

Managing Sludge and Grit

Water Industry Guide



ATLANTIC
PUMPS



Contents

5	Challenges and Opportunities	22	Pumps and Digesters for all Requirements
6	Challenge #1 - Sludge Build-up	25	Secure Data Capture
8	Challenge #2 - Abrasive Slurries	26	The Big Four TOTEX Costs
9	Challenge #3 - Unpredictable Solids	28	Case Study: Increasing Filtration Throughput
10	Challenge #4 - Environmental Pressures	30	Case Study: Lower Downtime and Costs
12	Fresh Investment = New Opportunities	32	Case Study: Flood Resilience Flexibility
14	Innovation in the Water Industry	34	Case Study: Protecting the Watercourse
16	Atlantic Pumps - Delivering Specialist Solutions	36	Case Study: Reducing Digester Cleaning Costs
18	Helping to Future-proof the Water Industry	38	How We Can Help
21	Specialists in Transferring High-Solids Sludge	39	Company Values

INTRODUCTION

I'm very glad to introduce the first Atlantic Pumps guide for the Water Industry! We have a number of key commitments to the industries we work with, driven by our Values, and one of those commitments is to 'Sound, Sensible Solutions'. That's what leads us to invest heavily in thoughtful and educational guides, with our hope being that this Guide will really help all our colleagues and partners in the Water Industry to be more effective in sludge and grit pumping solutions. And we believe that our collaborative, responsive and practical DNA fits perfectly with this industry's needs.

All this comes at a critical moment for the industry as we head into the AMP8 period. The Water Industry has been

under intense scrutiny and pressure and there has never been a greater need for game changing solutions. We need solutions that bring sustainable changes, that provide for the future, not only of people in the industry but ultimately our world. Coming from the mining industry, this is something we are used to and we're finding there is so much to leverage for everyone's benefit. We look forward to your input on this journey, with a commitment to continuous improvement, we can radically change the outcomes for the future.

Thank you and don't hesitate to reach out if there is anything I can help with.

**Andy Smith, Managing Director,
Atlantic Pumps**



The Water Industry 2025 – 2030: Challenges and Opportunities

The water industry faces rapidly evolving challenges, with ambitious goals set as a result of climate change, shifting societal demands and government policies.

As 'AMP8' approaches (the 8th Asset Management plan, covering the regulatory period April 2025 to April 2030), priorities such as stormwater management, TOTEX (total expenditure) reduction and pollution prevention are becoming increasingly important.

However, ageing assets, the ongoing energy crisis and ongoing sustainability and regulatory requirements are impacting the existing infrastructure and operational teams, making it difficult to balance day-to-day management with long-term projects.

Recognising the need for a new approach to turn the tide of public opinion and mitigate against increased regulatory penalties, Atlantic Pumps is committed to delivering practical and innovative solutions and believes that collaboration across the wider industry is key to progress.

Challenge #1

Sludge Build-up

Suspended solids in sludge cause blockages, premature wear and an increase in pump energy demand. As stormwater tanks, grit traps and digesters become silted up, it can lead to increased overflows and decreased treatment/storage capacity.

Cleanouts are disruptive, causing downtime and increased health & safety management, but with climate forecasting pointing towards even greater extremes in UK weather, we need to be prepared.

"I have been involved in flood modelling and resilience for around 40 years and in recent years flooding appears to have been getting worse, particularly in terms of rainfall intensity and more frequent flood events. These changes in weather patterns would appear to be as predicted by climate meteorologists and those specialising in climate change."

Professor Roger Falconer, Emeritus Professor Water & Environmental Engineering, Cardiff University
(Source: Science Media Centre, 2024)





The solution:

As weather extremes increase, so detention and stormwater lagoon maintenance tasks need to be completed faster than ever, as any steps that speed up the maintenance of storm assets will lead directly to better TOTEX and system resilience.

When designing sludge pumping systems, Atlantic Pumps' designers believe ease of maintenance should be on a par with technical performance. If the task can be completed safely by site operatives, it removes the need for specialist contractors or highly qualified engineers, and if Mean Time Between Maintenance (MTBM) is lengthened, it results in additional cost savings.

Challenge #2

Abrasive Slurries

Many fine particles in abstracted water and wastewater are abrasive, quickly wearing down equipment, which decreases both energy-efficiency and asset lifetime.

This has a disproportionate effect on pumps that rely on exact tolerances to achieve their performance, such as ram pumps and progressive cavity types.

Some very clever innovations have improved the OPEX (Operational Expense) of such positive displacement pumps over the years, but often at the expense of CAPEX (Capital Expenditure).

