

HYDROFLUX

WATER | SCIENCE | TECHNOLOGY

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NEWS FOR CUSTOMERS AND FRIENDS OF THE HYDROFLUX GROUP

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Municipal Biosolids Drying Facilities – Is This Part of Australia’s Future?

FEATURE STORY

BY JOHN KOUMOUKELIS

Building a pathway to sustainable biosolids management is a key topic amongst many Australian and New Zealand Water Authorities.

Consideration of technology, legislative change, public perception, circular economy thinking and emerging contaminants all form part of a roadmap to managing biosolids.

There are many different options available to successfully deliver such infrastructure within a large country such as Australia.

Biosolids management is a key topic around the world.

Some nations have moved towards centralised digestion with hydrolysis pre-treatment to exploit higher gas yields and green energy. Others have mandated fertilizer recovery from sewage biosolids.

Regardless of which path is taken, exploiting the hidden energy potential of biosolids is common. For thermal processes and fertilizer recovery – a drying step is typically employed. HUBER have now delivered over 50 thermal drying projects around the globe using their RotaDisc and BT Belt Dryer technology.

Their installations provide either fully (90%DS) or partially (45%DS) dried biosolids.

Selecting full or partial drying comes down to short and long-term goals. Full drying can provide Class A Biosolids quality for unrestricted use whereas partial drying is ideal when incorporating further downstream processing such as incineration or pyrolysis.

HUBER’s client base highlights the need for short- and long-term management strategies. Dryer selection requires whole of life cost assessments but completing these tasks can be challenging due to the uncertainty in regulatory change and disposal costs.

[Continued on page 2.](#)

How Capturing Biogas Can Save You Significant Fuel Costs in Running Your Boiler

BY ADRIAN MINSHULL

Energy costs are a major contributor to the overall running costs of most businesses and industries and there are many options available to make savings. Reduction of energy usage, lowering energy tariffs and the use of Solar PV are just a few of the obvious but there may be other opportunities for your business to consider.

In the examples of meat and dairy producers provided below capturing biogas to replace thermal coal or natural gas as a fuel for your boiler could save approximately

\$270,000 per year in coal purchases or between \$500,000 to \$550,000 in annual natural gas purchases.

In addition to that, your project may be eligible to create ACCUs and revenue from selling ACCUs. Depending on the market value at the time, this could potentially raise another income stream of \$300,000 to \$350,000 AUD per year.

Anaerobic treatment of wastewater is a popular and proven method of wastewater treatment in many industries such as meatworks, rendering facilities, piggeries, poultry

and dairy processing, and others. Capturing & utilising the gas produced by a digester or covered anaerobic lagoon [CAL] provides unique advantages. Biogas is both a significant source of greenhouse gas (GHG) emissions and energy and represents a true win-win if captured and used.

Biogas created by treating your own wastewater on your premises is a valuable

commodity and can be used to support the energy demands of your business.

Utilising biogas as an alternative energy source for a boiler provides a simple and ready to use alternative fuel to reduce the reliance and amount of coal or gas to fire your boiler.

This example shows the possible annual energy savings from a plant with a wastewater

stream of 10,000m³ /week and with an average COD loading of 10,000mg/litre, creating approximately 180,000 m³ of biogas per month. This could typically be achieved with 1x large covered anaerobic lagoon.

Let Hydroflux help you to identify and realise the commercial advantages of utilising biogas to improve the sustainability and profitability of your business.



FROM THE CEO



As we wind down, or in many instances knuckle down as the Christmas season arrives and the consequence of a shortened working month dawns on us, it is also a good time to start thinking and seriously planning for the future.

As a Group we have worked from our very beginning to create ecologically sustainable solutions for businesses and municipalities alike, supporting our clients on their journey to protect our most valuable resources. With the risk posed by climate change now high on everyone's agenda we are finding our expertise being called upon more often, to provide our clients with new and more sustainable solutions to their water, biosolids and future planning issues.

