

# Industrial Water Treatment

Raw Water Treatment

Water Reuse

Wastewater / Trade Effluent Treatment



Improve efficiency, cut raw water costs, reduce surcharges

# Who we are

We are a global company who provide advanced products, services and expertise to help municipal, industrial and construction customers to improve their water management processes, increase operational performance and reduce environmental impact.

With over 30 years of experience and a reputation for engineering excellence, Hydro International's solutions have proven themselves consistently in the most challenging environments, removing solids and other contaminants to deliver treated water that can be recycled and reused.

Headquartered in Clevedon, UK, we have a network of over 80 distribution partners and serve customers in more than 40 countries.

## The industrial water challenge

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Water scarcity, increasingly stringent effluent discharge regulations and operational efficiency drivers represent real challenges for water-intensive industrial businesses, with process water use, treatment and discharge generating both cost and risk.

Water is used in many aspects of an industrial organisation's operation and each process has its own opportunities for re-use and cost savings.

Consumers today look for more from their retailers/suppliers than just a good product at a competitive price. Research has shown that purchasers expect businesses to operate responsibly to address social or environmental issues, and this can include water use, wastage/reuse and pollution.

**Reducing water use, recycling water and treating trade effluent before discharge can all be shown as part of a company's environmental commitment whilst greatly reducing supply and discharge costs.**



## The solution

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Our industrial treatment products help businesses to use water more efficiently, recover valuable processing products and by-products, meet regulations and protect the environment—saving money and reducing financial and legal risks.

Hydro International are experts in liquid-solid separation devices, and we understand the challenges facing many businesses with regards to management of process waters, including competing demands for space within a given facility. Our devices have been engineered to be highly effective in a small footprint, to minimise the loss of production space.

Our services team can also install MCERTS compliant flow monitoring and provide MCERTS inspection reports for your site.

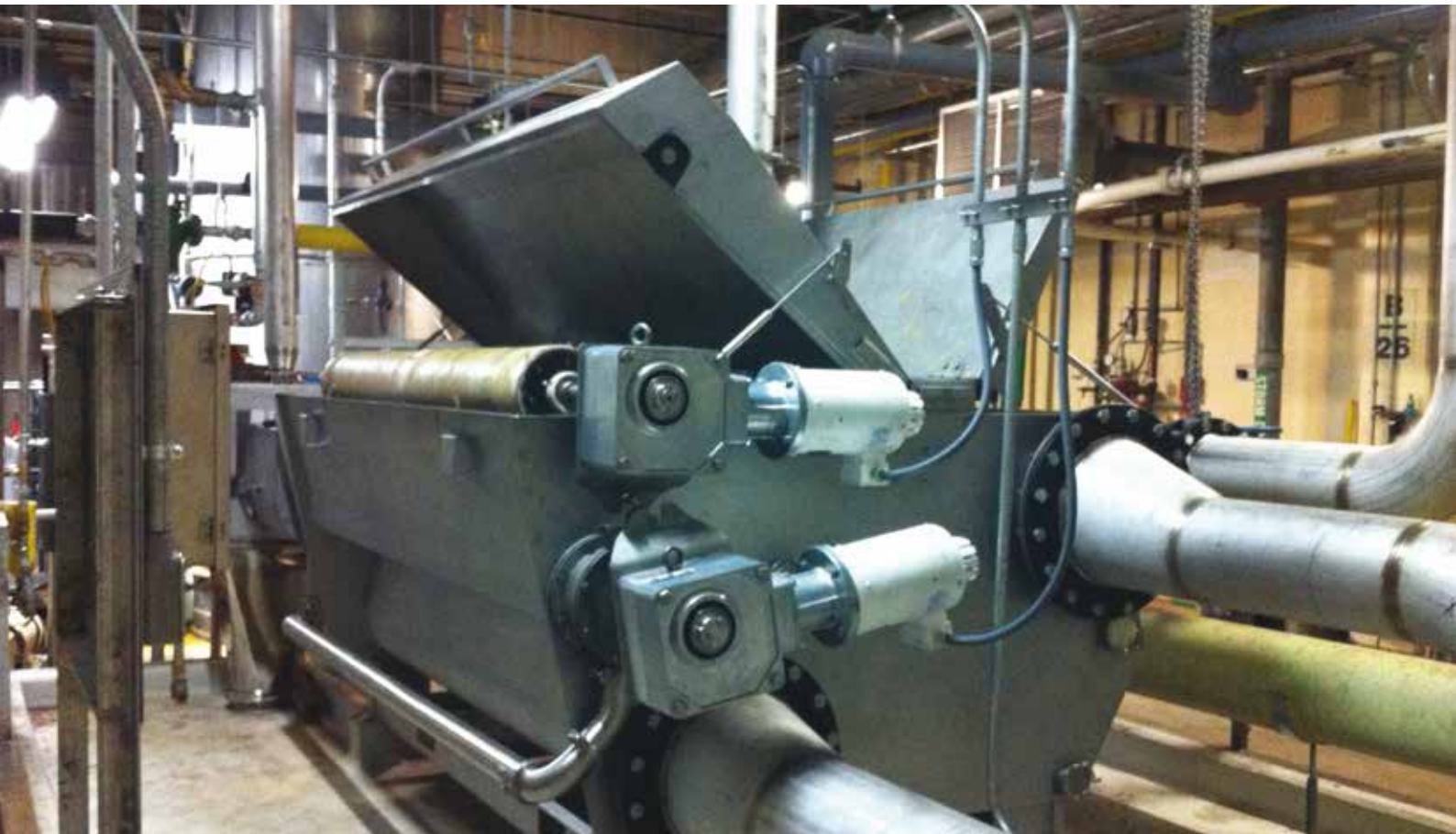
And our service teams provide immediate and ongoing support to enable better decision making, maintenance, upgrade and repair activities.

