



tubSed[®]

The optimal tube settler technology for sedimentation processes

THE OPTIMAL TUBE SETTLER TECHNOLOGY FOR SEDIMENTATION PROCESSES

Lamella settling technology has been successfully tried and tested to optimize the sedimentation process by increasing settling area without increasing footprint.

ECOTEC has been using this technology worldwide for over 25 years, and thanks to its commitment to incorporating continuous improvements, we provide solutions that ensure the most efficient lamellar systems.



KEY FACTS

- Equidistant Chevron V-Shape channels
- Largest channel section
- Minimal clogging risk
- High sludge evacuation capacity
- Exclusive T-guide / ultrasonic welding system
- High mechanical strength
- Minimal effective surface losses
- Trouble-free on site assembling
- WRAS certified for drinking water



THE OPTIMAL SHAPE

Channel geometry is the key factor in any system's performance, and Chevron V-shape channels have proven to be the most effective among other available tube geometries in the market.



Sketch 1

Geometric projected surface is widely used as commercial parameter, but it has no impact for calculation purposes, and, more important, it does not imply a larger equivalent projected surface

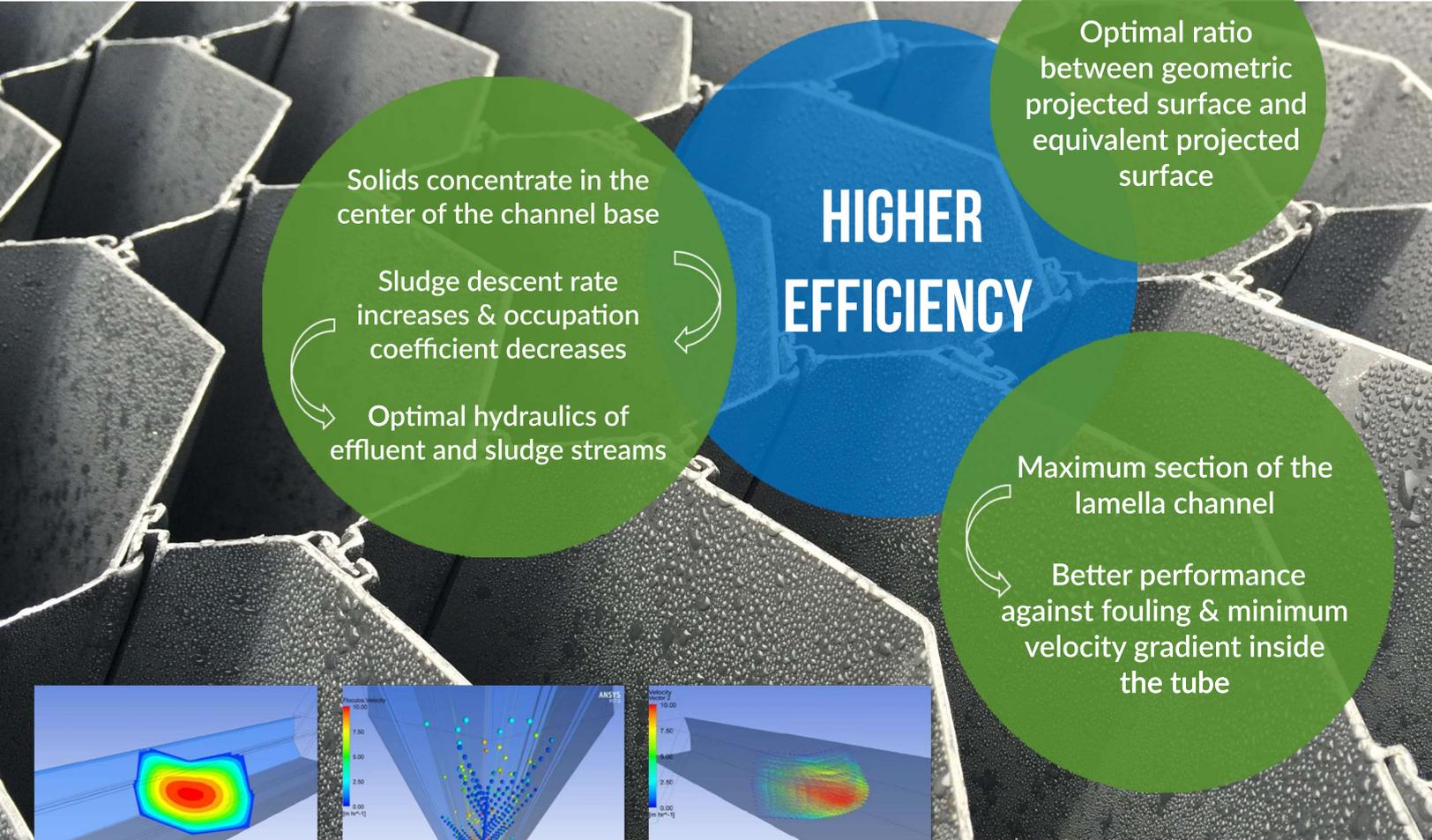
Equivalent projected surface is therefore the **only valid parameter for calculation**, and it is based on the maximum distance "D" (see sketch 1), which determines the path that the solid must cover inside the lamella, and this value is totally dissociated from the geometric channel shape.

