanks are ideal for high-capacity installations. With a Johnson Lamella separator, every square metre of tank area can provide up to 10 m^2 of settling area. Installing one or more plate assemblies in an existing settling pond is a simple and efficient means of increasing the capacity.

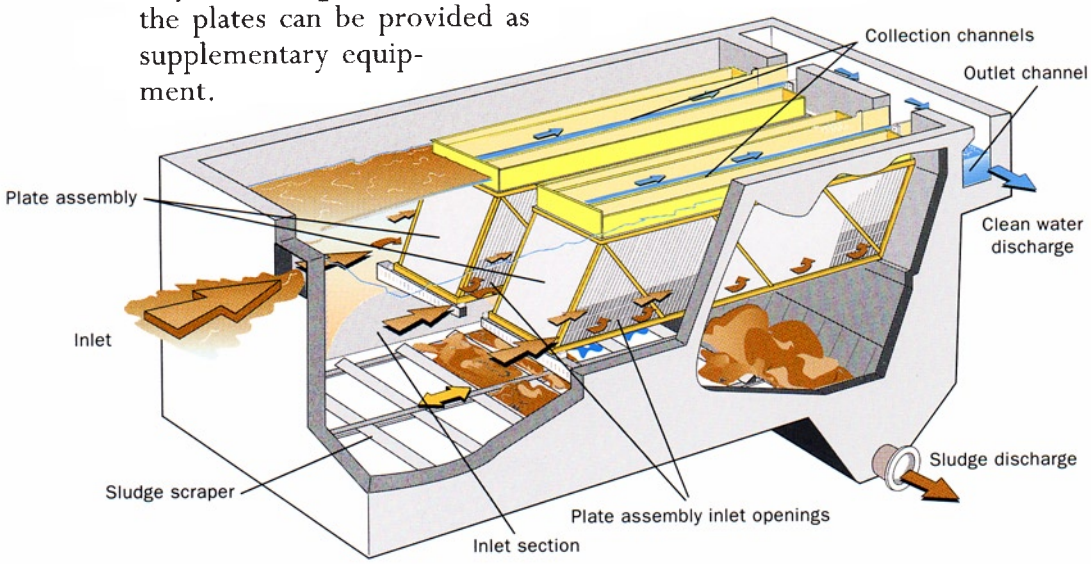
Plate pack assemblies can be supplied as complete units ready for installation, reducing both the time and cost of the project. Separators installed in this manner operate in exactly the same manner as free-standing units, the solids settling on the inclined plates and sliding into the space underneath under gravity.

The sludge is transferred into the sludge hopper with the aid of a bottom scraper and is discharged through the sludge outlet. If required, floatings may be removed with the aid of a surface scraper. If necessary a washing unit to clean the plates can be provided as supplementary equipment.

PLATE PACK ASSEMBLIES ARE SUPPLIED READY FOR INSTALLATION.

INSTALLATION COSTS ARE REDUCED BY MINIMAL HANDLING.

A flocculation stage may be installed upstream of the settling stage as required. Flocculation is completed in the inlet section, upstream of the plate assemblies, to improve separation.



The Johnson Lamella separator – special models

PRODUCTION OF PROCESS AND DRINKING WATER FROM MUDDY RIVER WATER.

RUBBER-LINED PLATE SEPARATOR DESIGNED FOR DESULPHURISATION PLANT.

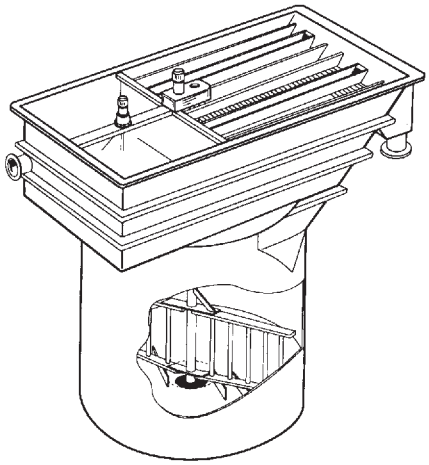
The standard range of plate separators is complemented by special, custom-built models. Designed in cooperation with individual customers to suit specific process conditions, these are built to the specifications applicable in each particular case, in terms of capacity, dimensions and materials.

Special versions of the LS and LT models, with settling areas of up to 800 m^2 and 300 m^2 respectively, have been built.

Applications for special models include:

- treatment of effluents from coating processes in the paper industry;
- thickening and recirculation of sludge in anaerobic biogas processes in the sugar industry, and in the pulp and paper industry;
- recirculation of water from wood rooms in the pulp and paper industry;
- purification of phosphorous-bearing effluents from gypsum waste in the fertiliser industry;
- purification of stone and gravel wash water;
- purification of mill scale-bearing water in the iron and steel industry.

INSTALLATION OF A TREATMENT PLANT CONSISTING OF A SPECIAL PLATE SEPARATOR AND DYNASAND FILTER.



Each special model is unique and is designed for a specific application.

Leading Lamella Separators

Nordic Water Products has been the world's leading manufacturer of plate separators for the last 30 years, supplying more than 6,000 plants for muni-cipal and industrial applications.

Customers include water and effluent treatment works, as well as the pulp and paper, chemical process, foodstuffs, surface treatment, power, mining and minerals, and iron and steel industries.

Applications include the purification of raw water and effluents, biological treatment processes and the recirculation of process water in a wide range of different applications.

Nordic Water Products

Nordic Water Products AB provides equipment and systems for water and waste water treatment to process industries and public utilities. Our headquarter is located in Göteborg on the Swedish west coast. We have offices and service units in Nynäshamn, Mariestad, Sala, Klippan and Hanhals. The products are distributed worldwide through a network of representatives and agents.

Our products represent the state of the art in the water industry. DynaSand Continuous Sand Filter, DynaDisc Filter, Lamella Separator, MEVA Fine Bar Screens, Screw Wash Presses, Grit Washers and Sludge Thickeners, Zickert Sludge Scrapers and Equipment for Settling Tanks.

nordic water

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