This issue highlights what the Hydroflux Group are doing for long term sustainable strategies in system design, from drying of municipal biosolids, replacing natural gas or coal with biogas to energy efficiency in biological treatment and equipment design, reliable high-quality water for remote hospitals in PNG and climate risk assessment and adaption plans for local government and business.

If you need assistance our specialist subsidiary companies provide a vast range of sustainable solutions from advising, consulting, designing, building to operational support to a wide range of government and businesses throughout Australia, New Zealand, Pacific Islands and the United Kingdom.

- ADRIAN MINSHULL

FEATURE STORY: MUNICIPAL BIOSOLIDS DRYING FACILITIES – IS THIS PART OF AUSTRALIA'S FUTURE? - Continued

The European experience has resulted in some never seen before collaborations between industry and water utilities, who are both aligned to circular economy thinking.

HUBER are currently involved in several projects where a

drying facility for municipal biosolids is used as heat sink for a power plant, as an example. The sustainability outcomes for both water utility and industry are significant.

There is a place for biosolids drying in the Australian market.

The challenge is to select a dryer technology that forms part of a Water Utility's future plans. The benefits include reduced

biosolids disposal costs, greater reuse opportunities of the final dried product, exploitation of waste gas, and the associated sustainability outcomes.

Hydroflux Epco is a significant driver of ANZ's future resilience in biosolids handling and disposal with exclusive access to some of Europe's leading biosolids technology, case histories and knowledge.



Rendering Plant Receives New Energy Efficient Biological WWTP

BY ANDREW MILEY

Hydroflux has commissioned a new energy efficient Wastewater Treatment Plant (WWTP) for a country-based rendering customer that is achieving massive reductions in the organic and nutrient loads via treatment in a Covered Anaerobic Lagoon (CAL) and energy efficient Sequencing Batch Reactor (SBR).

The turnkey project was completed on time and involved the replacement of a conventional physical/chemical treatment plant and above ground energy intensive SBR with an in-ground CAL and SBR specifically designed to be energy efficient and to treat substantially increased flows. The CAL was selected over the previous physical/chemical Dissolved Air Flotation (DAF) process due to the significant savings in operating costs and ability to generate renewable

Biogas from the high levels of COD in the wastewater.

After anaerobic treatment in the CAL the wastewater containing very high nutrient levels, is treated in an ingeniously designed HySmart® Hydroflux SBR tailored specifically for nutrient

removal. Greater than 90% Nitrogen removal is achieved whilst the system requires only minimal, low-cost external carbon source addition.

Even though the SBR was designed in a lined pond, best practice energy efficiency was achieved through the use

of AEROSTRIP® fine bubble diffusers due to their world leading high oxygen transfer efficiency, resulting in a power demand of 1/3 of the equivalent surface aerators.

To complete the project and minimise sludge cartage and disposal costs Waste Activated Sludge (WAS) is dewatered to a very high % dry solids in a HUBER QPRESS® screw press that uses very minimal wash water and has low OPEX requirements.



An Efficient, Simple, and Cost-Effective Way to Clean Membrane Diffusers

BY BRUCE WILLIS

Rising head pressure due to sedimentation of mineral/biological scale on the membrane surface is an occurrence that every membrane diffuser system on the market is confronted with.

Whilst this problem is easy to ignore, eventually the head pressure will increase to a point where damage to your membrane diffuser is imminent resulting in two

scenarios that are detrimental to the performance and general operation of the plant:

1. An increased power demand due to extended aeration cycles
2. Insufficient blower capacity to reach DO target.

Fortunately, Hydroflux offer an effective and simple-to-use portable chemical CIP unit to clean all types of membrane diffusers. This unit is designed

to inject a suitable cleaning acid into the air piping system, helping to release scale built up on the membrane surface.

The unit supplied is ready to operate and comprises

- Stainless steel cabinet
- High quality Prominent dosing pump – capable of pumping up to 7.5 L/hr
- Suction line with weight
- Dosing line with injection spray nozzle to suit 1/2 fitting.
- Pressure return line
- Filter unit with cartridge
- Isolation valves
- Instruction manuals



Service requirements

The system requires a 240V AC standard AU power socket.

