

EnviroHub

Safe Water with Service

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EnviroHub is a control system used by the quarrying and construction industries to monitor, treat, and report on water quality onsite.

With sites now required to provide proof of safe water disposal and water quality checks routinely being carried out by the Environment Agency, a robust monitoring system such as EnviroHub plays a vital role.

Founded on our client's feedback, EnviroHub is dedicated to implementing sound, sensible practices for permanent and temporary water management on sites, that reduce risk and protect our client's reputation.

We understand the day-to-day realities our customers face at site level, whilst also factoring in their company corporate aims and objectives. We bring these two strands together in proven, cost effective and sustainable solutions.

Each requirement has its own unique challenges, that's why we are on your journey from initial concept through to ongoing maintenance and support.



Challenges that EnviroHub Can Solve...

- Discharge water quality monitoring
- Automated alerts & datalogging
- Silt, sediment and discoloured water
- pH imbalanced water
- Hydrocarbons in water
- Needing an innovative bespoke solution



EnviroHub Solutions

These units can be combined to create a bespoke solution to your site's water quality challenges.



Lamella Tanks (HL)



Treatment Tanks (TT)



Correction Tank (CT)



Concrete Washout (CW)
(Used in conjunction with the CT)



Monitoring Unit (MU)



Dosing Unit (TU)



Control Module (CM)

Silt, Sediment & Discoloured Water

What they are

- This is the most common form of contamination, found on many sites.
- This is when the water contains fine sand, silt and clay type particles in suspension. This type of pollution is easily visible and is very traceable.
- Heavier particles such as sand settle very quickly, these are rapidly settling solids, whereas fine clay particles are so fine they don't settle even when the water is left stagnant for long periods. They require chemicals such as coagulants and flocculants to help them 'clump' together to settle out.

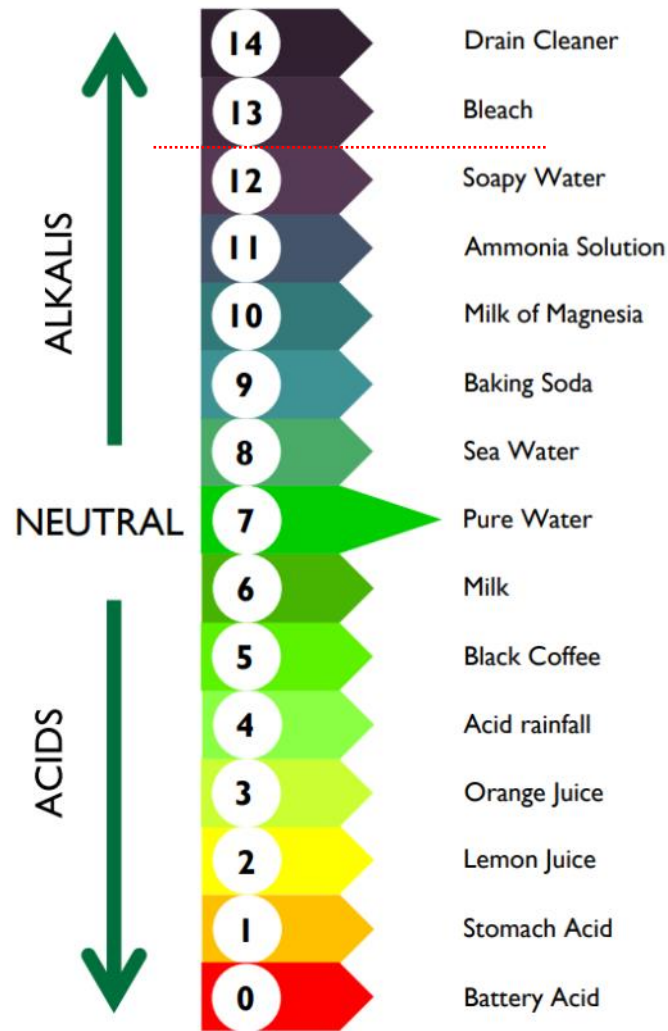
Where it comes from

- Surface water runoff from yards or processing plant areas.
- Quarry dewatering and temporary excavations.
- Process water from treatment systems.
- Washdown of equipment