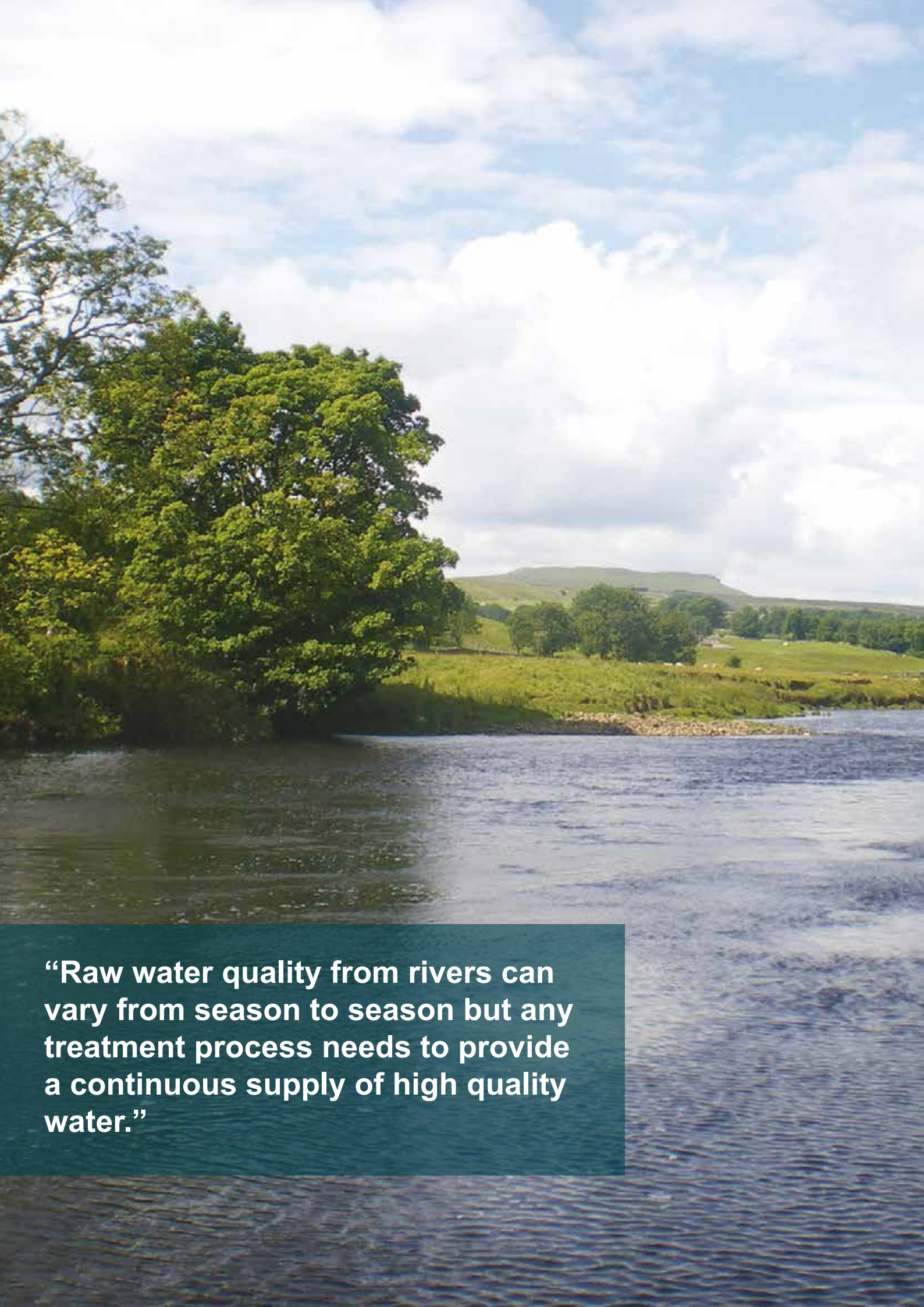
### We can help you:

- Remove TSS, BOD and other contaminants from discharge water.
- Meet regulations and reduce effluent surcharges.
- Increase operational efficiencies by reducing water use.
- Reduce costs through reuse of treated process water.
- Protect downstream equipment from damaging solids.
- Reduce maintenance and repair requirements.
- Recover valuable resources from process water.

### Industrial sectors we specialise in:

- Food
- Beverage
- Pulp, paper and Board





**“Raw water quality from rivers can vary from season to season but any treatment process needs to provide a continuous supply of high quality water.”**

# Water in industrial processes

## Raw Water

We can help you save money by ensuring a consistent supply of clean process water.

Raw water is water that is taken (abstracted) from rivers or from underground sources such as springs under licence from the Environment Agency. This water may need to be cleaned / purified before use and can also be treated after use and a portion recycled.

Abstraction charges vary depending on where in the country you are and, in cases of prolonged dry weather, reductions can be imposed by the Environment Agency to protect river levels. Cleaning and reusing this water can reduce abstraction volumes and therefore reduce cost and reliance on supply.

## Our raw water treatment capabilities

### Preliminary Treatment

- Coarse screening
- Grit and sand removal

### Primary Treatment

- Rotating belt filtration
- Settlement

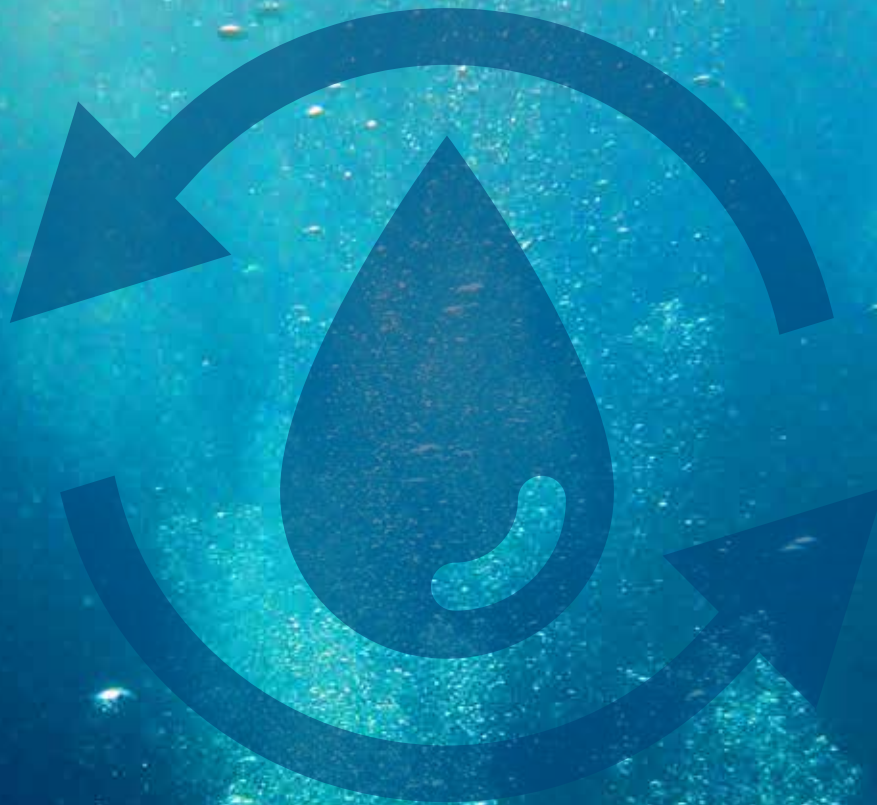
### Tertiary Treatment

- Continuous sand filtration
- Disc filtration

## Key products

- Hydro-Sludge® Screen
- Grit King®
- TeaCup®
- SlurryCup™
- GritCup®
- SpiraSnail®
- Hydro MicroScreen™
- DynaSand® range
- Lamella clarifier
- DynaDisc® Filter
- MEVA screens and conveyors





**“Recycling process water can help your business meet sustainability objectives and reduce reliance on imported water”**

# Water in industrial processes

## Water Recycling

We can help you clean up process water ready for re-use, reducing your abstraction volume or lowering your water usage costs.

To re-use process water it must be treated to varying levels depending on the application. Using a separator to remove sand and soil and a fine screen to remove the waste solids, may be enough to utilise water for Clean in Place (CIP), raw product washing, and conveyance around the plant. The captured waste material may also be re-purposed and could even become a potential revenue stream for the business. The captured solids will typically need to be reasonably dry to reduce volume and weight, which, in turn, will reduce the transportation cost.

Some trade wastes can be used as soil conditioners and spread back onto the land, others can be sent for anaerobic digestion, incineration or other methods of Waste to Energy generation.

