Water & Wastewater Product Catalog

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Turning Water Around...®

The Finest in Grit Removal & Handling Technology

Municipal wastewater treatment plants (WWTPs) require significant investments in high performance treatment processes such as membrane bioreactors and digesters to meet modern effluent criteria. Effective grit removal is needed to prevent abrasion, grit deposition, and equipment failure. If a plant has no grit removal or an under-performing conventional grit removal system, grit will deposit within process basins such as clarifiers, aeration basins, digesters, and equalization basins.

Grit characteristics vary from region to region in many ways including size, composition, shape, and the impacts from grease and other attached materials. These factors can cause coarse grit to settle like much finer materials, and increases the importance of understanding the site specific nature of grit.

Grit is introduced to a collection system through a variety of means, much of it eventually being carried into treatment plants. Wet weather runoff, infrastructure degradation, and infiltration increase the quantity of grit entering a plant. Peak flows or diurnal variations scour the grit accumulated throughout the collection system into the plant. Grit entering a plant abrades expensive pumps and mechanical equipment as well as depositing throughout the plant. As plant processes become filled with grit, operational efficiency decreases until the processes have to be shut down to remove the grit.

Hydro International's grit removal systems are designed to provide the highest level of grit removal efficiency with minimal maintenance, energy, and operational requirements.

Hydro's innovative products have been shown to be significantly more efficient than conventional grit removal technologies. They are cost effective and provide superior performance. Our product philosophy is to design equipment that has:

- Market leading installed cost / benefit ratio
- No moving parts
- No power or minimal power requirements
- Small footprint
- Low maintenance, robust equipment designed to solve tough problems and save the facility money

Optimized Solutions

The key to a highly effective grit management system is to target the removal of both fine grit particles and slowly settling grit. This is best accomplished by separating the removal, washing, and dewatering processes. In doing this the design of each unit process can be optimized. Hydro's systems remove grit from waste streams and deliver a clean, dry grit product suitable for landfill disposal. Turn to Hydro International for a grit system tailored to suit each budget and application. Hydro's grit management product offering includes:

Separation
- Eutek HeadCell®
- Grit King®
- Eutek TeaCup®

Washing
- Eutek SlurryCup™
- Grit King®
- Eutek TeaCup®
- GritCup®

Dewatering
- Eutek Grit Snail®
- Grit Classifier
- SpiraSnail®
- Decanter

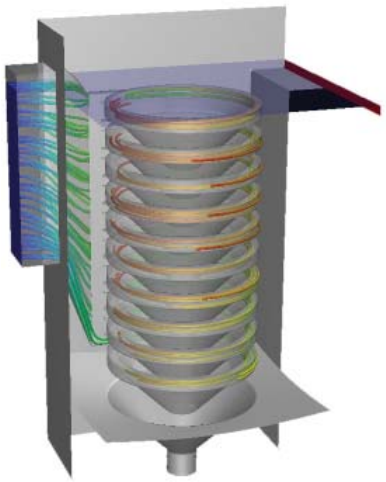
Designing for Tomorrow

Since the company's inception, Hydro International's commitment to innovation has been responsible for continuing customer loyalty. As a leader in cutting edge computer modeling and performance testing techniques, Hydro applies its expertise to develop truly advanced solutions for wastewater, CSO, and stormwater management.

Hydro's products are developed and rigorously assessed through a four-stage process: computer modeling, laboratory analysis, third-party field testing, and collaboration with industry experts and academic institutions. Hydro develops products with superior performance, maximized design flexibility and minimal maintenance to serve our customers' complex needs.

Computational Fluid Dynamics

Computational Fluid Dynamics (CFD) plays an important role in Hydro's customer service and R&D program, and as such the company has invested in and is championing the application of CFD in the water industry with a dedicated server cluster, training and collaborating with centers of CFD expertise and excellence such as Exeter University Center for Water Systems. In addition to furthering Hydro's level of customer service and aiding the R&D program, Hydro uses its CFD expertise to advise leading regulatory agencies, industry experts and other institutions in all water sectors. Hydro has become an internationally recognized expert in the application of CFD in the water industry with personnel participating in professional society technical committees, serving as peer reviewers for leading journals in the area of urban water management.