Labour and cleaning chemicals

Hydroflux can provide specialty labour across Australia and New Zealand to assist with process optimisation or any operational issues with fine bubble diffusers - including the supply of highly effective cleaning chemicals.

Water; The Health of a Nation

BY PAUL COBBIN

Part of Hydroflux's sustainability objectives is to provide communities with clean water and sanitation. It's in our DNA, and we have been successfully providing sanitation for communities in Papua New Guinea (PNG), since 1962. But sanitation is only half of UN Sustainability Development Goal 6, which is to provide clean water for drinking and sanitation through sewage treatment.

Recently, Hydroflux Epco has increased its sustainable offering to communities in PNG via our successful HyPURE® range of potable

water plants. The latest project for St Margaret's hospital, in the Oro province of PNG, is clear proof of our determination to providing clean water and sanitation.

In PNG, medical outposts have two significant problems. The first is quality of water supply and the second is reliability of service. The St Margaret's hospital site previously had to deal with both issues while trying to deliver quality care to its patients. The Hydroflux Epco HyPURE® treatment plant will solve this problem by applying robust and reliable technology to treat water on-site and assist with providing good health and well-being to the patients of the hospital.

For Hydroflux, the partnership with our in-country representative Fimali Ltd, increases local PNG access to our world class technology while providing economic



growth and skills development to the regional provinces of PNG. The distributed project model represents a PNG first with design being undertaken by Hydroflux and the in-country construction, installation and commissioning being undertaken from Fimali's trained staff in Madang.

Executing projects over long distance is never easy, and while this is by no means the first package plant Hydroflux has constructed in PNG, it is the first drinking water plant built in-country from the ground up. Building the HyPURE® potable water plant in Madang has positioned the

Hydroflux/ Fimali team as a leader of economic growth in the PNG water sector.

St Margaret's HyPURE® potable water plant, another example of Hydroflux sustainably supporting communities.

HyPURE® is a registered trademark of Hydroflux.



Epco Packaged Plant in the Snowfields Receives a Makeover

BY JOHN KOU MOUKELIS

Hydroflux Epco has been awarded the contract to design and supply of a custom screenings handling system for Mt Buller STP. The screenings handling equipment will wash and compact solids removed by the fine screens, reducing disposal volumes to landfill, lowering offsite disposal costs and return an organic rich wastewater stream back to the main liquid flow.

Mt Buller is a tourist township, located in the Alpine regions of Victoria. The upgrade will allow the existing Epco plant to accommodate peak winter visitation periods and snowmelt events.

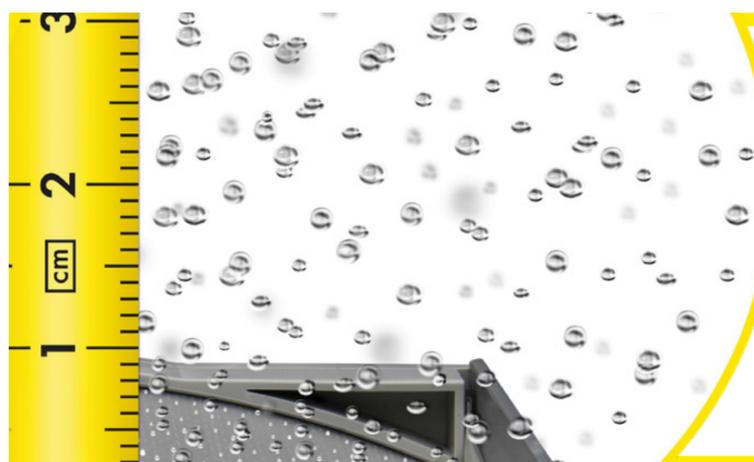
The existing Epco sewage plant has truly proven its longevity and robustness, built in the 70's, it has been servicing Mt Buller for 50 years and the plant upgrades will allow it to continue to operate effectively for many years to come.

As the Epco sewage plant is in an alpine national park the new inlet works building faced numerous site design constraints to minimize the impact on the local natural landscape and allow operation and maintenance to be conducted inside the building, out of the winter snow.