### Our water recycling capabilities

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- MEVA screens and conveyors



# The Mogden Formula

Charge per unit of effluent =

$$R + [(V + Bv) \text{ or } M] + B(Ot/Os) + S(St/Ss)7$$

where

**R =** reception and conveyance charge

**V =** primary treatment (volumetric) charge

**Bv =** additional volume charge if there is biological treatment

**M =** treatment and disposal charge where effluent goes to sea outfall

**B =** biological oxidation of settled sewage charge

**Ot =** Chemical oxygen demand (COD) of effluent after one hour quiescent settlement at ph 7

**Os =** Chemical oxygen demand (COD) of crude sewage one hour quiescent settlement

**S =** treatment and disposal of primary sewage sludge charge

**St =** total suspended solids of effluent at ph 7

**Ss =** total suspended solids of crude sewage



Try our free calculator and see how much you could save on trade effluent charges at [hydro-int.com/trade-effluent](https://hydro-int.com/trade-effluent)



# Water in industrial processes

## Wastewater / Trade Effluent

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We can help you save money on trade effluent charges by removing pollutants and reducing waste volume.

Trade effluent is water which is left over after a manufacturing or processing operation. It is generally considered to be waste and disposed of into the sewers.

Businesses that discharge trade effluent to the sewer network are given targets and charged by the water authority for volume and pollutants based on either industry guidelines or individual circumstances. Generally speaking, the more there is and the “dirtier” it is, the greater the cost. If you can improve the cleanliness of your effluent then you can reduce your discharge costs. The charges, which vary by water company, are based on ‘The Mogden Formula’ and subject to review each year.

The Mogden formula takes into account costs associated with the following processes:

- Collection
- Primary treatment
- Biological treatment
- Treatment and return of water to the environment
- Biological oxidation of settled sewage
- Treatment and disposal of primary sludge

Usually limits for Total Suspended Solids (TSS) and Biological and Chemical Oxygen Demand (BOD and COD) are based either on the restrictions of the wastewater network or the capability and capacity of the local treatment works. Passing too much trade effluent to the treatment works can cause sewer overflows and potentially cause a pollution event in a river or watercourse. Not only can this be costly, with fines and remediation costs under environmental regulations potentially unlimited, it could also result in bad publicity for your business.