How you treat it

- Treating solids in water depends on the type of solids and the flow rate required (how fast you want to discharge it). For rapidly settling solids and where 'visually' clear water isn't the priority, a basic settlement tank is suitable. However, if you require visually clean water, additional chemicals may be required to help achieve this.
- For larger volumes and to achieve visually clean water, the lamella clarifier tanks (e.g. HL20, HL40-R & HL50) are used in conjunction with the treatment tanks (TT05 & TT10) and dosing units (TU02).
- There are also options such as silt trap socks and water polishing medias that can be used in more tricky situations.





Above: red line denotes concrete water

pH Imbalanced Waters

What they are

- Water with a pH that is above 8 or below 6 is typically classed as not safe for discharge to surface water (rivers, streams, lakes etc.). For foul drainage below 6 or above 10 is generally not permitted.
- pH imbalanced water comes from activities where the water comes into contact with a contaminant that changes the pH. This must be corrected before it can be discharged off site.
- A pH imbalance in water is not necessarily visible; the water can look very clean, but can be a serious health risk to humans and the environment.

Where they come from

- Concreting and washing down concreting equipment, grouting and hydrodemolition works.
- Dewatering in acidic or alkaline rock works areas.
- Remediation on contaminated land reclamation sites.

How you treat them

- Concrete wash down or hydrodemolition activity can use treatment tanks such as the CW01 and CT01 to treat the water. These use CO₂ gas or acid to correct the pH. This is an automated process.
- Large volumes of water will require larger tanks such as the TT05 or TT10 in conjunction with a TU02 or CO₂ gas dosing systems, depending on what pH correction is required.
- Correcting pH can be very sensitive – it is important not to overdose which would cause the pH to imbalance to opposite extremes.

Hydrocarbons in Water



Above: An EnviroHub Lamella Tank

What they are

- A less common form of organic contamination, this is for example where water contains petroleum based oils or fuels.
- There are 'dense' and 'light' hydrocarbons, the dense generally settle out with other solids, whilst the light may float, so sometimes they can be skimmed off the water surface. Often further treatment is required to remove them from the water.
- Hydrocarbons are generally visible in water. Left untreated they can have very damaging effects on nature, resulting in costly clean up and compensation charges.

Where it comes from

- Land remediation activity of old contaminated sites.
- Process plant effluent where a chemical has been used as part of the process.
- Spills and incident clean up and remediation.

How you treat it

- The removal of hydrocarbons depends on the type, the volume in the contaminant and the volume of water in total.
- Light hydrocarbons can often be removed using a surface extraction bowl or skimmer. Likewise, dense hydrocarbons may settle out of the water and be able to be extracted as a sludge. However, frequently they can 'clump' or disperse through the water meaning they require more specialist treatment to remove them.
- Typically for simple applications the EnviroHub lamella clarifiers can remove both dense and light hydrocarbons. For more challenging applications a Dissolved Air Flootation (DAF) treatment system may be required, this essentially aerates the water and allows the fine air particles to attach to the unwanted contaminants and lift them to the surface so they can be skimmed off.

Remote Monitoring

Control Module (CM01)

About

The EnviroHub Control Module (CM01) is a cutting edge industrial programmable logic controller with specialised sensor inputs and telemetry capabilities, for use with EnviroHub systems.

It can be programmed for a large array of water monitoring and control purposes, and is capable of returning data to central EnviroHub servers.

EnviroHub Portal

About

The EnviroHub Online Portal provides a complete online record of data readings for each aspect being monitored and can be accessed from anywhere. The data will also give you an automatic log for the authorities proving you have been compliant.

- View graphs, change timelines, performance score, and max/min levels for each probe.
- View from anywhere at any time.
- You get real-time reports, alerts, and insight into what is happening without having to be there.