Our in-house CFD expertise allows us to refine our products for performance, and maximize the efficiency of our systems. Hydro was the first to utilize CFD in the evaluation of different types of grit removal chambers and in demonstrating the efficiency of advanced vortex chambers. As the recognized authority in CFD, Hydro advises regulatory agencies, industry experts and academic institutions for wastewater, CSO, and stormwater industries.

Research and Design

Hydro conducts laboratory research out of its facilities in Clevedon, England and Portland, Maine. The Portland facility is Hydro's center for water quality analysis. The Clevedon facility is the center for Hydro's water quantity research. This facility is equipped with the most sophisticated flow measuring equipment that delivers accurate readings under the most turbulent of conditions.

Current and past collaborations have included Bristol, Cardiff, Exeter, and Liverpool John Moores Universities in the UK, and The Civil, Construction and Environmental Engineering Department at the University of Alabama and The Stormwater Center at the University of New Hampshire.

Full Scale Testing and Mobile Pilot Systems

Hydro International is continuously operating, maintaining and upgrading its full-scale testing facilities in the United States and the United Kingdom. Hydro's in-house research facilities are world class, having the capacity to evaluate full-scale product performance under treatment flows in excess of 4 MGD (6 cfs).

The use of mobile pilot units ensures the performance of the technology on-site at WWTPs. Through the use of these facilities and pilot units, Hydro's research engineers have pioneered and refined testing methodologies for the evaluation of solid/liquid separation devices.

Our Commitment to Your Equipment

An important part of the Hydro Experience (HX) is our commitment to ensuring that our customers have the best experience with our equipment that we can provide. Our outstanding support team comprised of experienced professionals are ready to make sure that your equipment is optimized to provide performance throughout the life of the product. Hydro International maintains a staff of skilled technicians and support personnel to service our water, wastewater, and wet weather product lines.

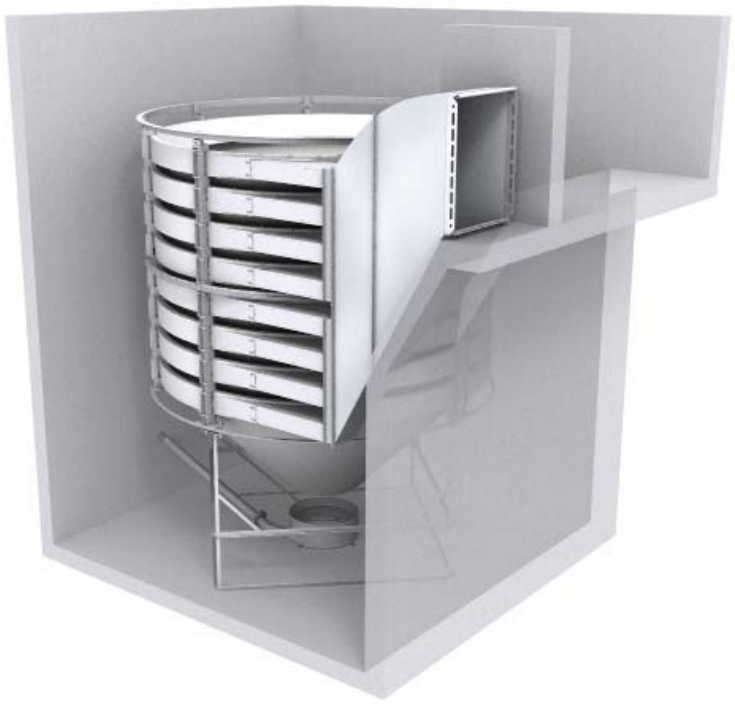
Grit Separation

Hydro offers the most robust performance guarantee in the industry. Hydro's grit removal equipment is designed for the performance of each individual unit process as well as entire system performance, which is one of many reasons why Hydro outperforms all other grit removal equipment on the market. Our grit removal systems get the results that our clients demand. Hydro's grit removal process begins with the outstanding performance of our grit separation equipment.