While providing the same equivalent projected surface, ECOTEC tubSed® has the minimum geometric surface and therefore larger section channels, which maximizes the operating area of the lamella and **minimizes clogging risks**.



DIFFERENTIAL ASPECTS

Module hydraulics



Solids concentrate in the center of the channel base

Sludge descent rate increases & occupation coefficient decreases

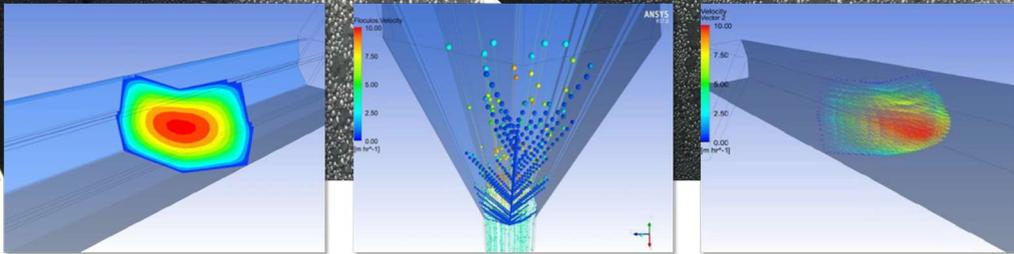
Optimal hydraulics of effluent and sludge streams

HIGHER EFFICIENCY

Optimal ratio between geometric projected surface and equivalent projected surface

Maximum section of the lamella channel

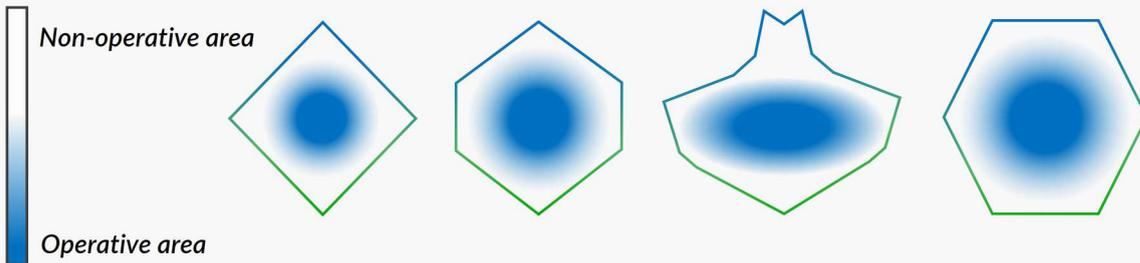
Better performance against fouling & minimum velocity gradient inside the tube



tubSed® modeling and simulation

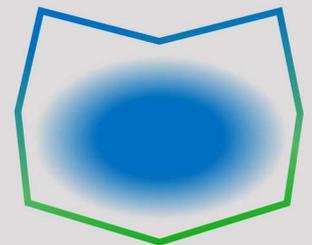
Operative area

OTHER GEOMETRIES



SMALLER OPERATIVE AREA → HIGHER VELOCITY → LOWER SEDIMENTATION EFFICIENCY

tubSed®



BIGGER OPERATIVE AREA
 ↓
 LOWER VELOCITY
 ↓
 HIGHER SEDIMENTATION EFFICIENCY

Design characteristics



Modules are made of one single profile fitted with a T-guide specially conceived to maximize the contact area in the welding points, thus providing the maximum mechanical strength and maximum breaking load.

High quality surface finishing which minimizes sludge adherence onto the profiles.

Parallel shape profiles.

WRAS certified for drinking water.

SUPPORT STRUCTURE

Custom-designed long term solutions

Designed and calculated to withstand the maximum load caused by any unforeseen contingency.

Support profiles specifically developed for ECOTEC tubSed® systems.

Customized support structure designed to reduce blind non-operative areas. Usual understructure systems entail 18 to 20% loss of effective surface. ECOTEC exclusive system can reduce this loss to a mere 6%.

Trimmed to exact specifications for full basin coverage.

Special support structures for large tanks.