Levels of management access:

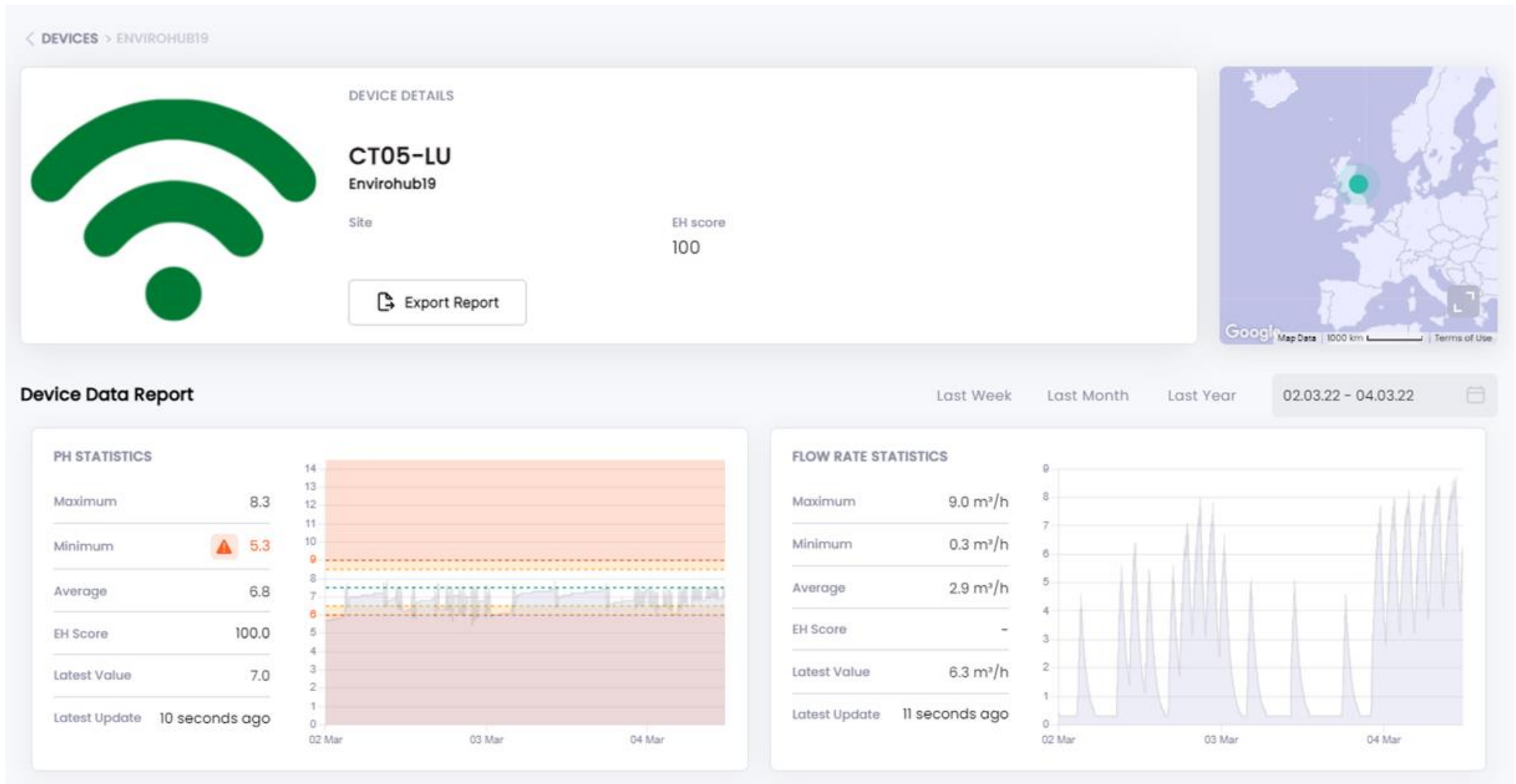
Management level: can view all their sites on the system and each site's score/activity log.

Site Manager level: can view their site, with score and activity logs. Also, reports such as the PDF week view can be downloaded.