The solution:

Anaerobic digestion (AD) and Advanced AD (AAD) technology is being optimised as a way of improving environmental and financial results in wastewater.

To continue this trajectory, better ways of processing abrasive AD slurries and digestate grits are being rolled out, converting more waste into valuable product, whilst reducing TOTEX (Total Expenditure) costs and part replacements.

Challenge #3

Unpredictable Solids

Just about anything can be washed down a combined sewer, including stones, litter, road surface debris, industrial waste and household waste. Even with clean water sourcing, the sludge can contain naturally occurring grit, suspended fines and animal remains.

Pumps and associated systems need to handle it all without a hitch: from damagingly large solids to dry-matter heavy sludge build-up. Such errors as specifying an incorrect impeller or the wrong sized motor, or utilising equipment not designed for abrasive sludges can send TOTEX figures off target very quickly.

With most pumps designed for the efficient transfer of clear water, those adapted to handle sand, gravel and other solid debris can be expensive to buy, complex to maintain and have a reduced, unpredictable lifespan.



The solution:

Atlantic Pumps believes that designing better treatment flows, adapting existing methodologies and selecting the right equipment for the application will differentiate the highest-performing water companies from the rest.

Challenge #4

Environmental Pressures

Now that our quality of clean drinking water is taken for granted, societal pressure is increasingly focused on wastewater's environmental impact. Coinciding with the effects of climate change, price pressures and energy scarcity, this is pushing water companies to the brink.

As we all know, the buck stops at the sewage plant. Pump failure and energy wastage are often the root causes of non-compliance and performance issues, with fines going into the millions, along with longer-term remedial costs and increased price suppression.

Water data is crucial to both improving actual outcomes year-by-year and also demonstrably exhibiting a company's positive environmental improvement to regulators and the public. It's crucial that we drill down into the numbers, study cause-and-effect in detail, take informed investment decisions and compile evidence, but this requires supplying the right data, at the right time, to the right people.





The solution:

Minimising downtime and maximising site capability reduces the need for expensive, ad-hoc inventions, such as road tanker deployment and emergency overflow management. As the industry gears up to work with an increasingly empowered regulator, the demand for fresh innovation and new perspectives is greater than ever.

Atlantic Pumps is here to support your AMP8 business plan, with innovations in data monitoring, pump energy efficiency and improved methods of silt removal, sludge treatment, and discharge quality control. We believe the water sector is on the cusp of a transformative journey.

Fresh Investment = New Opportunities

The proposed AMP8 Capex investment budgets will open many opportunities for TOTEX reduction and additional added-value revenue streams. New ways to deal with budget-draining issues such as storm management, pollution risk, grit, and sludge management are already apparent.

Pumps - the indispensable components

The water industry traditionally uses significant amounts of energy, primarily for pumping, aeration and treatment processes. Pumps, in particular, are responsible for a substantial portion of this energy usage. Whether utilised for lifting water from reservoirs and rising mains, transporting it through treatment processes, distributing clean supplies to end-users or taking it back as sewage, pumps are indispensable components of every drinking water and wastewater treatment plant.

Increases in Bioresources recovery options represent an ideal opportunity for the water industry to become net contributors of green energy.





Improving energy-efficient flow

Whole system thinking is crucial for energy optimisation. With growing environmental concerns and escalating energy costs, it is imperative for the water industry to improve pump efficiency and treatment effectiveness.

Energy-efficient pumps can substantially reduce operational costs and minimise the industry's carbon footprint, while advanced technologies, such as variable frequency drives (VFDs), allow pumps to adjust their speed based on demand, optimising energy consumption and minimising wastage. In addition, innovations in pump design, such as the use of high-efficiency impellers and motor systems, have further enhanced energy performance while increasing operational reliability.

Pipe size and material, treatment methodology and system layout can have as great an impact as pump selection. Furthermore, intelligent pump monitoring and control systems enable real-time optimisation, ensuring efficient operation, and contributing to overall energy savings. Senteos® is a secure 'cloud-based' monitoring and control platform, developed for pump management but also compatible for many other process and automation networks.

Meeting demand for 'best cost' solutions

Atlantic Pumps understands the demands of sustainability, resilience and capability facing the UK water industry. Working to stated values of speed and simplicity, our engineers work closely with water treatment customers to implement best practice and proven innovations, seeking out 'best cost available' solutions. By increasing outputs and decreasing inputs, water companies are decarbonising faster than ever, whilst giving their customers better value for money.

Innovation in the Water Industry

Innovation is a necessity in our rapidly changing world, with new approaches having to work 'out-of-the-box', as time itself is a limited resource. Before moving forwards, it's important to look at past innovations to establish a methodology.