Eutek HeadCell®

The Eutek HeadCell® is a small footprint grit separator, which uses hydraulically induced vortex flow and stacked trays to efficiently settle and capture grit. This unique design provides the surface area required to remove the finest grit particles, as small as 75 micron. The influent header design eliminates thermal short-circuiting, minimizes settling distance and maximizes surface area contact. Gravity moves grit into the center opening where it then falls into the central collection sump and is pumped to a Eutek SlurryCup™, Eutek TeaCup® or GritCup® for washing.

The small footprint makes the Eutek HeadCell® an ideal solution for plants with limited space, and typically the ideal grit removal solution for any plant. The stacked tray design allows the Eutek HeadCell® to be easily retrofitted into existing grit chambers and basins, significantly reducing capital costs. The Eutek HeadCell® has no moving parts and requires less than a foot of headloss to operate. The Eutek HeadCell® is sized for a wide range of flows and can handle virtually unlimited turndown ratios.



Grit Separation

Grit King®

The Grit King® is a robust hydraulically induced vortex separator that removes, separates, and cleans grit as small as 106 micron from sewage and other liquid streams with little headloss.

The Grit King® has no moving parts and is efficient over a wide range of flows. The system is easy to operate with a proven track record as either a free-standing or in-situ system. Free-standing Grit King® units can often operate without a grit pump, reducing mechanical components and decreasing energy requirements. The Grit King® unit's low energy and maintenance needs result in low lifetime operational costs.

Eutek TeaCup®

The Eutek TeaCup® is a versatile free vortex type hydraulically induced separator system suitable for both grit removal and / or grit washing. The Eutek TeaCup® typically requires more than a foot of headloss to separate very fine grit as small as 75 micron and deliver low volatile solids grit slurry suitable for landfill. The Eutek TeaCup® separator can be mounted on a Eutek Grit Snail®, Grit Classifier, or Decanter dewatering device to accommodate a range of performance specifications and budgets.

The Eutek TeaCup® can also be used to remove snail shells accumulated in trickling filters, sediment removal from water intakes, and is best suited for batch processing applications. The Eutek TeaCup® has set the industry standard in performance since 1976.

Grit Washing

Each step in a grit removal system is important to ensure the overall performance of the system. A grit removal system is only as strong as its weakest link. Overall performance in both existing and new grit systems can be improved by incorporating a Hydro grit washing system. This is especially important at facilities with high turndown ratios. When conventional grit systems are loaded at rates less than peak, the volatile solids content of the grit slurry can increase significantly. The key to an effective grit removal system is maximizing grit capture while minimizing volatile solids which hold moisture, and cause odor issues. Hydro grit washing systems capture 75 micron grit while retaining less than 15% volatile solids by weight (VS).

Eutek SlurryCup™

The Eutek SlurryCup™ system uses a highly efficient process to capture, classify, and remove fine grit, sugar sand, and high density fixed solids from grit slurries, and both primary and secondary sludge. Concentrated underflow can enter the Eutek SlurryCup™ from a Eutek HeadCell® or Grit King® concentrator, or other grit collection device. Once inside the Eutek SlurryCup™ a hydraulically induced free vortex flow regime and boundary layer effects separate grit from volatile solids, reducing odors, volume and delivering grit suitable for landfill disposal. A hydraulic valve on the bottom of the Eutek SlurryCup™ provides secondary washing, which further reduces volatile solids content. The washed grit flows from the bottom of the Eutek SlurryCup™ and into a Eutek Grit Snail® for dewatering. Removed organics are carried downstream for further processing. The Eutek SlurryCup™ system with a Eutek Grit Snail® dewatering escalator delivers “dry” grit containing 60% total solids with less than 15% volatile solids in grit washing applications.

