LAKESIDE
Water Purification Since 1928

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Grit Removal Systems

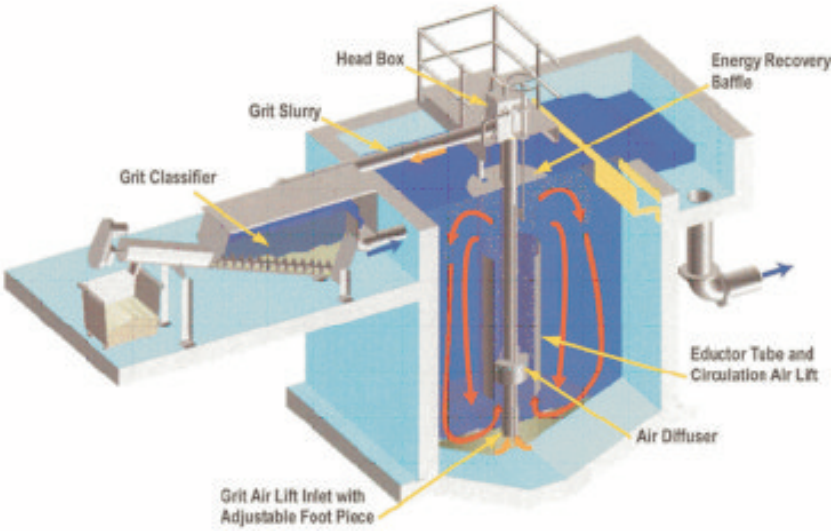
Simple, low cost, effective grit removal to enhance plant performance

- Aeroductor
- Model L Grit Classifier
- SpiraGrit
- *Raptor*® Grit Washer
- Inline Grit Collector

Grit Removal

Abrasive grit can be the downfall of all mechanical equipment. Accumulated grit reduces digester and/or aeration tank volume, clogs piping and treatment units and increases wear on pumps and valves, significantly raising maintenance costs. Effective grit removal enhances total plant performance and keeps overall operating costs down.

Lakeside Equipment Corporation offers a wide range of grit removal systems.



Lakeside Aeroductor with Model L Grit Classifier

Lakeside Aeroductor

The Aeroductor injects air into the basin, circulating the water and causing grit to settle at the bottom.

The Lakeside Aeroductor effectively removes inorganic grit from treatment plant influent in a controlled, aerated environment. Air is injected into an eductor tube located in the center of the basin, creating a vertical pumping action that circulates the tank's contents. This circulation keeps organics in suspension while allowing the heavier grit to settle at the bottom of the Aeroductor where it is scoured, washed and collected in a central hopper.

An energy recovery baffle above the eductor, at the water level, increases efficiency by directing the vertical flow horizontally across the tank surface to the walls and then downward in a circulating flow pattern.

Grit Removal Efficiency and Dewatering

High-bulk, liquid velocity in circulation patterns removes only large, heavy grit, while low velocities remove fine grit but also increase the collection of organic material. Aeroductor circulation velocities are easily controlled by simple adjustments of the air supply valve.

An air lift pump, centrally located in the eductor tube, draws grit from the bottom of the Aeroductor to the air lift inlet. The mixture of air, liquid and grit is lifted to the head box where the air is vented while the liquid/grit mixture is directed to the Grit Classifier, separating and dewatering the grit. If settled grit is allowed to build up, a handwheel-operated retractable foot piece can be elevated to clear the inlet, then lowered slowly as the pumping action continues to remove accumulated grit.

Lakeside's Aeroductor is shown with the air injection line for the eductor tube and air lift headbox on the operator access bridge.

