HUBER TECHNOLOGY
WASTE WATER Solutions

NEWS

September 2013

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"UKWIR Report identified that water companies who implement primary sludge concentration at small WWTWS can achieve faster paybacks on their investments"

UK Installation of 2 x ROS2

The Newsletter of Huber Technology UK

www.huber.co.uk

Welcome to the Huber Technology newsletter for 2013.

Huber Technology has a long and successful history spanning over 150 years, supplying market-leading products for waste water treatment.

In the UK, we have been serving our customers for over 20 years, providing a wide range of waste water treatment solutions for a variety of applications; from inlet screens and screenings handling through to tertiary disc filters prior to final discharge.

One area where Huber has really excelled is in the provision of innovative stainless steel products for municipal and industrial sludge treatment. These are used to reduce processing and transportation costs as well as helping to meet ever more stringent disposal requirements.

In a recent report by UKWIR (Ref No. 13/SL/11/6) they identified that water companies who implement primary sludge concentration at small WWTWS- can achieve faster paybacks on their investments. The report compares a range of technologies and discusses the features of some of Huber's equipment.

In this edition we will be outlining our sludge products and describing where they are used and the benefits they are bringing to customers.

We hope you enjoy reading this newsletter and welcome your feedback. We will be more than happy to provide further information about any of our products and their applications, and to discuss your specific requirements.

Best Wishes

Steve Morris
Managing Director



Huber Sludge Products



SP4
RoS3 (right)



Sludge Screening

Ro3 - Sludge Acceptance Plant
SP4 - StrainPress - pressurised sludge screen
RoFAS - Sludge Screen

Sludge Thickening

RoS2S - Disc Thickener
RoS2 - Drum Thickener
DB - Drain - Belt/ Gravity Belt Thickener

Sludge Dewatering

RoS3 - Drum Dewaterer
RoS3Q - Q Series Horizontal drum dewaterer
BS - Belt Press Dewaterer
Combi - Combined GBT & Belt Press Dewaterer

Sludge Drying

BT - Low Temperature drying plant



RoS2 Disc Thickener
Sludge Dryer (right)



BS EN ISO 14001:2004



Earlier this year Huber had an Environmental Management System audit. CCAS are pleased to certify that the Environmental Management System of Huber Technology has been assessed and registered as meeting the requirements of **BS EN ISO 14001:2004**

The scope of approval covers Design, Assembly , Supply, Installation & Commissioning of Effluent Treatment Plant Equipment and After Sales Service

Huber Technology has now achieved the Organization Carbon Footprint Standard ISO 14064 and will continue to strive and reduce our impact on the environment. We are continually looking for new innovation to make the world a better place for everyone.



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Huber Sludge Screens – Two Stage Approach

"Huber continue to strengthen their range of sludge installations in Wales"
said Adrian Heneghan ASM Wales,

Huber Technology,for the past 20+ years have been the largest supplier of sludge screens into the UK market with over **735** units sold to date. There are two types of well-established and recognised sludge screens supplied by Huber. These are the **gravity Ro3 Sludge Acceptance Plant** (475 sold to date) and the pressurised SP **Strainpress®** screen (272 units sold to date). The versatility of having these two types of screens in our portfolio enables Huber to provide the best possible technical and whole life cost solution to our clients as each screen has different characteristics which may well be suited for different sludge types and applications.



Northern Ireland Ro3 Installation

We are always assessing the market and we have found that the nature of the sludge has changed over the last 20 years. In recent years in particular, Huber have noted an increase in the solids concentration of the screenings contained within the sludge and this has become more of an issue. The results of this increase will limit the screens capabilities not necessarily on its hydraulic capacity but on its solids removal capacity. In these instances, Huber have developed an option to increase its integral screenings conveyor capacity to over double that has been supplied in the past. This enables us to meet the ever changing characteristics of the sludge now being found in the UK's treatment plants. Clients in conjunction with ourselves,are now combining the Ro3 Sludge Acceptance Plant unit in series with the SP Strainpress® Pressurised Sludge Screen. They have found that this gives a good combination to fulfil the large screenings handling capacity requirement now necessary with very fine 2 dimensional sludge screening. This will reduce not only the plant operational input required by reducing de-ragging of pumps and aeration systems but also a reduction in maintenance of the basic sludge screens themselves.

