HYDROFLUX

WATER | SCIENCE | TECHNOLOGY

March 2018

NEWS FOR CUSTOMERS AND FRIENDS OF THE HYDROFLUX GROUP

Hydroflux Pacific
The new addition
to our group

Page 1 and 2

Breaking records at Bribie Island

Full Story Page 3

WOULD YOU BUY A WASTEWATER TREATMENT PLANT FROM A CATALOGUE?

Full Story Page 2

When Water Giants Collide

FEATURE STORY

BY JOHN KOUMOUKELIS, DIRECTOR

The Hydroflux Group of water treatment companies has announced the launch of Hydroflux Epco — a brand combining wastewater innovator Hydroflux HUBER with EPCO Australia, one of Australia's longest standing water companies.

Hydroflux HUBER has been dedicated to providing wastewater technology and processes to Australian water authorities and councils for many years. EPCO Australia has meanwhile been a supplier of clarifiers, anaerobic digester equipment and package sewage treatment plants throughout Australia, PNG and the Torres Strait Islands for over 50 years.

Continued on page 3.

Luke Shadbolt Photographer/Artist lukeshadbolt.com

International Year of the Reef

FEATURE STORY

BY ADRIAN MINSHULL, CEO

Starting the International Year of the Reef the Prime Minister of Fiji, Frank Bainimarama, announced the nomination of large portions of Fiji's Great Sea Reef as a Ramsar site in an effort to protect it from threats, such as climate change, chemical and waste water run-off from neighbouring urban settlement, and industry. A Ramsar site is designated under international treaty as a wetland important for the conservation of global biological diversity and for sustaining human life. Under the convention, wetlands are broadly defined and include areas such as coral reefs.

"We are engaged in a battle for the future of these reefs. We approved the nomination of large parts of the Great Sea Reef as a Ramsar site to protect it for future generations," Bainimarama said. "Today I appeal to every single person on earth to help us. We must replace the present culture of abuse with a culture of care."

Fiji's Prime Minister is certainly one who understands the threat, with Fiji being made up of an archipelago of more than 330 tropical islands surrounded by coral reefs. But "winning the battle" for the future of the reefs is not quite so simple.

It has been widely known for some time that whilst healthy coral reefs can exist over a wide range of natural nutrient environments, the heat and light stress tolerance of corals and thus their bleaching susceptibility and recovery after bleaching events, is adversely affected by high dissolved inorganic nutrient loads. Higher than normal inorganic nutrient loads disrupt the finely balanced environmental conditions necessary for coral to thrive via multiple pathways. Increased phytoplankton loads can supply more food for the larvae of the crown of thorns starfish, limit light penetration and cause an abundance of filter feeders, whilst high algal growth, fuelled by the unnatural abundance of inorganic nutrients, out compete and smother both live and bleached coral, release algal toxins and deplete oxygen, inhibiting growth and recovery.

In a naturally nutrient balanced environment the heat and stress tolerance in the first instance and the recovery speed after bleaching events of coral reefs, is likely sufficient to withstand the globally predicted higher water temperatures, however when combined with the higher inorganic nutrient loads we are imposing on the coral reefs, it is rapidly becoming apparent that their survival is unlikely.

> ***"Hydroflux Pacific, Hydroflux's latest addition to their environmental group and located in the heart of Suva Fiji knows only too well the challenge ahead."***

Inorganic nutrients make their way into the coral reefs from a wide variety of sources including fertiliser usage, deforestation, land use for grazing, urban stormwater pollution and lack of sewage treatment or poor nutrient removal in sewage treatment plants. Even mobilisation of sediments via trawling and dredging increases the levels of nutrients. Making matters worse, nutrient stress on coral reefs often occurs a considerable distance from the source, via the movement of the increased phytoplankton loads.

Hydroflux Pacific, Hydroflux's latest addition to their environmental group and located in the heart of Suva Fiji, knows only too well the challenge ahead. Hydroflux Pacific has already started helping Fiji with the battle for the future of the reefs. Bringing advanced global technology to the islands along with the local support necessary, Hydroflux Pacific is already helping Fiji treat the wastewater from both industry and resorts, all of which potentially makes its way into the coral reef oceans.

Continued on page 2.