Aeroductor Advantages

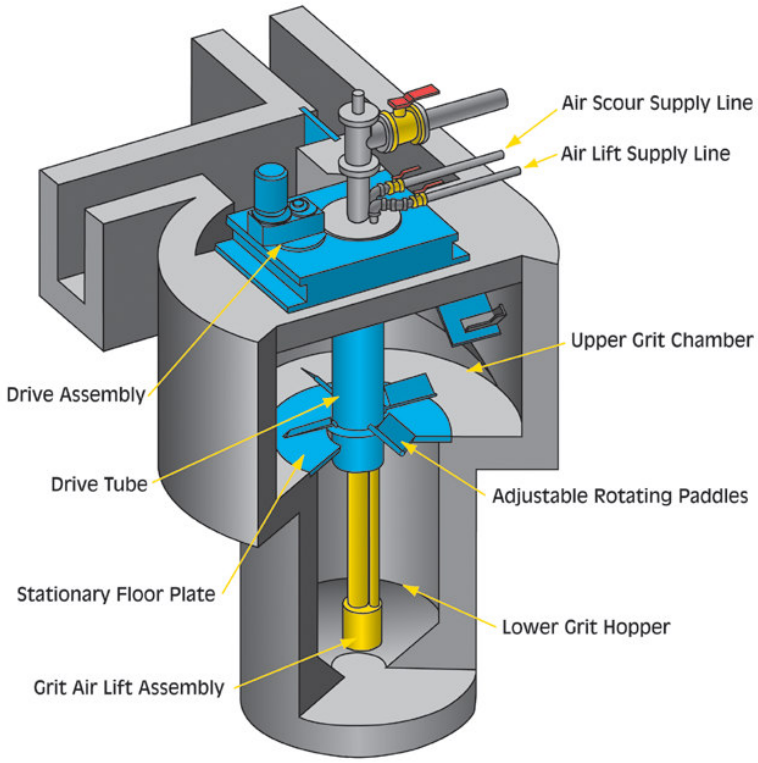
- Simultaneous grit washing and separation
- Effective under all flow conditions
- Low head loss requirements
- Low-cost, straight wall construction
- No submerged moving parts
- Keeps organics in suspension
- Simple velocity control
- Produces clean, dewatered grit

The Lakeside Aeroductor (left) separates grit before directing it to the Model L Grit Classifier (right, shown as part of a plant headworks system).

Lakeside SpiraGrit

The Lakeside SpiraGrit Vortex Grit Chamber effectively removes inorganic grit from treament plant influent in a mechanically induced vortex environment. The SpiraGrit operates efficiently over a wide range of daily flow rates. Rotating paddles maintain the flow velocity in the vortex chamber, keeping organics in suspension while allowing heavier grit to settle at the chamber floor.

The settled grit is then moved across the stationary floor plate towards the center opening and into the lower grit hopper. Grit is removed from the lower hopper by either an air lift, a recessed impeller or a self-priming grit pump, and sent on to the Grit Classifier.



Typical installation of a Lakeside SpiraGrit Vortex Grit Chamber with an air lift system and grit classifier.

SpiraGrit Advantages

- Compact design, requiring less space
- High removal efficiency
- Steady performance in all flow conditions
- Simultaneous separation and dewatering
- No submerged bearings - easy to maintain