Above: CM01

Remote Monitoring



Above: EnviroHub Online Portal display

Correction Tanks (CT)

About

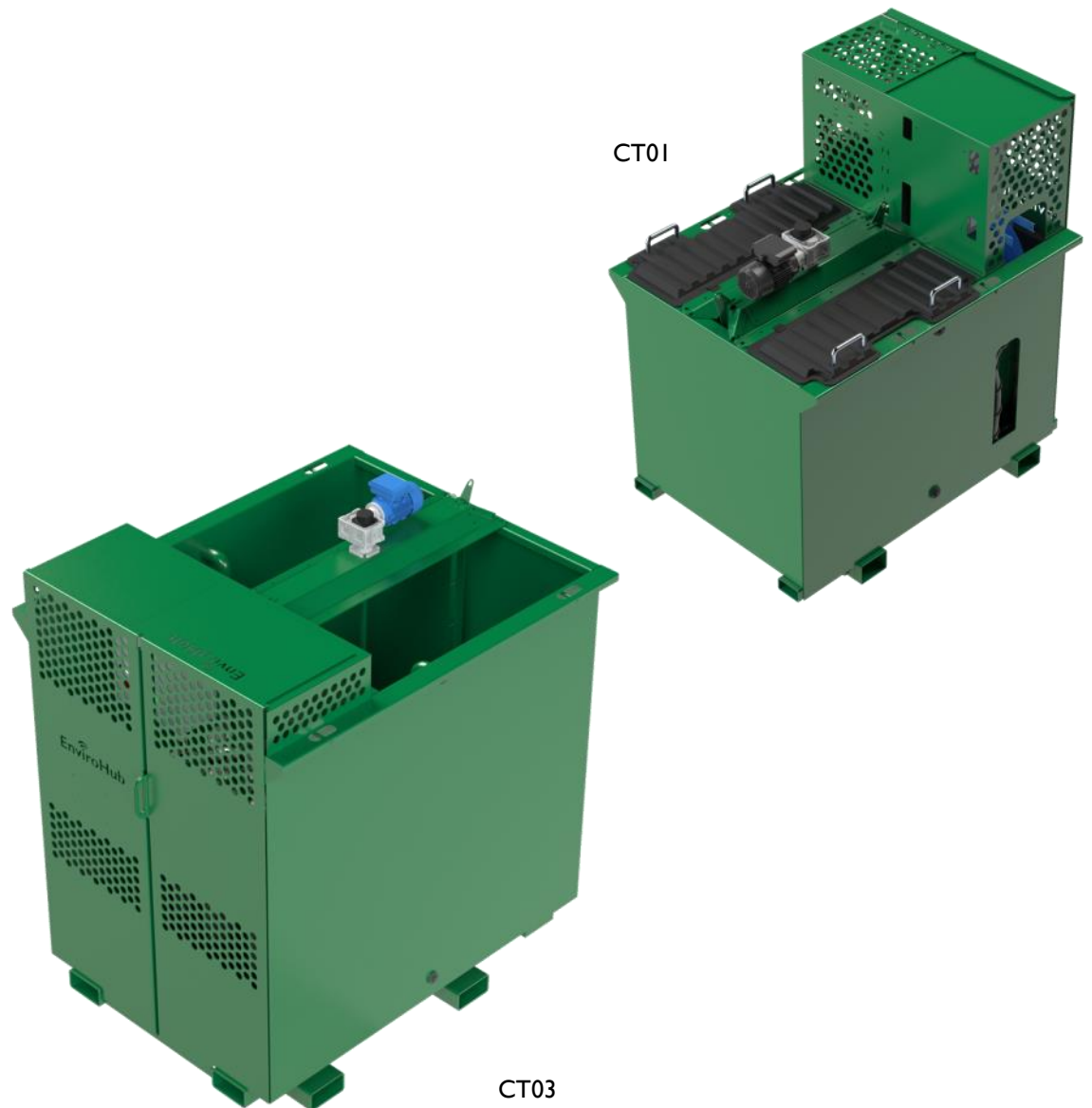
The CT is designed to treat alkaline waste water arising from concreting activities on sites.