HUBER WAP® L Wash Presses are being used to wash and

compact screenings providing a dewatering performance of up to 40 % DS which reduces the screenings volume by up to 70%, resulting in savings for transport and disposal fees. The dewatered screenings will be automatically stored in sealed bags until weather permits access for disposal.

The HUBER WAP® is a robust, complete stainless steel, German made machine designed to handle coarse material and is suitable for feeds from all types of wastewater screens. It is available in six different sizes and has been well proven in Australian and New Zealand.



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Glen Innes Severn Council Proactively Plans for a Warmer Climate Future

BY JULIA SEDDON

In the rush to net-zero emissions, we can sometimes forget that the physical impacts of climate change must also be assessed. Glen Innes Severn Council in the New England region of Australia knows that a warmer and less predictable climate is coming and is determined to act.

The smallest and most rural council in NSW to declare a state of climate emergency after the catastrophic 2019-20 bushfire season, the region has firsthand experience of the

impact of climate extremes. Following years of stifling drought and level 5 water restrictions, the bushfires left the region with two dead and hundreds of homes, a school and hundreds of thousands of hectares destroyed. Major flooding came next running across unstable dry ground washing out roads, bridges, and other critical infrastructure.

Council engaged Cress Consulting to undertake a climate risk assessment and adaptation plan which identified 48 risks. Eight were considered high risk,

27 medium risk and 11 of low risk. Formally adopted by Council in September, Council will now begin work on an adaption strategy, a key strategic objective of the 2021-2025 delivery program, and an emissions reduction plan.

The Cress report describes how prolonged and frequent drought, floods and more frequent and dangerous bushfires has multiple social, economic and environmental impacts from human health, reduced economic output and destroyed ecosystems. Global warming will generate “increased costs associated with health care, social services, public administration and safety, education and training, both in terms of delivery of current programs and upskilling to maintain those services,” the plan said.

The permanent effects of climate change will place a



heavy burden on the New England region and the need for a Regional Response and Recovery Taskforce to act as an emergency response to future climate-driven crises, plus a regional adaption planning response to climate change is highlighted.

The NSW Department of Environment and Heritage forecasts the region’s average

temperatures to rise by 2.2 degrees by 2070, meaning hotter maximums, harsher droughts, and more frequent and intense bushfires. The region is not alone, and the urgency is now critical for all councils across Australia to undertake comprehensive risks assessments and devise their own robust climate adaption plans.



Standard HD-100 model being installed to remove metals from ground water following completion of major tunnelling project in NSW.

HY-DAF Range for any Application

BY ANDREW MILEY

The Hydroflux Hy-DAF comprises a unique range of advanced dissolved air flotation systems available in over 40 different configurations and sizes.

Hydroflux has installed DAF systems with capacities ranging from 2 kL/hr to 1000 kL/hr in modular form suitable for a variety of applications

including Food and Beverage, Mining, Municipal process operations (eg Waste Activated Sludge (WAS) thickening, Algae removal) and Ground Water Treatment.

The standard HD model (shown on left) is designed with integrated hoppers that simplify the cleaning and draining process.



The HD-V model is a robust DAF system designed specifically for applications where high volumes of settleable solids such as grit are present. This model contains an integrated screw conveyor in the base which automatically removes settled solids eliminating the need for periodic draining.

The GT-DAF is a unique model specially designed to treat greasy wastewater from food courts and restaurants when grease traps are not suitable or permitted.

All HyDAF systems are paired with a proprietary dissolved air production unit individually sized to each specific application, minimising unnecessary power usage and maximising sustainability.

HYDROFLUX QUIZ -
DIFFICULTY: MEDIUM

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HYDROFLUX

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The Hydroflux Group comprises eleven companies based in Australia, Fiji, New Zealand and the United Kingdom, providing ecologically sustainable, design-and-build, equipment, process and operational services in water and wastewater treatment.

The group’s skill and experience span across municipal and industrial water and wastewater treatment with full after sales support.

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