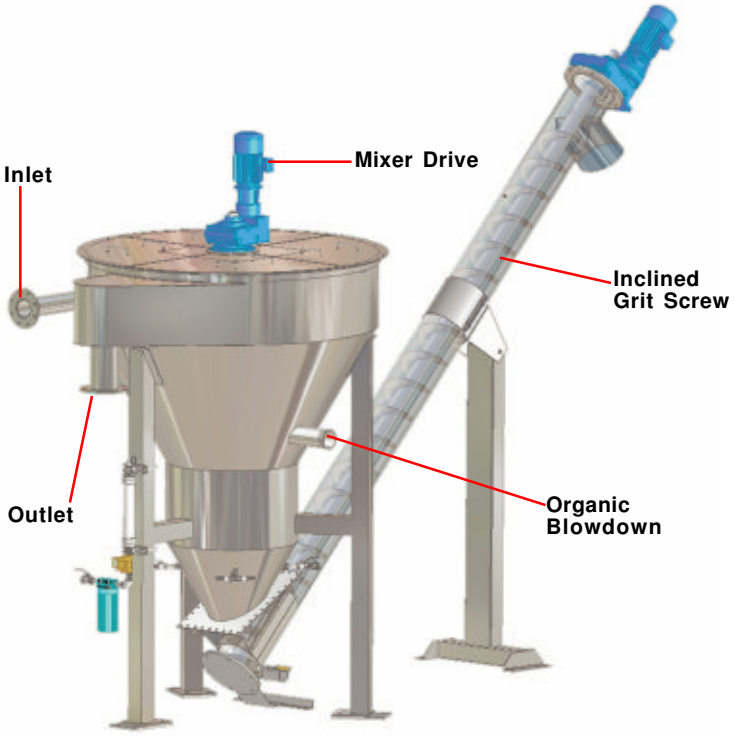
Raptor® Grit Washer

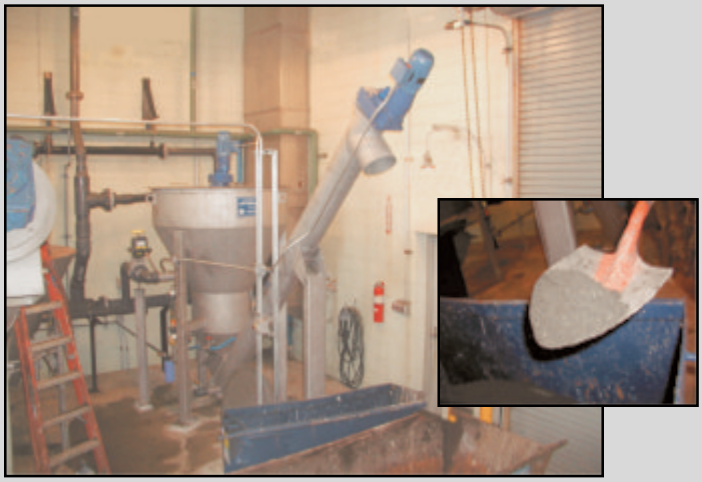
When the highest quality of captured grit is required, the Lakeside *RAPTOR*® Grit Washer can be the solution. Combining a circular and conical design with natural vortex and gravity forces, the *Raptor*® Grit Washer provides the highest washing efficiency over a wide range of flowrates.

Influent flow enters the all stainless steel unit tangentially, creating centrifugal forces that allow water and lightweight organics to discharge over an upper weir plate. Grit and heavier materials settle to the lower conical-shaped grit zone where they are gently agitated by mixer arms and washed.

The unique two-stage organic separation system includes an organic capture cone and organic blowdown valve. Organics released during agitation and washing are captured in the cone and removed periodically from the *Raptor*® Grit Washer via a blowdown valve.The inclined grit screw provides optimal dewatering.

Typical grit discharge from the Grit Washer is 90% dry weight or greater, with less than 5% organic material.





The Raptor® *Grit Washer rinses grit before compaction, ensuring only cleaner, dense grit remains (above).*

Grit Washer Advantages

- Highest grit discharge quality
- Vortex grit and organic separation
- Gentle grit agitation and washing
- Two-stage organic separation
- Compact footprint
- Operates over a wide flow range
- Stainless steel construction

Inline Grit Collector

For small applications, Lakeside's Inline Grit Collector is an ideal solution. The collector consists of a baffled settling hopper with an air diffuser, an effluent trough and a grit screw. Water flows in one end of the settling hopper, under a baffle, up and over an adjustable weir and out to the next unit in the treatment process. The grit settles into the screw trough and is conveyed from the system.

Drainage of free water occurs during the conveying process. The diffuser circulates the liquid to minimize the settling of organic material. This low head loss unit is ideal for plants with a peak flow less than 2.0 mgd.

The Inline Grit Collector works well at smaller wastewater plants with peak flows less than 2.0 mgd.

Treatment equipment and systems solutions from Lakeside

Lakeside offers a wide range of equipment and systems for virtually all stages of wastewater treatment from influent through final discharge. Each process and equipment item that we supply is manufactured with one goal in mind . . . to reliably improve the quality of our water resources in the most cost-effective way possible.

We've been doing just that since 1928.

Aeration
newair® Diffuser
CLR Process
E.A. Aerotor
Magna Rotors
Rotor Covers
Level Control Weirs

Submersible Products
Mixers
Propeller Pumps
Grinder Pumps

Clarification
Spiraflo Clarifier
Spiravac Clarifier
Tertiary Treatment using Series Clarification
Full-Surface Skimming

Trickling Filters

Trash & Screen Rakes

RAPTOR® Screening Products
Fine Screen
Micro Strainer
Rotary Drum Screen
Wash Press
Septage Acceptance Plant
Complete Plant

Other Screening Products
Water Intake Screens
CSO Screens

Grit Collection
SpiraGrit
Aeroductor
RAPTOR® Grit Washer
Inline Grit Collector
Model L Grit Classifier

Screw Pumps
Open Screw Pumps
Enclosed Screw Pumps

LAKESIDE
Water Purification Since 1928
1022 E. Devon, P.O. Box 8448
Bartlett, IL 60103
630/837-5640, FAX: 630/837-5647
E-mail: sales@lakeside-equipment.com