Few, if any, of history's best innovations came out of nothing. The most successful breakthroughs involved technologies taken from other industries and applied in a different field of application. For example, Stevenson didn't invent the steam engine. He took the concept from a pump engine and applied it to his locomotive, thus producing steam power. Likewise, the internet was initially invented to aid document retrieval at a single scientific institution.

So, what proven concepts and ideas can water companies take from other industries and apply them to the challenges they are facing? By taking the lead from industries with similar challenges, such as sludge grits, wastewater management and resource extraction, water industry leaders can de-risk investment decisions and speed up progress. Thus, progressive water companies are tapping into wider industry experiences, bringing in proven solutions from other arenas.

Success in AMP8 is about nailing performance at low TOTEX (Capital + operating expenditure = Total Expenditure).

Higher performance requires investment; lower TOTEX requires innovation.



Taking the initiative from other industries

One industry where the TOTEX cost of handling sludges, grits and abrasive solids has long been mission-critical is the quarrying and mining industry. As the difficulty and cost constraints of mining increased during the 20th century, so improving outcomes from equipment and processes became a finely tuned science.

This highly regulated industry has had to work hard to 'get its house in order' over sustainability and wastewater management. Like the water industry, it's about extracting a finite resource, with the associated responsibility for sustainability.

As a mining and quarry pump manufacturer, Atlantic Pumps has an established history of delivering efficiency and sustainability innovations in transferring, separating, and treating high-solid sludges and grit-laden slurries.





Atlantic Pumps: Changing the Face and Cost of Pumping

As an operator within the aggregate extraction industry, Atlantic Pumps has long mastered the handling and treatment of grit-laden wastewater, settling solids and abrasive slurries, engineering low TOTEX assets for traditionally high OPEX/CAPEX applications.

Specialist solutions for abrasive sludges

Innovation in sludge and grit pumping has made us specialists in abrasive sludge processing for industries such as waste management & recycling, anaerobic digestion (AD), AAD, bioresources, clean water sourcing, wastewater and heavy industry. Helping water treatment plants is now an important core activity of Atlantic Pumps, with specialisation in de-gritting, abrasive slurry transfer and sludge dewatering.

Meeting emerging challenges

We continue to develop solutions for emerging challenges, whether global, company-wide or site-unique, constantly innovating to deliver the required results. Whether we are acting quickly to resolve reactive situations or undertaking small to large-scale planned improvement projects, our team focuses all its attention on finding the optimum solution with agility and originality, saving our clients time and money. We also believe that innovation needs to be matched by great personal service and take great pride in delivering the highest levels of customer service.

Taking the TOTEX reduction approach is vital for long-term financial and environmental sustainability. OPEX dwarfs CAPEX on most pumping projects, so TOTEX thinking gives you better Lifetime Cost appraisal, eases decision-making and leads to a stronger business plan.

When choosing pumps for sludge and abrasive slurries, it's important to bear in mind that pump specification sheets usually provide data based on clean grit-free water, typically in perfect conditions. Often, what looks best on paper doesn't translate into practical success, especially when it comes to challenging applications within wastewater and bioresources, and that's where experience comes in.

Achieving the optimum package that avoids excessive downtime and brings the lowest TOTEX, is a blend of science, design and niche experience.

Optimising TOTEX based on experience

Atlantic Pumps - Helping to Futureproof the Water Industry

Atlantic Pumps provide a rapid, pro-active service, dedicated to boosting water, wastewater and bioresource performance by sorting the water industry's most gritty problems.

We understand that your plant requires the fastest possible delivery of practical solutions, and aim to provide sound advice and tailored, innovative solutions to your abrasive fluid needs. At all times, our goal is to align with your objectives: keeping downtime to a minimum, growing capacity and resilience, and improving environmental and financial sustainability outcomes.

Atlantic Pumps manufactures Audex submersible grit pumps, SlurryPro centrifugal sludge pumps, Gromatex flanged pipe system for abrasive fluids EnviroHub treatment systems, and Senteos online monitoring software.

We are also the UK partners for Toro process pumps, and LSM, one of the main players in the industrial peristaltic pumps market, with a range of pumps that are ideal for wastewater and AD applications.

As part of the Intrax Group, Atlantic Pumps' products and solutions are used worldwide, with regional distribution and support centres in the UK, Argentina and Australia.



Supporting water and wastewater companies with expertise, know-how and problem-solving capability

TOTEX costs can escalate quickly when grit and hard solids meet pumps, requiring costly part replacement. In addition to direct costs, site downtime can result in a significant loss of time, energy, budget and long-term investment ability.