Should you exceed your discharge conditions, you may lose the right to dispose of your effluent into the sewers at all. You would then need to tanker away liquid waste to a wastewater treatment works that can deal with it, and these costs could be prohibitively expensive.

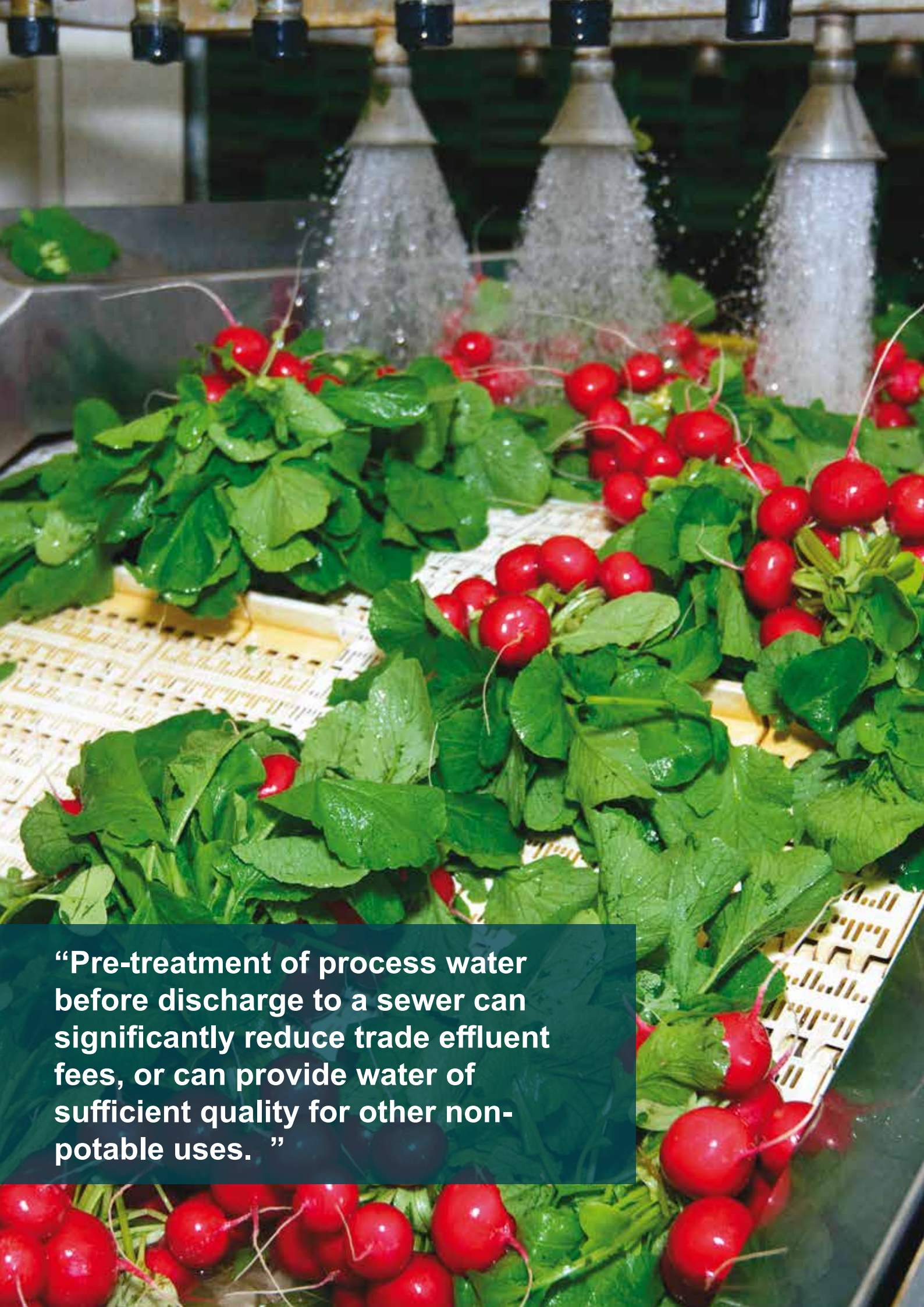
For more information on trade effluent charges visit: <https://www.ofwat.gov.uk/nonhouseholds/yourwaterbill/hownonhousehold/>