Written by Nick Hunt- Sales Director



South Wales SP installation

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Treatment of effluent containing solids- the suitability of Huber Wash Drum RoFAS or Sludge Acceptance Plant Ro3

"Greater solids removal rate"

"Low wash water requirement"

The Huber **RoFAS** wash drum and the **Ro3** Sludge Acceptance Plant are both capable of handling effluent containing solids that require separation, but there are instances where the standard version of one machine may be more appropriate for an application than the other.

The standard screening apertures shape and size offered by the raked bars in the **Ro3** are able to pass more viscous liquid, such as older septic sludge, that might otherwise lead to pulsed operation and therefore longer off- load durations if the high level in the unit kept being reached ("thicker" fluids do not flow through smaller apertures as quickly)

Other factors that may lead to the **Ro3** being the most suitable for an application include;

- ✔ Low wash water requirement
- ✔ Integrated screenings washing and press zone (though the raised **RoFAS** may be used in conjunction with a screenings handling machine positioned under its discharge chute)
- ✔ Integral emergency bypass and its imperviousness to hair – pinning by finer fibrous materials

The perforated drum of the **RoFAS** is very robust and able to accept larger solids (e.g. rocks etc) that might otherwise damage screening components (however the **Ro3** may have a stone trap installed immediately upstream of the unit to remove such large items from the feed). If a high throughput of very thin liquid containing high solids concentrations and /or particularly large solids is required, then the **RoFAS** offers a very robust solution. It may accept any ratio of grit, large rags and hardened grease deposits

Other potential advantages of the **RoFAS** include;

- ✔ Greater solids removal rate
- ✔ Smaller screening apertures provide a greater solids capture rate
- ✔ Option for multiple vehicles discharging simultaneously

Though the **Ro3** inlet basket is protected from over topping by level control when operated in automatic mode as per the control philosophy, the fully enclosing drum of the **RoFAS** provides guaranteed retention of solids should the automatic operation be compromised for any reason (e.g. inadvisable operation in hand mode by tanker drivers).

It should also be noted that while 6mm bar spacing in the **Ro3**, a 6 mm perforated plate in the **RoFAS** tend to be offered as standard in the UK; both units may be fitted with different aperture sizes to suit a customer's requirements.

Written by Jason Sims
Process Development Manager



Scottish RoFAS installation

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Imported / Septic Tank Sludge

Photos showing imported tank sludge

"Operations staff are always impressed with the operational functionality and flexibility of the Huber Technology Sludge Thickeners and dewaterers" ***commented Fred Neumann ASM Scotland & Ireland***

"Imported sludge can vary tremendously from site to site"

Over the last 25 years Huber Technology have supplied approximately 475 Ro3 Sludge Screens throughout the UK and Ireland.

Huber supply these units in a range of sizes, with the most popular being:

780mm x 6mm for flows of
27ltrs /sec @ 3%ds and
18ltrs /sec @ 6%ds

1000mm x 6mm for flows of
45ltrs /sec @ 3%ds and
30ltrs /sec @ 6%ds









These machines are fitted with a 273mm diameter auger as standard and the auger is capable of transporting 1.6m^3 / hour of screenings.

The above flows are guidelines and will vary depending on the screenings loading in the sludge.

Up until approximately 5 years ago, the 780 mm diameter units were the units used in the majority of applications. However over the last four to five years, Huber have experienced a substantial increase in screenings loadings in imported / sceptic sludge. We have conducted studies at various sites to try to understand what has changed and what is required to handle the increased loadings.