The CT is a simple but effective way of ensuring that environmental pollution concerns of high pH water, from such as concreting or grouting are safely met, by neutralisation. This ensures compliance with authorities such as the Environment Agency and Water board's site water standards requirements.

The CT comes in two sizes and can use either gas or acid to neutralise the water.

Benefits

- Minimises environmental impact of concrete washout water and ensures compliance.
- Good practice for health, safety and environment requirements onsite.
- Provides clean water for safe disposal.
- Frequent operation capability, using the onboard automated water recover process.
- Easy and fast to deploy or move around site.
- When used in conjunction with an EnviroHub CW concrete washout unit, ensures clean water after solids removal.
- One CT unit can be used in conjunction with several CW concrete washout units.





Concrete Washout (CW01)

About

The CW01 is designed to contain and treat wash water from the mixer truck washdown procedure after delivery of the batch on site. It can then be pumped to a secondary unit for further processes such as pH correction.

Benefits

- Minimises environmental impact of concrete washout water and ensures compliance.
- Good practice for Health, Safety and Environment requirements on site.
- Provides a clean aggregate product and filtered water that can be neutralised for safe disposal.
- Frequent operation capability, using onboard water recycling system preventing high volumes of contaminated water to dispose of.
- Easy and fast to deploy or move around site.

Lamella Tanks

(HL)

About

Lamella tanks are designed to effectively recover suspended solid particles from water in continuous pumping applications.

They are a simple but effective way of ensuring that environmental pollution concerns of high suspended solids in water, from activity such as groundwork dewatering and silt laden wash water are safely met. This ensures compliance with authorities such as the Environment Agency and Water board's site water standards requirements.

These tanks are typically used with either 2" or 4" pumps, though this can vary depending on the appropriate flow rate required. Where there are greater treatment volume requirements, multiple units can be easily connected in parallel to increase settlement capacity.

Benefits

- Safe solution for removing solids from water and minimising environmental damage to watercourses.
- Ensure compliance with Authority requirements.
- Good practice for HSE requirements onsite.
- Provides water suitable for safe discharge to foul or surface and inert sludge.
- Easy and fast to deploy; minimal set up required.
- Suitable for all suspended solids settlement.
- Unlimited process time without complete washout.
- Flocculant cages built into inlet for basic water treatment.
- Easy transportation using either built in ground level lifting points or fork pockets.



Why a Lamella Settlement Tank is a Better Solution for Protecting the Environment

What's the issue?

If your site water goes directly into a river or watercourse, the discharge must meet strict standards set by the Environment Agency, and you must install the appropriate water treatment equipment.

If your site discharges into a sewer, your obligations may appear much less onerous, however you must consider whether your equipment will cope when you have large flow rates, for example after a high rainfall event.

A simple settlement tank that copes in dry weather may simply become a conduit for the waste to flow directly off your site untreated.

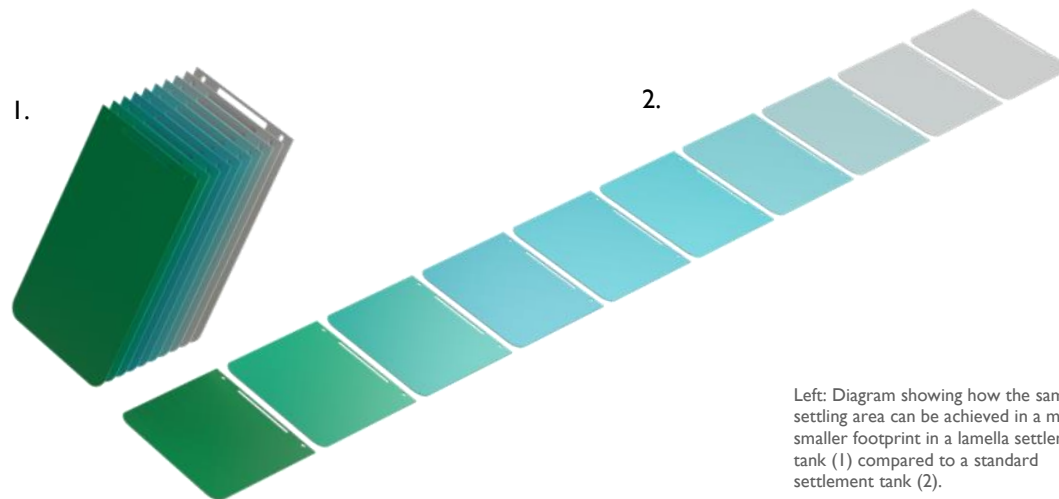
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“England's rivers, including 85% of the world's precious chalk streams, are widely agreed to be a national treasure, yet only 14% are in good ecological health, and every single one fails to meet chemical standards”.