### Key products

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- Hydro-Sludge® Screen
- Grit King®
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- SpiraSnail®
- Hydro MicroScreen™
- DynaSand® range
- Lamella clarifier
- DynaDisc® Filter





**“Pre-treatment of process water before discharge to a sewer can significantly reduce trade effluent fees, or can provide water of sufficient quality for other non-potable uses. ”**

# Our specialist applications

## Food

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Food processing operations generate wastewater which can have high levels of organic and inorganic material. Pre-treatment before discharging to a sewer system significantly reduces fees, as well as recovering potentially valuable by-products.

Food processing facilities require water for activities that include conveying product, washing, processing and clean-in-place (CIP) operations. As a result, they typically generate a tremendous amount of wastewater, which often has very high levels of Total Suspended Solids (TSS), Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), and Fats, Oils, & Greases (FOG).

When dealing with anything grown in the soil, producers must deal with dirt, sand, and grit. Equipment such as conveyors, pumps, scrapers, spray nozzles, and material handling equipment all can be seriously damaged by fine particles and abrasive sand. Traditionally, sedimentation basins have been used to settle out these materials from vegetable processing operations. These work, but take up a large area of land that could be used for additional planting and removing settled materials from these lagoons is often labour intensive, expensive and can be hazardous.

Our food processing wastewater treatment technologies can help food manufacturers to save money on operations, improve treatment efficiency and recover and reuse by-products.

### Targeted processes

- Meat, poultry and fish carcass washing
- Milk equipment cleaning
- Dairy cattle washing
- Fruit and vegetable washing
- Clean-in-place
- Canning and processing
- Transport and vehicle washing

### Targeted materials

- Fine particles
- Coarse particles
- Organic materials
- Nutrients
- Gross pollutants, eg. straw, feathers

## Beverage

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Everything about beverage and alcohol production involves water. Irrigation water is needed to grow grapes, hops, and grain. Water is required all over the plant to maintain sanitary conditions. Fermentation tanks and barrels, presses and crushing equipment need to be thoroughly washed. Everything needs to be cleaned using water at some point in time, and almost everything needs to be cleaned each day of operation.


Our beverage processing wastewater treatment technologies can help drinks manufacturers to save money on operations, improve treatment efficiency, recover by-products and recycle and reuse water.

### Targeted processes

- Crate and bottle washing
- Clean-in-place
- Transport and vehicle washing

### Targeted materials

- Fine particles
- Coarse particles
- Organic materials
- Nutrients
- Gross pollutants



**“Save space and money by recovering pulp fibres or silt, sand and sediment in a small footprint.”**

# Our specialist applications

## Pulp, paper & board

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The processes required to manufacture pulp and paper generate wastewater containing high levels of solids, organic and potentially hazardous content, and the environmental impact of this matter is significant and potentially costly.

While much of this water can be recycled, some of it is wasted and ends up as sludge. Up to 80% of total suspended solids (TSS) in the water treatment process can be transferred to wastewater treatment sludge during the primary treatment process. Sludge treatment and disposal costs money, so these solids represent a cost to the business.

Our pulp and paper processing water management solutions can help you remove solids before they reach downstream treatment systems, cutting the costs of sludge processing and handling, providing options for water recycling and re-use, and improving downstream treatment capacity and efficiency.

### Targeted processes

- Wood debarking and chip washing
- Pulp screening
- Sludge thickening and dewatering
- Paper and card recycling
- Process clean-up
- Vehicle washing

### Targeted materials

- Paper fibres
- Fine particles
- Coarse particles
- Organic materials
- Nutrients

# Key products for preliminary treatment

## Coarse screening

### Hydro-Sludge® Screen

A superior coarse screening solution, delivering solid performance and straightforward maintenance.

Offering a range of screen sizes, reduces loading on downstream processes and improves overall treatment effectiveness. Able to handle a dry solids capacity of up to 9%.

Delivers savings by cutting the costs of solids handling and equipment maintenance.