Imported sludge can vary tremendously from site to site and can be made up from screened / unscreened sludge from outlaying works, pre thickened sludge, waste from sceptic tanks, waste from sewer chokes/ tank and pump station clean downs and waste from industrial tanks.

This sludge / waste can contain liquids / sludge in varying thickness, oils, fats and grease in varying consistencies, screenings, rags, litter, leaves cans, plastics, rubber, stones and bricks, grit in different quantities, shapes and sizes.

Our studies, carried out at Ballymoney, Cookstown and Strabane, Broadford and Stornoway and other rural sites throughout the UK, highlighted, that the tankered imports were very highly contaminated with screenings.

We feel that this is down to a number of factors:

This probably coincides with charges being imposed for the emptying of septic tanks and results in tanks being emptied less frequently, which obviously results in more screenings etc being retained in the tanks and uplifted by the tankers. The type of rag / material has also changed over the years with more wipes and sanitary material kitchen roll which is less bio-degradable.

This results in higher screenings loading in the imported sludge. As an experiment when problems were being experienced with the sceptic sludge imports through the imported sludge screen at Ballymoney, Northern Ireland. The septic sludge imports, which was basically liquor with very high screenings loading, were diverted and discharged through Huber WAP screenings handling unit, whilst the minor to major sludge imports continued to be discharged through the site import screen, without problems.

Following our studies we came to the conclusion that there is little point increasing the screen basket size without increasing the auger transport rate. Where high screenings loadings are present, Huber would suggest using the larger screen basket, 1200 mm diameter with a 355mm diameter auger in the unit, this gives a screen throughput of 80ltrs. /sec. @3% and 55ltrs./sec@ 6%ds giving a maximum screenings removal rate of 4m^3/ hour.

We have also improved maintenance access on these units with interlocked side access doors on the tank sides. This allows easy access for removal of stone grit and a viewing door on the tank lid with a safety grill to allow the operation and solids loadings to be viewed safely.

Some examples of Septic / Imported Sludge

Written by Fred Neumann,
ASM Scotland and Ireland

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RoS2S Disc Thickener

"The RoS2S sludge disc thickener is the ideal solution to reduce tankering costs on small sites" ***explained Richard Willis at a recent Thames Water Innovation Day***

At the centre of the RoS2S is an inclined, slowly rotating filter disc that separates flocculated sludge from filtrate. The filter disc consists of a fine mesh cover (with roughly square apertures of 0.35 – 0.40 mm across) fixed on top of a rigid perforated carrier disc (with 5 mm dia. holes.) A baffle plate distributes the inflow from the flocculation reactor evenly across the entire filter radius. Flexibly supported ploughs divide and move the sludge layer on the disc and open up furrows so that water can easily drain through the filter mesh, thus enhancing the filtration effect. As the filter disc continuously rotates, a scraper pushes the thickened sludge from the disc. The filter mesh is backwashed with a spray bar.



RoS2S outside operation



"2 sizes available for up to 40m3/hr of throughput"

RoS2S

Disc Thickener Trial Unit



Benefits of the Disc Thickener

Low operation costs as a result of excellent performance and easy system operation:

- ✔ **Unique Design**
- ✔ **Very small footprint**
- ✔ **2 sizes available for up to 40m3/hr of throughput**
- ✔ **Low polymer consumption**
- ✔ **Fully enclosed design**
- ✔ **Filtrate water can be utilised to wash the disc**
- ✔ **Capture rate of 97-99%**
- ✔ **Low power consumption**

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RoS3Q Screw Press Dewaterer

"Outstanding energy efficiency"

"Low operator attention required"

The RoS3Q is a screw press with a conical screw shaft and cylindrical sieves consisting of three treatment zones: inlet and drive zone, three-part thickening and dewatering zone, and press zone with pneumatic counter – pressure cone.