Eutek SlurryCup™ Vortex

Grit Washing

Eutek TeaCup®

The Eutek TeaCup® is a versatile hydraulically induced free vortex type separator system suitable for both grit washing and / or grit removal. The Eutek TeaCup® requires more than a foot of headloss to wash and deliver low volatile solids grit slurry suitable for landfilling after dewatering. Flow enters the Eutek TeaCup® tangentially, which creates a vortex and a boundary layer at the bottom of the vessel. Grit is forced to the outside, settles into the boundary later, and is swept to the center of the unit for collection. The washed grit discharged from the Eutek TeaCup® is sent to dewatering and then landfilled. The Eutek TeaCup® separator can be combined with a Eutek Grit Snail®, Grit Classifier, or Decanter to accommodate a range of performance specifications and budgets.

Eutek TeaCup® Vortex

GritCup®

The GritCup® is an efficient and economical all-hydraulic grit washing and classification device, which produces clean grit ready for dewatering. Since the unit does not require washwater and has no moving parts, operational costs and maintenance requirements are significantly reduced. The GritCup® is typically used to wash the grit collected by the primary grit removal equipment, such as a Eutek HeadCell® or Grit King® grit separator, aerated grit chambers, vortex grit collectors, or other grit separators. Dewatering is performed in a high performance grit dewatering device such as the SpiraSnail®. The GritCup® is capable of separating and classifying grit 106 micron (150 mesh) and larger.

GritCup® Vortex

Grit Dewatering

Grit dewatering is a critical final step in grit removal, particularly when capturing fine grit particles. Many dewatering systems are expected to both wash and dewater grit using a turbulent processes, which can stir up captured grit, and bypass it back into the system. These types of processes rely on settling velocity to separate volatile solids and grit resulting in either lost fine grit or high volatile solids content in the output. Hydro separates the washing and dewatering processes, which allows a quiescent dewatering process that can retain fine and slowly settling grit particles. Hydro equipment is designed to work as a system, and when dewatering is combined with Hydro's advanced separation and washing systems, the result is the best performing grit removal system on the market.

Eutek Grit Snail®

The Eutek Grit Snail® is a highly effective grit dewatering and transport device that uses a slow moving cleated belt to gently escalate grit as small as 75 micron from the clarifier pool without re-suspending fine grit particles into the clarifier overflow. The Eutek Grit Snail® construction couples a stainless steel body with durable HDPE wear parts in abrasion zones to ensure a long product life with trouble-free operation. Clean grit output from a Grit King®, Eutek SlurryCup™, or Eutek TeaCup® flows into the Eutek Grit Snail® clarifier. The grit settles to the bottom of the clarifier, where a slow moving belt carries it to the discharge chute, while letting the water drain back into the clarifier. Degritted effluent flows back into the plant for further processing. The device incorporates a variable frequency drive that adjusts belt speed to match changing grit loads. The Eutek Grit Snail® discharges clean, low-odor solids at 60% total solids, with less than 15% volatile solids (VS) in grit washing applications.

Eutek SlurryCup™ / Grit Snail® System

Grit Dewatering

SpiraSnail®

The SpiraSnail® is a highly efficient screw type grit dewatering system designed to work in combination with a Hydro International grit washing unit such as the GritCup®. Its unique clarifier design, low loading rate, and slow screw speeds provides higher capture efficiency while reducing re-suspension of captured materials when compared to conventional units.

Decanter

The Decanter is a batch grit dewatering container for smaller plants and is offered in front-loading, rear-loading, or self-dumping configurations. The Decanter has a durable galvanized steel design, a stainless steel wedgewire dewatering screen, and rolling casters.