Atlantic Pumps demonstrate time and again that excessive wear and tear, long periods of pump disruption and surprise costs don't have to be the accepted norm.



A wide range of resources to meet every need:

- Long-lasting pump systems for abrasive fluids.
- Stand-alone grit management and abrasive fluids consultancy, providing assessment and guidance on the management of abrasive fluids, grits and sharp solids within your processes.
- UK-held stock of replacement and wearing pump parts.
- Fast delivery of new pumps and parts, avoidance and reduction of downtime are our priorities.
- Flood risk reduction and climate resilience ideation.
- Reduced energy usage, speeding up net-zero with new technology and proven methodology.
- Innovative engineering from an in-house team and trusted network.
- 24-hour WhatsApp support, plus direct daytime contact with technical support and your dedicated account manager.
- On and off-site pump fabrication and servicing of pumps, pump systems and specialist treatment.
- Secure remote monitoring and reporting of water data via the Senteos secure cloud-based portal.

Key product applications:

- AD Feedstock transfer
- Digester clearance
- Clean water sludges and wastewater
- Grit removal
- Sludge and thickener underflow transfer
- Portable by-pass water clarification treatment; EnviroHub
- Remote water data recording and alerts; Senteos
- Feed pumps for hydrocyclone separators and filter presses

Designed to handle the most demanding slurries:

- Grit
- Thick sludges
- Rocks, stone
- Large or sharp solids
- Semi-solid pastes
- pH extremes





Specialists in Transferring High-solids Sludge from A to B

The wastewater industry is unique in the way it 'collects' from its customers. As the sewer network system is so interconnected, there are few opportunities to actively check what is entering the system.

This makes system parameters difficult to refine, with pumps having to handle anything from water to sharp solids. Such challenges have been the focus of our sludge-processing system designers for years, as they optimise pumps to handle such vagaries.

Taking a low TOTEX approach, our engineers and system designers fully understand the need for pump packages that are long-lasting, easy to maintain, simple to operate and deliver the best ROI (Return on Investment).

We are always happy to have a conversation about optimising wear life and exploiting TOTEX reduction opportunities at your site, especially where abrasive solids and high dry-matter content are involved.

"Based on our mining and waste-recycling background, we have years of experience in handling the most difficult abrasive and aggressive fluids efficiently, including slurries laden with grit, rags and other, often unpredictable, foreign bodies - whatever customers choose to flush away."

**Nathan Rowles,
Atlantic Pumps Director**

Pumps and Digesters for all Requirements

We offer a range of products designed to deal with whatever you may encounter in the sewage system, including abrasive solids, high dry matter, sludge, grit and silt.

Abrasive Solids



Audex

The Audex range of submersible pumps is designed to handle dense and heavy fluids containing up to 30mm hard solids. Inbuilt agitators make these pumps great for minimising silt deposits and blockages in storm tank returns and detention chambers.

SlurryPro

The SlurryPro range of pumps is designed to handle abrasive slurries, containing anything from grit to chunks of rock. Different impeller designs, materials, and chamber linings can be specified for each pump, aiming for the lowest TOTEX cost in each application.



High Dry Matter

Previously, ram pumps and progressive cavity (PC) pumps were the only option for low moisture sludge. Both types are notorious for high CAPEX and OPEX costs with abrasive sludges. They rely on close tolerances to operate effectively, and parts are generally expensive to make, and complex to replace.

Atlantic Pumps offers low-TOTEX positive displacement pumps for problematic sludges and high-solids slurry. Proven reduction of downtime, a greater lifespan and simplified maintenance.

LSM peristaltic (hose) pumps are beneficial in many problematic sludge duties. With the hose being the only wet-part, servicing is low-cost and easy. The pump is reversible, helping clear blockages and enabling filling and emptying cycles.

Toro Pumps, in partnership with Kronoa, have a new PC geometry that's designed for a longer-wear life in abrasive sludge applications.



Digester Clearance

Atlantic has recently made significant breakthroughs in improved sludge tank emptying and managing projects to support the refurbishment of AD Digester assets. Sites that have previously been using vacuum 'supersuckers' are finding cost and time benefits in tank and chamber emptying by switching to an LSM peristaltic-based pump system from Atlantic Pumps.

The advantages of using this system include simple and easy cleaning, low maintenance, greater flow control and better energy efficiency: all resulting in a low TOTEX solution. It's step-changes like this that can show dramatic improvement to TOTEX, prompting its planned rollout to many more AD and AAD digesters across the UK during AMP8.

Grit Removal

Whether the application involves positive or flooded suction, Atlantic offers several proven solutions based on many years handling grit and stone-laced slurries. Water treatment, AD applications and pumping stations can all benefit from Atlantic's fork-liftable, pump-based platform, developed for grit chamber clearance. (Please ask for case studies and site references.)