It is ideal for dewatering of the following types of sludges

- ✔ Primary, Secondary sludges
- ✔ Digested sludge
- ✔ Flotated sludge
- ✔ Membrane sludge

Benefits of the RoS3Q are:

- ✔ Outstanding energy efficiency
- ✔ Low operator attention required
- ✔ Compact, space saving, stainless steel design
- ✔ Vibration free, virtually noiseless operation
- ✔ Minimum costs for wear parts
- ✔ Totally enclosed

RoS3Q
with covers open



RoS3Q



The key features of the RoS3Q include

- ✔ Conical auger shaft
- ✔ Three wedge wire sections with different bar spacings
- ✔ Continuous wedge wire inside, cleaned by a wiper mounted on auger flights
- ✔ Pressurised feed (0-500mbar)
- ✔ Pressure monitoring / control
- ✔ Easy access through large inspection openings

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INDUSTRIAL SLUDGE - CASE STUDY

DAIRY CREST DAVIDSTOW CREAMERY IN CORNWALL



Trial plant
(RoS3 Screw Press)

The Dairy Crest Creamery in Davidstow is the largest producer of mature cheddar and the most advanced cheese making creamery in Europe. When an upgrade of the sludge handling facility was required, Dairy Crest turned to several suppliers of dewatering equipment to dewater their sludge's. Four different sludge streams arise from their modern effluent plant and it was initially thought they might behave differently with regards to polymer requirements and dewatering potential so bench trials with each sludge were undertaken and various combinations that may occur were tested. The four streams comprised of; DAF flotate, activated sludge, settled sludge and back-wash sludge and they varied in quantity, % dry solids content, pH and colour. After bench tests, Huber installed their trial plant to get some full scale results and attempt to reproduces the results from the laboratory work.

The trial plant is supplied as a complete package and incorporates; the dewaterer itself, the polyelectrolyte (poly) dosing unit, the sludge feed pump, the flocculation reactor and the control panel. The container also comes with a conveyor that is positioned under the discharge point from the dewaterer and allows cake to be deposited outside the container.

Various combinations of feed were trialed. With the DAF sludge achieving a high throughput of 7 m3/h at 3.3% feed solids and a good solids capture ratio whereas the biological sludge's gave a wetter cake from a 1-2% DS feed. In all cases, the volume reduction was 4 to 6 times the feed volume thus reducing transport and disposal costs.



18%+ DS cake produced from the mainly DAF sludge with the Atana polymer

The resultant cake is storable and spreadable by muck spreader and considerably easier to handle.

The RoS3 screw press is totally enclosed, and showed a vast improvement over the existing belt press in cleanliness and performance. The screw press operates at 1 to 6 RPM and requires 14% of the power for a centrifuge with none of the high wear, speed, noise and vibration associated with the centrifuge.

After successful Trials Huber have been pleased to accept an order from Dairy Crest for 2 off Screwpress units and associated polymer dosing equipment.

Written by Tony Clutten,
Process Sales Manager

"It's good to see at last that some of our clients have revisited how imported sludge is dealt with to remove the gross solids prior to further treatment. We understand the importance of this, as failure to adequately screen sludge can impact significantly on the ability to generate power from the sludge treatment process and also leads to vastly increased OPEX." explained Dale Foster at a recent Yorkshire Water presentation.

STOP PRESS

We received an order from the largest **brewery** company in **Dublin** for **screening their effluent**.

Huber are pleased to announce that we have received an order for our first **Grit Recycling Plant**, which is to be built in Wales.

Further data on these two projects to follow

Anaerobic Digestion

StrainPress

In the anaerobic digestion (AD) sector, the Huber strainpress is helping our clients reach PAS110 quality standard for their digestates. The problem of plastics contaminating digestates can be addressed using different mesh sizes and pilot plants are available for demonstrating the process for customers on their specific feedstocks. Digestates from AD are high in nutrients and make excellent alternatives to synthetic fertilizers, so the removal of plastics is an important requirement which Huber can help to solve.

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