[hydro-int.com/hydrosludgescreen](http://hydro-int.com/hydrosludgescreen)



### Meva™ Shaftless Screw Conveyor

The Meva™ Shaftless Screw Conveyor is a high-volume, efficient spiral conveyor for conveying sludge screenings and other wet and dry waste and industrial solids.

The Meva™ Shaftless Screw Conveyor combines high transport capacity with a low inlet height to provide options for a wide range of applications including screenings and both thickened and dewatered sludges.

[hydro-int.com/mevaconveyor](http://hydro-int.com/mevaconveyor)



### Meva™ Counter Pressure Screw

The Meva™ Counter Pressure Screw reduces sludge screenings volume and weight by up to 50%. Further reductions are possible when combined with the Meva™ Screw Wash Press, delivering shredded screenings with a dry solids content of up to 60% and offering further reductions in disposal costs.

[hydro-int.com/mevascrew](http://hydro-int.com/mevascrew)



### Meva™ Screw Wash Press

The Meva™ Counter Pressure Screw reduces sludge screenings volume and weight by up to 50%. Further reductions are possible when combined with the Meva™ Screw Wash Press, delivering shredded screenings with a dry solids content of up to 60% and offering further reductions in disposal costs.

[hydro-int.com/mevapress](http://hydro-int.com/mevapress)



# Grit and sediment removal

We provide small-footprint solutions for flume de-gritting that outputs dry sediment that is ready for cost-effective disposal.

Our sand and grit removal equipment has been used in a wide variety of operations to help quickly recycle wash water and re-use this valuable commodity for additional washing or irrigation.

## Grit King®

The Grit King® is a compact, unpowered advanced grit management system that removes 95% of 106 µm particles or larger, preventing costly downstream grit abrasion and deposition caused by grit, silt, and sand.

With no moving parts, requiring less than 150 mm of headloss at average flows and a capacity to handle flows as low as 11 l/s, the Grit King® is a versatile and economical grit removal system that helps owners and operators to cut plant maintenance costs.

[hydro-int.com/gritking](https://hydro-int.com/gritking)



## TeaCup®

The TeaCup® is a high-performance accelerated gravity grit removal system.

Available in a range of sizes and able to accommodate flows as low as 4.5 l/s in a single unit. TeaCup® units can be used to accommodate a wide range of flow characteristics, making it the ideal system for many different types and sizes of plants.

[hydro-int.com/teacup](https://hydro-int.com/teacup)



## SlurryCup™

The SlurryCup™ is a grit washing system that employs two levels of separation and classification to capture, wash and classify grit as small as 75 µm from grit slurries, primary and secondary sludge, protecting downstream processes from abrasive wear and clogging.

With no internal moving parts, the SlurryCup™ is a low-maintenance solution that produces clean grit ready for dewatering, minimising organic content and cutting the volume of solids hauled to landfill.

[hydro-int.com/slurrycup](https://hydro-int.com/slurrycup)



# Key products for preliminary treatment

## Grit and sediment removal

### GritCup®

The GritCup® is a compact, unpowered grit washing system with no moving parts that delivers clean grit ready for dewatering by a SpiraSnail® dewatering system, effectively separating and classifying 95% of all particles 106 µm and larger and 75% of 75-106 µm particles.

The GritCup® is typically used to wash grit collected by primary grit removal systems such as Grit King®, and is ideal for smaller plants.

[hydro-int.com/gritcup](https://hydro-int.com/gritcup)



### 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 a TeaCup®, the SpiraSnail® provides effective, affordable grit dewatering ideal for smaller industrial plants.

[hydro-int.com/spirasnail](https://hydro-int.com/spirasnail)





# Key products for primary treatment

## Micro-screening

### Hydro MicroScreen™

A low-energy, small-footprint rotating belt filter that delivers exceptional solids removal from industrial process water, maintaining efficiency at peak design flow rates. Can replace multiple step pre-treatment systems.

[hydro-int.com/microscreen](http://hydro-int.com/microscreen)



## Lamella

The Lamella Plate Clarifier is a primary clarification device used to remove sediment from industrial waste streams which requires up to 80% less space when compared to a traditional settling tank.