Source: The Rivers Trust

“Raw sewage was discharged into rivers and coastal areas for more than 3.1 million hours on more than 400,000 occasions throughout 2020, according to data from the Environment Agency”.

Source: The Daily Telegraph



Left: Diagram showing how the same settling area can be achieved in a much smaller footprint in a lamella settlement tank (1) compared to a standard settlement tank (2).

The Advantages of a Lamella Settlement Tank

Efficiency

Lamella tanks are significantly more efficient than settlement tanks. This means they keep protecting the environment even at much higher water flow rates.

Compact size

A lamella tank takes up a fraction of the footprint of a settlement tank of the same settlement capacity.

Convenience

Their size and mobility mean that short-term hire is an option, as they are easy to both install and decommission.

Modular design

The compact design of the lamella tank means it can be coupled with other water treatment units for extracting other substances from the water.

Robust construction

No moving parts or power required. This means running costs and maintenance requirements are minimised.

Water saving

The efficiency of lamella tanks means your water is treated quicker. This recycled water is available to be re-used in your plant, reducing the need for water storage.

Monitoring Unit (MU)

About

The MU system is designed to automate the process of water quality monitoring, through the use of apparatus that continuously records and reports the quality downstream of a certain point, most commonly at the final site discharge point.

At the core the system is a range of standard equipment brought together into an effective package to deliver maximum results and guarantee compliance, through the transmission of data to the leading-edge EnviroHub Online Portal.

The MU system is a simple way to give ultimate peace of mind about the compliance of your sites, ensuring that you never fail to comply with the authority's requirements for water standards.

Benefits

- Removes human error and monitors continuously.
- Provides 24/7 365 data logs for onsite water activity to prove compliance.
- Monitored from anywhere at any time.
- Automated process and warning alerts of potential breaches before they happen.
- Options for full system integration and control.
- Good practice for Environmental care.
- Ensures compliance with Authority requirements.





Treatment Tanks (TT)

About

Treatment Tanks are designed to pre-treat water with reagents such as coagulant and flocculent polymer to improve settlement of solids, or for pH correction.

The units are a simple way of batch or continuously processing water to prepare it for further treatment. Pre-treatment is essential to getting good water quality outcomes, especially if the water is heavily contaminated with clay or has a high acid or alkaline state.

The pre-treated water is often discharged to an EnviroHub HL Lamella tank for final clarifying into clean water, ready for re-using.

Features

- 3.0m³, 5.0m³ and 10.0m³ water holding capacity available.
- Can be used for polymer, acid, alkaline or CO₂ dosing.
- Easy to move around via chain lift or fork pockets.
- 2no Agitation stirrers to ensure full water treatment.
- Very compact footprint.
- Designed to be used in conjunction with TU02 dosing system.

Dosing Units (TU)

About

The TU02 is designed to effectively dose polymer and other additives to condition water in preparation for further treatment.

Using the CM01 Control Module to automate dosing guarantees consistency and accuracy, to ensure that there is no over or under dosing and the best quality of water is created. This system also has the capability to monitor and report on the water quality as it is discharged from the system.

As a free standing unit it is designed to take 2no IBC's or smaller containers and works on a small power supply, enabling it to be used in conjunction with many treatment systems including the EnviroHub TT Treatment tank range and the HL Lamella Tanks.

