HUBER TECHNOLOGY

HUBER Opti-Flow System for optimal tank flow

Inlet system for circular secondary clarification tanks:
– Feed distribution to the full tank circumference
– High surface overflow rate
– High surface sludge load
– High operational safety

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The situation:

The settlement characteristics of a secondary clarification tank are affected significantly by the inflow system design.

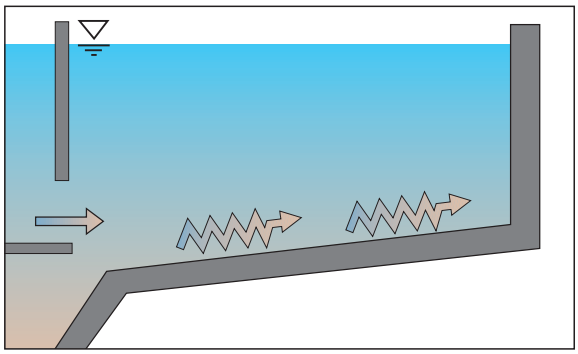
Poor inlet arrangements result in several problems that may compound and lead to a high concentration of filterable material in the effluent.

The main problem is the high inlet energy in centrally fed tanks that leads to high internal flow rates and thus to

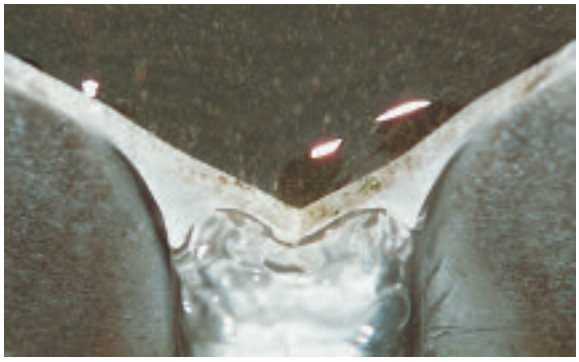
- sludge resuspension
- high sludge blankets
- unstable flow patterns
- low return sludge concentrations

and finally to sludge overflow.

The feed energy can be minimised if the influent is distributed over the entire tank circumference. In this way the inflow velocity is significantly reduced, resulting in a very favourable hydraulic tank flow.



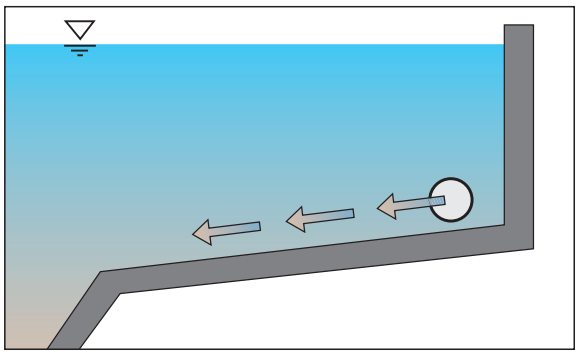
Instable and turbulent flow conditions



Solids in the clarified water outlet due to non-optimised tank flow

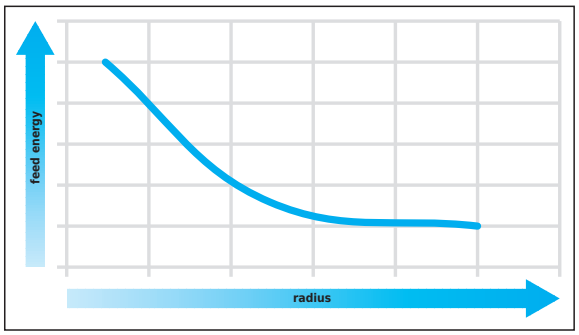
Our solution:

The Opti-Flow feed system introduces the wastewater/sludge mixture into the tank with the lowest possible potential and kinetic energy. The flow is uniformly distributed around the entire tank circumference as close to the tank wall, and as deep as possible, which not only gives the lowest feed energy, but at the same time minimises short-circuits and reduces the tendency for turbulence.