The Ideal System For Any Plant

There is no one size fits all grit removal design for wastewater treatment plants. Hydro International offers a suite of grit removal products that can be combined into a system which provides the best possible solution for an individual plant's grit removal needs within existing plant layouts. Hydro provides the optimal design for new grit systems as well as retrofit solutions to improve the performance of existing systems. Contact Hydro to discover which system is best suited to eliminate grit problems at your plant.

Eutek HeadCell® / SlurryCup™ / Grit Snail® System

A Eutek HeadCell® grit separator, Eutek SlurryCup™ grit washer and Eutek Grit Snail® grit dewatering escalator is the ultimate grit solution. The system can be designed to meet stringent performance requirements for a wide range of flows, providing the ideal solution for small plants as well as some of the largest plants in the world. With the smallest footprint in the industry and minimal headloss requirements, a Eutek HeadCell® based system is ideal for plants with tight space limitations. Standard designs can remove 95% of all grit 75 micron and larger, with less than 15% volatile solids content. This configuration is the ideal system for plants that demand performance.

Grit King® / Grit Snail® System

A Grit King® grit separator paired with a Eutek Grit Snail® can provide outstanding performance, with very little headloss - typically less than 12" at peak flow, and less than 6" at average daily flow. Grit King® units can either be provided in-situ or as free-standing units in stainless steel tanks. A free-standing Grit King® / Eutek Grit Snail® system may not require a grit pump making it a very economical system to operate.

GritCup® / SpiraSnail® System

The GritCup® and SpiraSnail® system is a cost-effective grit washing and dewatering solution suitable for plants that have no available washwater for their grit system. The GritCup® is an all-hydraulic washing and classification device which sends cleaned grit to the SpiraSnail®. Since the grit has already been cleaned by the GritCup™, the SpiraSnail® is only needed for dewatering. This reduces the amount of turbulence in the screw and increases grit retention. Using innovative design features found in a number of other Hydro products, the combined system retains more than 90% of all grit 106 micron and larger with more than 60% total solids in grit output. A GritCup® and SpiraSnail® system is often the ideal solution for smaller plants looking for performance grit capture.

Sludge Processing & Treatment

In addition to traditional headworks grit removal for wastewater treatment plants, Hydro provides equipment that can be used in numerous other applications. A few of the more common solutions that Hydro equipment provides follow.

Eutek SlurryCup™ / Grit Snail® Sludge Degritting System

When grit is accumulating in sludge, or depositing in digesters Hydro offers a solution to remove it. The Eutek SlurryCup™ / Grit Snail® provides high performance in sludge degritting applications and is a simple and effective way to minimize deposits and abrasive wear downstream of primary clarifiers. For plants with a history of grit problems, this may be the only solution. Portable skid mounted packaged Eutek SlurryCup™ / Grit Snail® systems can be used to degrit sludge or remove grit from basins at multiple locations within a plant. The robust design of the Eutek SlurryCup™ / Grit Snail® sludge degritting system makes it a maintenance friendly solution in this difficult application. Eutek SlurryCup™ / Grit Snail® systems can capture 95% of all grit 75 micron and larger with less than 20% volatile solids content in sludge degritting applications.

Hydro-Sludge® Screen Sludge Screening & Residual Compaction

The Hydro-Sludge® Screen is an-line pressurized device that screens coarse material from sludge and dewaters it for landfill in one operation. This horizontal, in-line coarse material separator has an inlet screening zone and a pressing (compaction) zone. The enclosed system reduces odor problems and has no washwater requirements. The system can be used either for pumped feed or on direct discharge from a septage truck.

What is HX?

HX is Hydro Experience, the essence of Hydro. It's interwoven into every strand of Hydro's story, from our products to our people, our engineering pedigree to our approach to business and problem-solving.

HX is a stamp of quality and a mark of our commitment to optimum process performance. A Hydro solution is tried, tested and proven.

There is no equivalent to Hydro HX.

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Grit Removal at its Finest...™