Water Desilting

EnviroHub is a semi-portable, dirty water by-pass treatment system, available for hire or purchase. The modular and rapidly deployable system monitors and treats water for silt removal, heavy hydrocarbons and pH correction, and is used in the wastewater industry as a resilience support or bypass system during downtime and peak periods, making it ideal for use during refurbishment or other maintenance and construction work.

The EnviroHub modules include an inline monitoring unit (for temperature, flow, volume, pH, and clarity), a dosing unit for CO₂ (pH buffering), coagulant and flocculant tanks, lamella settlement tanks, and an enhanced data/command transmission gateway. The level of automation options and speed of installation make EnviroHub ideal for backing up or bypassing the regular wastewater filtration system when necessary at your WwTW (Wastewater Treatment Works).





Secure Data Capture

Senteos - the cloud-based answer for monitoring and recording data 24/7

Senteos seamlessly interconnects with measuring probes, pumps and other equipment, giving site management a performance dashboard and 24/7 data log for reporting and troubleshooting. Bringing together such water data as temperature, pH, clarity and flow rates, the system increases situational awareness in even the most stringent environments.

Allowing automated or remote control of pumps, valves and other connected equipment, Senteos can be used to send commands, such as turning pumps off or on. A live dashboard and email or SMS text messages alert nominated staff when pre-set parameters are met, allowing timely invention.

This two-way report and control platform is hosted on a secure, UK-located server and employs a variety of security layers to prevent unauthorised access. Secure records also provide the data that management needs for continued improvement and demonstration of compliance.



SENTEOS®
DATA · CONTROL · INTELLIGENCE



The Big Four TOTEX Costs: People, Power, Sludge and Chemicals

1

People

Atlantic Pumps believes in simplicity. We aim to find the simplest method to achieve the best results, freeing up people to work on improving other outcomes. By reducing the complexity and frequency of maintenance tasks, we take the pressure off management and engineering teams, and empower site operators to achieve more.

As required, the Atlantic engineering team can take care of all your pump servicing requirements or support your staff remotely 24-hours a day via WhatsApp. All Atlantic Pump models integrate with CheckProof, an app-enabled asset maintenance/inspection software that optimises operations, HSE and quality control - connecting your people, assets, manuals and tasks in a streamlined way, across all site locations.

2

Power

With our experience in decarbonising pump-and-treat systems in other industries such as quarrying, we bring fresh thinking to the water industry. Although pumps are responsible for a huge percentage of the world's electrical consumption, electric motors are inherently more efficient than diesel-powered options. As such, Atlantic Pumps has channelled its focus into developing more efficient electric pumps over the years.

When designing a sludge treatment process, it's just as important to select the correct pump specification as it is to take a system-wide energy use/energy recovery approach. Correct pump selection, variable frequency drives (VFD), system design, telemetry and intelligent sensors all work together to achieve greater cost savings and efficiency.

3

Sludge

Sludge in wastewater reduces the effectiveness of pumps, wears out engines and motors, and often dramatically shortens asset life as it is generally abrasive. Accumulations of sludge blocks pipes and valves, and reduces the storage capacity of vessels and tanks. To counteract this, Atlantic Pumps has developed a variety of sludge transfer, fines separation and grit removal solutions in use in the water industry today.

We work with water companies to reduce site energy consumption and increase green bioenergy generation and bioresources from wastewater treatment. Our vision, which we are realising, is to turn energy and sludge costs around 180 degrees, turning costly waste sludge into a revenue stream.

4

Chemicals

Toro's chemical-resistant pumps increase asset lifetime, while LSM peristaltic pumps deliver accurate and controlled dosing for cost and quality control. Remote data collection and interrogation allows management to set pre-programmed responses, such as valve activation, stopping/starting pumps or changing their speed – enabled via Atlantic Pumps Senteos software platform, developed specifically to handle this process securely across remote sites.

SlurryPro Centrifugal Pump Increases Filtration Throughput by 40% at Water Treatment Plant

Background

A water treatment plant was utilising a wash plant dewatering screen, followed by filter presses to dewater the thickened underflow drawn from the settling tanks, thus separating the slurry into filter cake and clear water for easier and safer disposal. Relying on high-pressure feeds of up to 45 bar, the presses squeezed the water out through a filtration membrane.

The Challenge

The existing twin Latham filter presses were robust, but the cycle time on each was between 2 - 2 ½ hours, due to the typically low flow rate of ram pumps. This meant that the prior treatment processes had to be slowed to match this constraint, resulting in reduced efficiency throughout the operation. The challenge was to increase filtration throughput efficiency.