Benefits

- Free standing unit with integrated bund to protect surrounding environment from potential spillages.
- Control module monitors and reports directly proportional to influent.
- Remote monitoring available on water quality and activity.
- Low power consumption.
- Works in conjunction with many treatment options.
- Fully automates the process minimising manual input.
- Good practice for Environmental care.
- Ensures compliance with Authority requirements.



Case Studies

Case Study 1

Application:

Lagoon maintenance

Situation:

The client needed to empty a surface water settlement lagoon that was collecting water from highways drainage. This lagoon filters the solids and hydrocarbons prior to releasing into a nearby brook. The lagoon needed emptying to enable silt removal and repair work, which not only meant dewatering the contaminated water in the lagoon but also providing a continual by-pass for the brook inflows.

As the work commenced the water needed treatment to remove suspended solids and allow for the removal of light hydrocarbons, to ensure that there was no pollution discharged into a nearby SSSI site (Site of Specific Scientific Interest).

Solution:

Using a series of lamella tanks with onboard oil removal syphons, all the discharge water left the site free of solids and hydrocarbons.

Outcome:

The highly contaminated water was safely cleaned and discharged into the nearby brook well within the parameters required by the consent permit. This significantly reduced the very costly risk to the client of polluting a SSSI site.

Case Study 2

Application:

Process water effluent – precast plant

Situation:

On completion of each day, the client washes off all equipment, moulds etc and hoses down the floor in preparation for the next. This water, averaging 20m³ per day, because of its contact with cement-based slurry products, contains a high suspended solids content and is highly alkaline. Added to this, the large storage and curing area have a high runoff during rainfall events. This runoff ends up in the same settlement tanks.

This water is a contaminated waste product, requiring routine maintenance in the removal and disposal of silt. The 120m³ settlement tank is a significant health and safety issue.

Solution:

By installing a treatment system consisting of a treatment tank for pH reduction and water conditioning, a lamella settlement tank to remove solids and a water quality monitoring and correction tank, the water is transformed from a contaminated waste to a safe reusable asset.

This process not only enables the water to be reused in the batching process, but is also within the specification of the discharge consent for safe discharge from site.

As part of the installation of this system, the settlement tank was reduced from 120m³ to 45m³, with safety measures put in place to protect personnel, and a 10,000-litre clean water tank was installed to store clean water ready for reuse.

The system is installed for total automation, using its onboard diagnostics system to report to the site operatives on water quality, consumable restocking requirements and system status troubleshooting.

Outcome:

The client could now discharge water from site within specification, but more importantly they closed the loop, recycling water on site and hugely reducing contaminated waste disposal a) saving them a significant waste budget and b) treating waste at source to reduce the volume, contamination grade and carbon footprint of the waste.



Compliance and Legislation

Make sure your site complies with the law

The best practise for quarries or construction sites is to discharge off site under the Environment Agency's 'Regulatory Position Statement' (RPS). This allows you to discharge water from your site, for a limited period of time, so long as it is mostly rain water and is of a suitably clean quality. However, if in doubt ask. Small risks have big impacts when it comes to water.

In the event that you have an excess of water and it is too contaminated to safely meet the constraints of the RPS, you should then look at the option of applying for a bespoke consent to discharge permit from either the Environment Agency or your local water authority should you be looking to discharge to foul drains.

Typically, if you need to treat the water through a process to make it suitable to discharge safely, you must have a consent permit in place.

Plan ahead for peace of mind

The number one money saver on a project is to plan ahead if you foresee water related issues. Applying for a permit can be costly and take 6 to 9 months to get approval.

There is no second plea for not knowing, negligence claims are costly both monetarily and for your company reputation. But if you are planning ahead and taking precautionary measures you have a case to mitigate that claim.

Monitor continuously and keep records

With sites now required to provide proof of safe water disposal and water quality checks routinely being carried out by the Environment Agency, a robust monitoring system such as EnviroHub plays a vital role. In addition to monitoring and reporting water quality onsite, EnviroHub can inform the site if the water is unsafe to be disposed of and can automatically intervene.



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