More than 9 m span

The optimal lamella system

In conclusion, the most reliable tube settler system should combine all previous points: A robust module conception with a geometric design of the tube that enhances sedimentation and minimizes possible clogging problems, and a strong support system designed to meet the specific requirements of each application.

INTERNATIONAL PROJECTS

Reliability, the key to long distance supplies

ECOTEC has over 25 years of experience in worldwide deliveries. We have carried out reference projects in several countries.

Module assembly on site is easy, and does not require specialized personnel.

When delivered as single profiles (instead of assembled modules), volume occupied for freight purposes is reduced up to 1/6th.

ECOTEC can offer a turn key project, as well as an on-site technical supervision of the assembly by our specialists.



TECHNICAL DATA

TECHNICAL DATA		MODEL	TS.50	TS.65	TS.85
					
Specific surface	Slope 60° [m ² /m ³]		11	8	6,25
	Slope 55° [m ² /m ³]		13	9	7
Vertical module height [mm]			500 – 2000	750 – 2000	750 – 2000
Standard module height [mm]			1000	1000/1500	1000/1500
Lamella pitch [mm]			45 (+/- 1)	64 (+/- 1)	83 (+/- 1)
Hydraulic radius [cm]			1,5	2,5	2,6
Material			PVC PPTV	PVC PPTV	PVC PPTV
Max. operation temperature [°C]			55 80	55 80	55 80
Weight (dry) [kg/m ³]			80 53	60 41	45 35

AUTOMATIC CLEANING SYSTEM

tubJet® is a patented system designed to clean all lamellar channels installed throughout the surface of clarifiers. It is effective and thorough.

It operates automatically once it receives the start order from plant operator. When the cleaning process is completed, the unit returns to the initial position until the new start signal.

tubJet® cleaning system can be installed in tanks up to 60m long and 12m wide.

Highly effective cleaning process throughout all lamellar channels, and the entire surface of the clarifier unit.

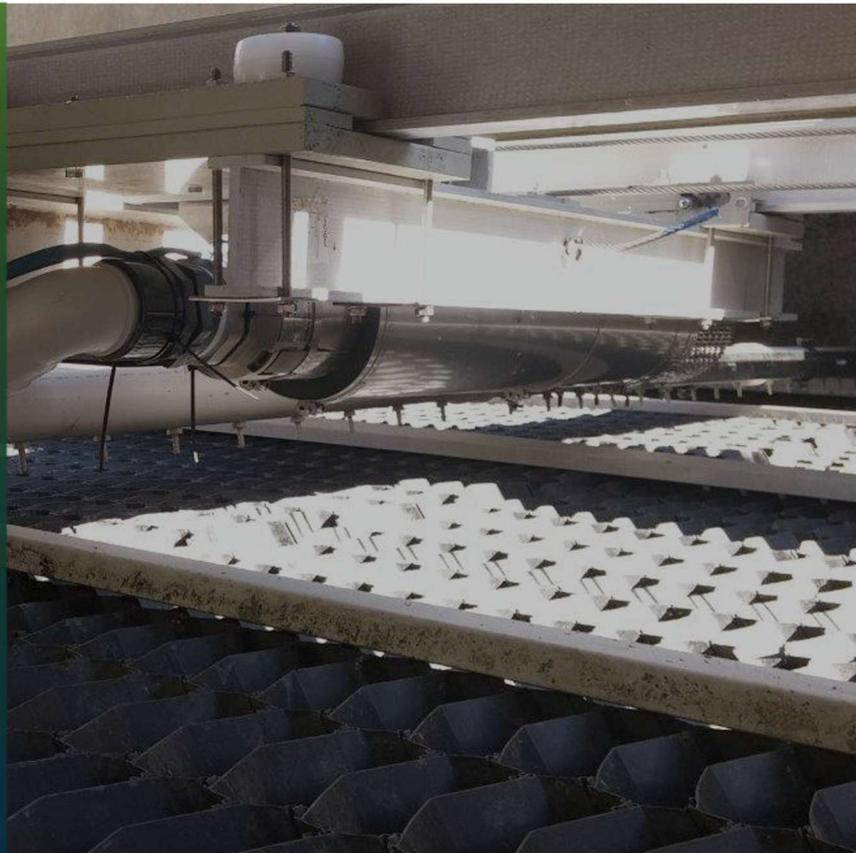
It resolves all the limitations of manual cleaning, reaching all the internal surfaces of every tube channel, and preventing adhered sludge that has been exposed to the weather from drying out before being removed.

The process does not require manual labour or intervention.

The tank does not have to be emptied.

It can be accessed and inspected easily as it is placed on top of the lamellar package.

Low operation costs: The cleaning frequency can be adjusted to each specific process which ensures maximum efficiency of the clarifier unit.





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