[hydro-int.com/lamella](http://hydro-int.com/lamella)

# Key products for tertiary treatment

## Continuous vertical sand filtration

### The DynaSand® Range

Hydro International supply a range of continuous upflow vertical sand filtration technologies which deliver removals of TSS and BOD down to 10 mg/l, and can also be configured to remove Phosphorus and Ammonia or Nitrogen.

[hydro-int.com/dynasand](http://hydro-int.com/dynasand)

### DynaDisc®

The DynaDisc® is a compact tertiary cloth media filter with a 10 to 20 micron filter. It provides a large area for filtration in a compact process vessel for high-volume, low headloss tertiary treatment applications.

[hydro-int.com/dynadisc](http://hydro-int.com/dynadisc)



# Support Services

Hydro International provides a suite of support services designed to keep water management systems operating at peak performance, saving time and money and enabling businesses to focus resources on their core operational objectives.

To get the most from your wastewater equipment, you need a reliable and responsive service team that knows and understands your plant, processes and procedures inside out.

From breakdown response to planned, preventative maintenance; from spares delivery to major refurbishment projects, Hydro is committed to providing friendly and efficient customer service based on its outstanding product knowledge and long-serving industry experience. Service contracts can be agreed for individual items of plant, single sites or for multi-site programmes.



## Maintenance

- Emergency breakdown
- On-site repairs
- Condition monitoring
- Strip-down
- Full equipment service



## Servicing

- Range of service contracts
- Bespoke multi-site contracts
- Planned maintenance programmes
- Scheduled inspections



## Technical Support

- Telephone helpline
- Troubleshooting
- On-site investigations



## Hire

- Breakdown response
- Equipment trials
- Planned outages



## Spares

- Telephone helpline
- Stores and despatch
- Next working day despatch



## Refurbishment

- Plant upgrades
- Process improvements
- Overhauls and refurbishment



## Training

- On-site maintenance training
- Off-site operating training
- Refresher training

To find out how our services team can help keep your systems working at peak performance call 0333 600 5004 or visit [hydro-int.com/services](http://hydro-int.com/services)

# Example Application Data

## Particle Board Manufacture

Hydro MicroScreen™ reduces solids loading from industrial wastewater effluent by 77% on average.

### Situation

A large particle board manufacturer in western Oregon, US, was looking for a more effective TSS removal system that could handle larger loads, reduce required detention time for settling, protect their sedimentation system, and reduce the frequency of required cleaning. Their TSS primarily consisted of sawdust and 6 mm (¼") wood chips.

### Solution

Hydro International tested Hydro MicroScreen™ performance under a wide variety of operating conditions at various flow rates, with and without prior polymer addition, and during plant washdown. Grab samples of influent to the Hydro MicroScreen™ and effluent out of the Hydro MicroScreen™ were analysed by the plant's on-site laboratory staff.

Despite the wide variety of their operating conditions, the Hydro MicroScreen™ performed consistently – with 77% TSS removal on average. Additionally, solids output from the Hydro MicroScreen™ system were visibly dry and could be fed back into the plant process, rather than being sent to landfill.



## Carrot Processing Facility

Hydro MicroScreen™ removes 100% more solids from process water than existing screening technology.

### Situation

A large California carrot processing company wanted to improve its industrial process water treatment efficiency. The company's gravity disc screen was missing solids, reducing the effectiveness of an effluent spray system that was being used to recycle process water onto the carrot fields.

### Solution

The Hydro International team ran a pilot test of the Hydro MicroScreen™ rotating belt screen, to demonstrate its effectiveness in removing food solids from process water.

The Hydro MicroScreen™ performed extremely well during the pilot trial, removing 100% more solids than the company's existing gravity disc screen.

When operated downstream of the gravity disc screen it was further discovered that, for every eight-hour shift of operation, the Hydro MicroScreen™ was catching 6.8 m<sup>3</sup> of carrot solids that the gravity disc screen was missing.



Find out how Hydro International could help your business reduce water use and cut discharge costs, call +44 (0)1275 878371 Search **Hydro International** online or visit: [hydro-int.com/process-water-treatment](http://hydro-int.com/process-water-treatment).

Contact us to talk to an expert:

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Make better water management decisions