The Solution

Working with Atlantic Pumps, a focused study on the filter press system was conducted, looking for optimisations. Due to the high-pressure requirements, filter presses are often fed by ram pumps, although they struggle to compete with centrifugal pumps on flow rate. (There again, centrifugal pumps are prone to premature wear when primarily pumping abrasive fluids.)

The solution was to introduce an additional first stage of pumping, involving a high-chrome lined, 55kWh 6×4 SlurryPro centrifugal pump, giving each filter press an initial fast-fill in turn. When the slurry feed pressure reaches 5.5bar (approx. 80 psi), the ram pump takes up the pressure, leaving the centrifugal pump to begin the next initial filling on the other press.

“Atlantic Pumps’ mission is to deliver robust improvements to abrasive sludge and slurry processing, using proven solutions delivered with our market-leading speed of service and ongoing support. Thanks to our innovative approach, we have been able to deliver faster cycle time, increased throughput and reduced energy wastage for this water treatment plant.”

Deryck Harmer, Project Leader, Atlantic Pumps

LSM



LSM Pumps Deliver Lower Downtime and Costs at Ecopark

Background

Based in Dungannon, Co. Tyrone, Granville Ecopark uses AAD (Advanced Anaerobic Digestion) to create bio-methane, electricity, and bio-fertiliser.

Like many waste-to-energy AD plants, the AAD feedstock contains a variety of solids, including sharp residual grit. This presents a particular challenge to pumps, with the resulting wear quickly degrading the efficiency, capability, and lifetime of the equipment. Most pressure-building pumps rely on fine tolerances between the rotor and stator, which are soon spoiled by wear.

The Challenge

The existing PD pumps were proving to have a higher OPEX than expected, with the nature of the digestate rapidly wearing down expensive parts. Granville asked Atlantic Pumps to see if a lower TOTEX could be achieved. Two options were considered: utilising alternative after-market spares, which came in at a lower cost overall, or a completely new approach to transferring the abrasive digestate. Whichever solution was chosen, it needed to produce a relatively high pressure, low shear stress, consistent flow and be able to handle high dry-solids matter of 60%.

The Solution

The decision was made to replace the current progressive cavity pumps with LSM 100mm peristaltic pumps, which were quickly deployed across the site, resulting in minimal disturbance to operations.

The Results

The solution was to introduce an additional first stage of pumping, involving a high-chrome lined, 55kWh 6×4 SlurryPro centrifugal pump, giving each filter press an initial fast-fill in turn. When the slurry feed pressure reaches 5.5bar (approx. 80 psi), the ram pump takes up the pressure, leaving the centrifugal pump to begin the next initial filling on the other press.

Audex Pumps Increase Flood Resilience Flexibility and Reduce Energy Costs at Wastewater Treatment Plant

Background

Like many wastewater companies across the UK, this English Water and Wastewater company is facing increasing influxes of stormwater run-off. Following a wet summer, it was apparent to site management that the stormwater return pump needed replacing. Frequent downtime meant that the retention pond was often at reduced capacity before a weather event. Without being able to empty it for maintenance between events, silt and debris were building up, compounding the problem.

The Challenge

Frequent downtime meant the retention pond often operated at reduced capacity before the next weather event. Without being able to empty it for maintenance, silt and debris were building up, compounding the problem.

Putting out a tender request resulted in two options: the original supplier proposed installing a replacement 110kWh pump that could handle 270m³/h at 11m head pressure, allowing up to 75mm solids to pass through, which technically covered the need; Atlantic Pumps, a new supplier to the plant, proposed a different approach.



The Solution

Atlantic recommended the installation of two 11kW 6" Audex submersible pumps, each capable of 234m³/h at 11m head, to replace the stormwater pump. These pumps allow hard solids to pass through up to 30mm in size and are made with wear-resistant materials to handle sharp grit.

WaSC management found the Audex solution to be the most energy-efficient and flexible system. Although the solids passage size is smaller than the 110kW pump, it has a filter shroud and inbuilt agitator to help prevent clogging. Thanks to its compact profile and lifting eyes, the Audex can be raised and lowered on the davit or moved across the site with ease.

The Results

Having two Audex AW-1100 pumps generates up to 320m³/h, which is less than half the power consumption of the single larger stormwater return pump. At times of low demand, one pump can be running while the other is on standby, enabling inspection and servicing to be undertaken on schedule. This delivers greater cost savings, better backup capability and increased flood resilience flexibility, backed by a service contract with Atlantic Pumps, providing ongoing support.



