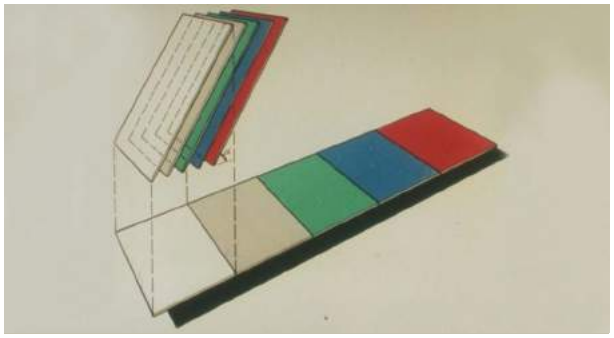
Brightwork

Tilted plate separator modules information sheet

Tilted plate separator modules

A tilted plate separator (TPS) may be applied to a variety of solids/liquid separation situations in both process industry and water and waste water treatment. The huge area savings of up to 4-10 times the normal footprint are one of the most important benefits of using TPS technology.



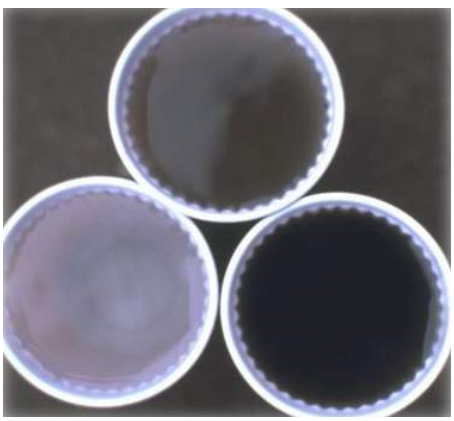
Footprint savings

The proper selection of type and size requires a set of input data and a good deal of know-how and experience of settling technology and – if required – upstream coagulation and flocculation. BW Products has the knowledge to assist you in designing the system to your needs, based upon a wide variety of full scale references, pilot research and engineering capabilities.

BW Products designed a standardized TPS module of rigid materials which may be incorporated as a single unit or in multi units both in stand-alone tanks and – for the larger capacities – in concrete basins. In some cases the TPS module may fit into an existing tank, in other cases you may well design your own tank to fit in the TPS module(s).

Features and module design
counter current flow conditions
plate spacing: 50 – 100 mm, depending on sludge volume and settling rate
flat plates, easy to clean
plate length/width ratio > 2 to ensure homogeneous flow distribution
laminar plug flow conditions (Re < 250 and Fr > 10^{-5})
Welded polypropylene plate and frame construction, suitable for any medium
plate angle of 55o for fast removal of settled sludge
modules for both stand-alone tanks and for incorporation in (concrete) basins
module configuration for capacities from 5 m^3/h up to 10,000 m^3/h
each module equipped with leveling tool
each module equipped with lifting lugs for easy lift out

Applications
waste water pre-settling of organic and inorganic solids
waste water post-settling of organic and inorganic solids
wash water treatment in drinking and process water plants
settling of surface water for process water production recycling plants
primary settling in the food industry (e.g. starch separation)

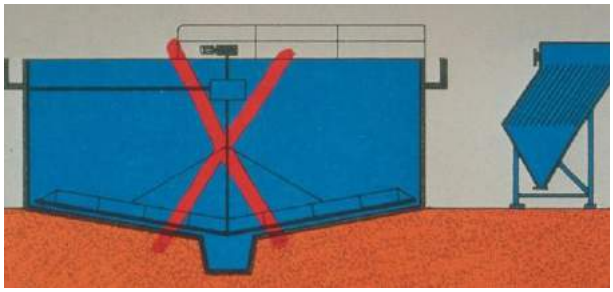


Clockwise: feed, sludge (TPS underflow) and settled effluent samples

Each module consists of a polypropylene frame with individually welded in lamellas.
The feed flow is fed into the module plates from the bottom end of the sides. While the feed water is flowing to the top of the TPS in between the plates the sludge is settling on the plates, sliding downwards and released at the bottom of the module. In order to prevent any interference between the settling sludge and the feed water a free space of 0.7 m below the module is taken into account.
The settled water is released at the top of the module by using a discharge gutter equipped with discharge orifices in order to create a homogeneous water release over the length of the module.

Operations benefits
reduced space requirements
reduced total installation costs
lower maintenance, virtually no wear and tear
improved efficiency, no short-circuiting, wind

up to 88% area savings by applying TPS



TPS Modules

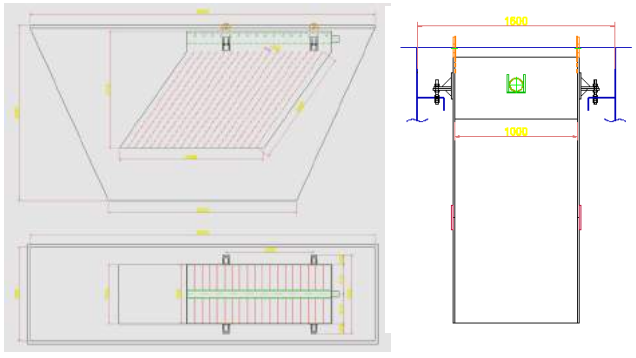
Each settling area can be designed by an arrangement of a number of TPS modules. The optimum configuration will be determined on the basis of feed flow rate, solids concentration and density, settling rate, sludge volume and required effluent quality. An application questionnaire may be helpful for designing purposes. If not available a simple settling tests may be useful.

number of modules	settling area (m^2)		minimum required tank dimensions		
	50mm plate distance	100mm plate distance	length (m)	width (m)	depth (m)
1	22	11	3.0	1.5	3.0
2	44	22	4.5	1.5	3.0
3	66	33	6.0	1.5	3.0
4	88	44	7.5	1.5	3.0
6	132	66	10.5	1.5	3.0
8	176	88	7.5	3.0	3.0
10	220	110	9.0	3.0	3.0
12	264	132	10.5	3.0	3.0
16	352	176	13.5	3.0	3.0

Settling area per x modules and required tank dimensions

Example

An existing concrete postsettling tank (l x w = 5.9 x 1.6 m) proved to be too small to achieve good settling performances. Two standard TPS modules with a plate distance of 100 mm have been designed to fit into the existing tank. The result was a more than doubled available settling area.



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