TeaCup / HeadCell / Grit King

Potable Water - Surface Water Pre-Treatment

Hydro International

Increase efficiency by removing abrasive grit & reduce deposition

Highlights

- 95% removal of all sand 75 micron (µm) and larger
- Dewatered solids ≥ 60% total solids
- No chemical conditioning required
- Continuous or intermittent operation
- Rapid start-up and shut-down
- Few moving parts
- Low maintenance
- Small footprint

Conventional Storage Pond

Conventional Flocculation Tank

Overview

Treatment facilities using surface water as their source face unique challenges. Variability in source water quality can significantly impact the operation of process equipment ranging from the clarification system to the sludge handling processes. In the case of river water, turbidity and fine sand content can increase substantially during wet weather.

Fine sand deposition can impact water treatment plants in many areas:

- Accumulation in flocculation tanks:
  - reduces retention time
  - causes short-circuiting
  - causes accelerated wear or failure of flocculator mechanism
- Sludge collector wear and transfer pipe plugging
- Prematurely wears sludge pumping and processing equipment
- Increases sludge volume

Conventional Pre-Treatment

Many plants find sediment volume and abrasive wear can be reduced significantly by removing free settling sand prior to chemical treatment and flocculation. Some plants achieve this through pre-sedimentation tanks or storage ponds. Pre-sedimentation tanks and storage ponds are large, taking up valuable plant space. Cleaning of these tanks is time consuming as the tank or pond typically must be taken off line and drained in order to manually remove accumulated sand for disposal.

Pre-Treatment - A More Efficient Way

Pretreatment of surface water can be a cost-effective solution for plants dealing with flashy river water. Many plants look at conventional clarification or inclined plate clarifiers for mechanical pretreatment. However, achieving both separation and dewatering of the removed sand makes the solutions offered by Hydro International very cost-effective. In some cases, the fact that no chemicals have been added allows the water treatment plant to discharge the removed sand back to the river which significantly reduces disposal costs. Other plants have been able to sell their captured sand.

Hydro International offers a range of products that remove fine sand particles 75 µm and larger without chemical conditioning. Hydro offers both gravity and centrifugal separators to meet each plant's specific treatment needs. These systems can include fine sand concentration and dewatering components to produce a dry product which can be used, potentially sold, or disposed of. Fine sand concentration and dewatering units can be used with Hydro sand collection products or to dewater dredge water from sedimentation basin cleaning.

Pumped Flow Solutions

Fine sand can be removed from pumped flows with the TeaCup® or Grit King® units. Screened intake water is delivered to an elevated separator housed in a stainless steel tank. Separated sand is removed and discharged by gravity to a dewatering device or sent directly back to the water source while clean water is discharged from the top of the tank.

Prestonburg, KY WTP influent pre-treatment with Grit King®

System Highlights

- 95% removal of all sand 75 µm and larger
- No moving parts within separator unit – simple operation
- Self-contained separator – cost effective and easy to install
- Small footprint
- Gravity discharge of fine sand – no pump required
- Modular design allows multiple unit installation to handle wide range in flows

Pikeville, KY WTP influent pre-treatment with TeaCup®

Gravity Flow Solutions

Gravity flow fine sand removal systems can be accommodated with an in-situ HeadCell® or Grit King® unit. Concrete tank(s) located at or above grade house the separator components. Sand is separated by gravity and then pumped to a dewatering device while clean water exits over a weir at the top of the tank.

Conventional storage pond

System Highlights

- 95% removal of all sand 75 µm and larger
- No moving parts within separator unit – simple operation
- Compact design takes up little plant space
- Wide turndown range
- Low headloss

HeadCell® intake fine sand removal system

Learn more

To learn more about how our **surface water pre-treatment solutions** can save you money visit **hydro-int.com**, or contact us:

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