Stable flow conditions – reduced turbulence

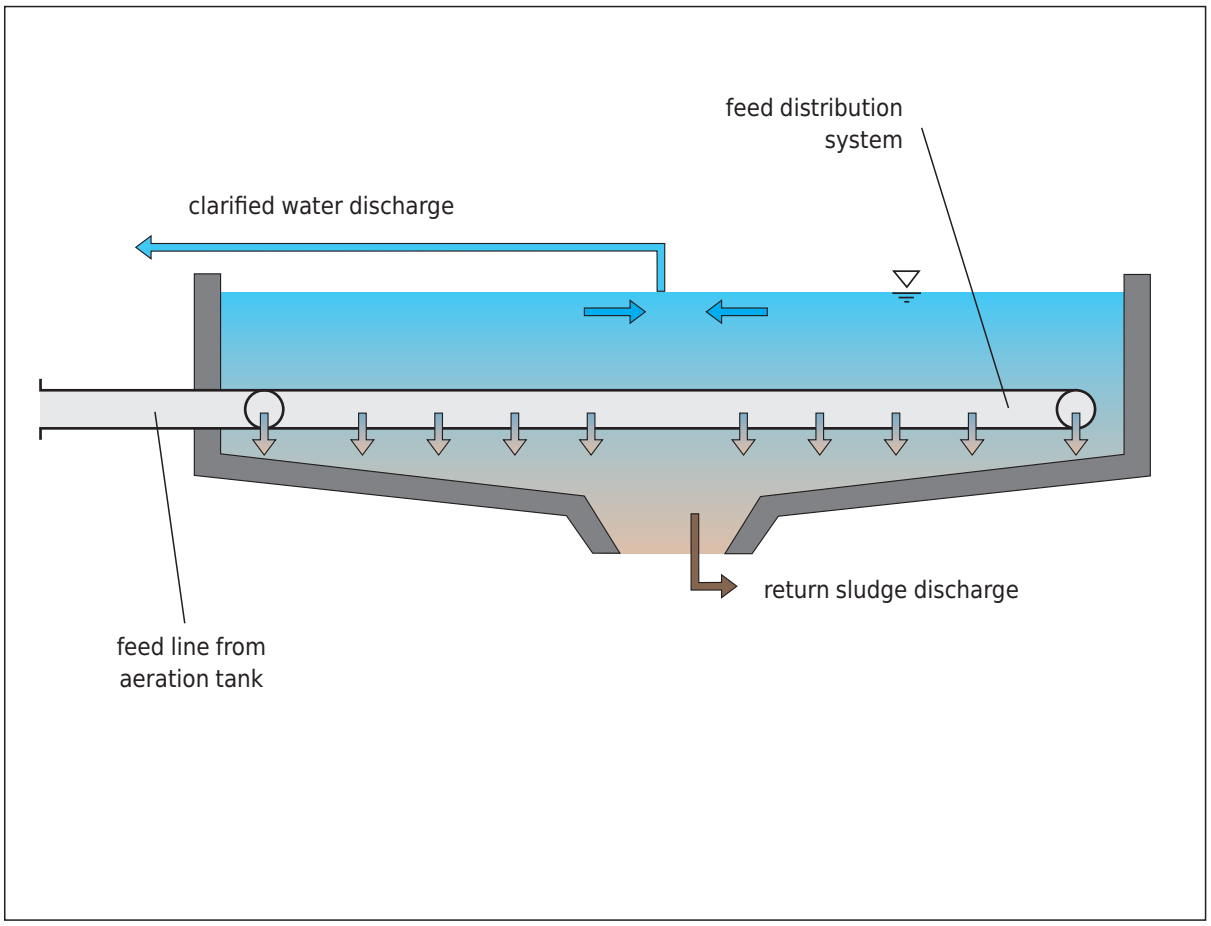
Feed energy



Feed energy consists of potential and kinetic energy. The total energy decreases if the feed circumference is increased, i.e. circular tanks should be fed over an as large as possible radius to minimise thus the feed velocity.

HUBER Opti-Flow System Functional description:

The feed is introduced through a circular pipeline installed at depth around the inner tank wall. The circular pipeline is optimised for the whole range of flows, ensuring minimal inflow energies and uniform inflow distribution all over the full tank circumference. Clarified water is discharged either at the tank rim or centre, depending on the tank configuration.



Flow diagram

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Benefits of the HUBER Opti-Flow System

- Uniform distribution giving optimal utilisation of the available sedimentation tank area
- Low energy feed
- Stable tank flow
- Reduced short-circuit flows due to special separation of inlet and return sludge discharge
- No siphon intake required
- Reduced investment costs as no scumboards are required
- Suitable for both horizontal and vertical flow tanks

We offer:

- Operational reliability due to optimal tank flow
- Easy retrofit
- Safety due to process-specific design
- Increased separation efficiency due to the undisturbed sedimentation process
- Optimal utilisation of the full tank volume
- Suitability also for rectangular cross-flow tanks

Other benefits:

- Completely made of stainless steel, corrosion resistant through high material and processing quality
- Competence in hydraulic processes
- HUBER submerged pipe for clarified water discharge
  - For uniform discharge of clarified water
  - For minimised water level variation
  - Unimpaired by floating sludge
  - Floating sludge removal up to the tank rim

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