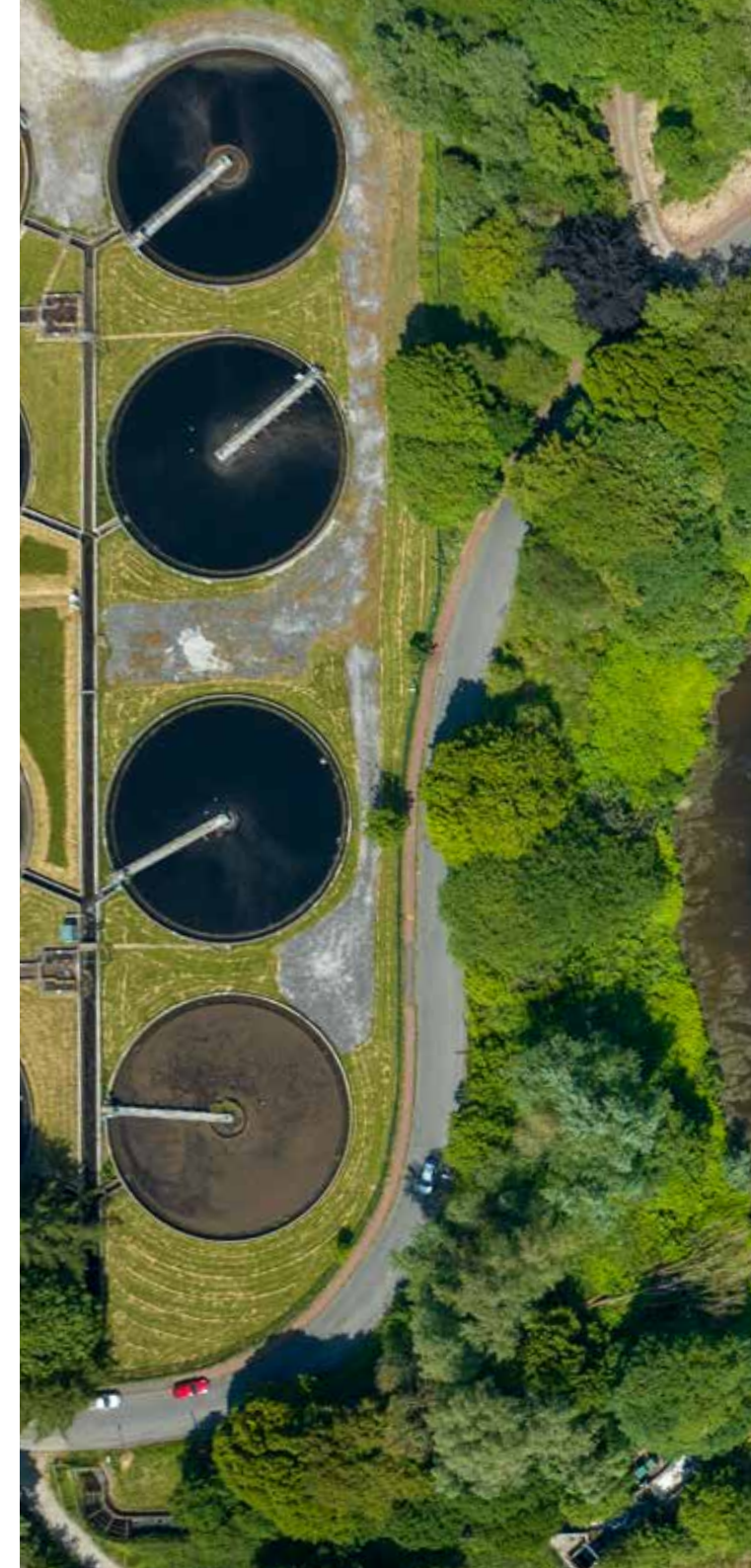
EnviroHub Protects the Watercourse During Upgrades at Water Treatment Works

Background

A water treatment works was undergoing extensive work to upgrade the plant to 21st century standards. Once the upgrade project was complete, the works would be able to provide up to 210 megalitres per day of wholesome drinking quality water to current standards well into the future.

The Challenge

The contractor was tasked with upgrading the existing rapid gravity filters (RGFs), from direct filtration to conventional post-clarification filtration, with the materials from the redundant sand filters to be recycled to avoid waste going to landfill. With a river flowing near the site, it was essential to control and treat the surface water run-off, spills and groundwater during excavations.



An aerial photograph of a river system. In the foreground, a dam structure is visible, with water cascading over it. The river flows through a lush, green landscape with dense trees and vegetation. The sky is clear and blue. The overall scene is a natural, scenic view of a watercourse.

The Solution

Following a site survey, water samples were lab tested in coagulation and flocculation simulations to determine the treatment chemical and dose rate. Taking the test results and forecasted flow volume into consideration, a bespoke water treatment solution was configured using the following EnviroHub modules:

- Treatment tanks for dosing and mixing the coagulant and flocculant polymers
- CO₂ injectors (as strong base pH correction was required)
- Lamella Plate Settlement Tanks

EnviroHub Monitoring Units would control the system, generating text and email alerts via Senteos to warn of impending issues. Real-time data would be accessed via the dashboard, giving management the insights required to ensure compliance, while auto-logging of data would simplify reporting.

The Results

Initially, two EnviroHub systems were fitted, each capable of treating 14l/s and handling the daily run-off and excess groundwater. During a period of record-beating rainfall, the client requested the hire of two additional EnviroHub systems to deal with the peak water volumes.

This configurable, flexible water management system provided stakeholders with the peace of mind that the watercourse would be protected from any risk of pollution, even in adverse weather conditions.

LSM Pump Reduces Digester Cleaning Costs by 35%

Background

As many AD operators know only too well, digester cleaning is a long, labour-intensive task. Back in AMP6 (2015-2020), many sewage treatment plants invested in new wash plants and dewatering screens to carry out digester sludge recycling on-site. This reduced the need for tankering volumes of sludge off-site, reducing road miles somewhat. However, it was still necessary for a vacuum truck to de-grit the tanks and blew the digester debris out onto the wash plant.

The Challenge

As other plant efficiencies were made, the slowness of the vac truck system was found to be constrictive. Not only did it mean working around the contractor's time-lines, and the on-and-off flow meant the wash plant was alternating between no feed and batch loading. Requiring an improvement to the system, a forward thinking WWTW made the decision to switch from vac trucks to LSM pumps for their AD digester emptying.

The Solution

Partnering with Atlantic Pumps' engineering department, a trial LSM pump was installed. This emptied the digester tanks and directly pumped the high-solids sludge directly into the wash-plant.

The final system, built by Atlantic Pumps, consists of an LSM-150 pump fitted with lifting hooks, an inverter (VFD) drive, Bauer quick-connect couplings and a 3-phase plug. This provided the client with in-house assets and ability to de-grit their AD tanks faster, easily moving the system from tank to tank as and when they need emptying.

The Results

Digester cleaning now takes one single operator half the time of the previous process, ensuring the digester is back in operation days earlier than before. The new tank emptying solution keeps pace with the dewatering screen at a steady 130m³/h, resulting in a treatment rate increase of 160%. The uninterrupted feed suits the wash plant, and the variable speed controller helps synchronise supply and demand for optimised energy consumption.

The steady stream of sludge throughout the process now creates an energy-saving, low-emission and time-effective way to keep digester tanks working at optimum capacity. Costs and downtime have been reduced by over a third at this particular site. It proved a clear success in TOTEX and emission reductions, removing the need for truck journeys and reducing on-site energy usage.



LSM-150 Pump Tech spec:

Power:	18kW
Flow :	up to 130m ³ /h with 4.5 - 10 bar (max) pressure
Inlet / outlet size:	150mm (6")
Suction lift:	4m (can be fitted with a vacuum pump to support up to 8m)

"The LSM-150 pump can handle rope, rag and large solids up to 150mm meaning it hardly ever gets blocked. But even if it does, the single operator can just flick the pump into reverse until the blockage has cleared."

Ed Smith, Project Manager at Atlantic Pumps

Talk to the Pump Experts

Atlantic Pumps has the expertise and capability to keep your abrasive solids and fluids moving, with innovative, cost-saving solutions that focus on TOTEX reduction and meeting your AMP8 business plan.

Whether you require data monitoring, pump energy efficiency, improved methods of silt removal and sludge treatment or discharge quality control, we are always happy to have a conversation.

For further details about our product range, including centrifugal and submersible slurry pumps, dirty water pumps, slurry pump parts and spares, hydrocyclones and Envirohub, please visit our website at www.atlanticpumps.co.uk



Andy Smith



Mark McCreadie



Nathan Rowles

To discuss your requirements, whether a new project or an existing system, please call +44 (0)800 118 2500, WhatsApp +44 (0)7537 149 180 or email the team at hello@atlantic-pumps.com

Atlantic Pumps Commits to the Following Values:

Commitment to excellence:

We always choose to excel

Genuine care:

For people and the planet, now and in the future

Speed and simplicity:

Over-complexity wastes time and resources

Humble and hungry:

We owe it to our customers to keep learning and improving

Doing what we say we'll do:

Our customers, and yours, rely on it



**ATLANTIC
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