Multi Award winning Musket Cove Island Resort, located in the remote Malolo Lailai, installed a Hydroflux Sewage Treatment Plant

EDITOR COMMENTS

Dear Readers,

Following the acquisition of EPCO Australia, much of 2017 was spent moulding Hydroflux HUBER's and EPCO Australia's municipal wastewater teams, products and services together into the most comprehensive professional range available in Australia.

December 2017 finally saw the public release of the new combined powerhouse brand Hydroflux Epco to the market. We welcome Paul Cobbin to the group, whose experience and knowledge of the EPCO brand is second to none.

Hydroflux Industrial has been busy in the Food and Beverage, Tunnelling and Mining sectors, also benefiting from the EPCO acquisition with a comprehensive range of industrial clarifiers and lamella separators being made available.

The Hydroflux HyDAF Dissolved Air Flotation system has remained Hydroflux Industrials' most popular product and we were somewhat surprised recently when we received 3 separate orders for systems treating over 200 kL per hour in as many months. We are looking forward to constructing our largest free standing HyDAF system that has the potential to handle up to 500 kL per hour.

Hydroflux Utilities has expanded significantly with much innovation in the application of chemistry to the water and wastewater markets. With improved purchasing power and more advanced facilities, Hydroflux Utilities can easily beat the larger chemical businesses in quality, service and price.

Australia continues to fall in love with Hydroflux HUBER'S Q-PRESS®. The Q-PRESS recently commissioned at Bribie Island achieved an unmatchable 18% dry solids on Waste Activated Sludge!

And what is in store for 2018? Well watch this space as Hydroflux has a few surprises in the pipeline. Our growth has been phenomenal and with the Fiji office now offering the groups' products and services to the entire Pacific region, we really are going from strength to strength.

We at Hydroflux are eternally grateful for the support of clients, customers, consultants and contractors who keep coming back to us, year after year.

Thanks again.

ANDREW MILEY
DIRECTOR

FEATURE STORY: INTERNATIONAL YEAR OF THE REEF - Continued

The Hydroflux Group already has a number of major projects underway in the region. This includes the provision of an advanced wastewater treatment plant at the multi-award winning Musket Cove Island Resort, located in the remote Malolo Lailai, and several more packaged sewage treatment plants under construction for other major resorts in Liku Liku, Malolo and Matamanoa in the Fijian Mamanuca group of islands.

Hydrofluxs' range of advanced packaged sewage treatment solutions treat wastewater generated by guests, in addition to that from the laundry and the kitchens, to a standard suitable for reuse in irrigation, thus ensuring the environmental sustainability of the resort and helping protect the fragile neighbouring coral reefs into the future.

Hydroflux Industrial is currently constructing a wastewater treatment plant for a multi-national food and beverage company in Suva Fiji, taking significant pollutant and inorganic nutrient load off the local municipal sewage treatment plant.

The plant incorporates the Hydroflux Groups' world-class HyDAF Dissolved Air Flotation, Hydroflux HUBER Screening and HUBER Q-PRESS® dewatering, as well as the innovative Hydroflux HySMART™ SBR technology, all designed to treat high-strength industrial wastewater so that the discharge complies with Fiji's National Liquid Waste Management Strategy.

Hydroflux Pacific fully supports the Prime Minister of Fiji, Frank Bainimarama and his appeal to every single person on earth to help save the coral reefs of the world.

A Hydroflux Epco RoadTrain™packaged STP at Pt Hinchinbrook Resort

IS THAT A DAF IN YOUR SHOPPING CART?

WASTEWATER TREATMENT PLANTS DON'T BELONG IN A CATALOGUE

BY ANDREW MILEY, DIRECTOR

Dissolved Air Flotation (DAF) systems have been around for a long time and it would seem that they are here to stay. That said, if anything, DAF manufacturers are getting more - rather than less - enthusiastic about the application of DAF technology in new areas of treatment or processing.

Applying existing technology such as DAF for a new purpose can have its rewards, although it can be dangerous unless the principles of DAF are fully understood. There are far too many companies selling DAF systems from a catalogue without taking into consideration exactly what they are going to be used for.

The specific design and features of a DAF system really do matter and not only because the unit is expected to fulfil its duties. An incorrectly designed system can absorb considerably more power than it needs to, and it can take up unnecessary space.

Many companies simply quote standard sizes of DAF systems which are based on a flow rate that the unit is deemed to be able to treat. You may get lucky if the stream that you want to treat is similar to what that particular design is based on. However, to invest considerable money, while leaving a successful outcome to chance is not a particularly virtuous or smart business decision.

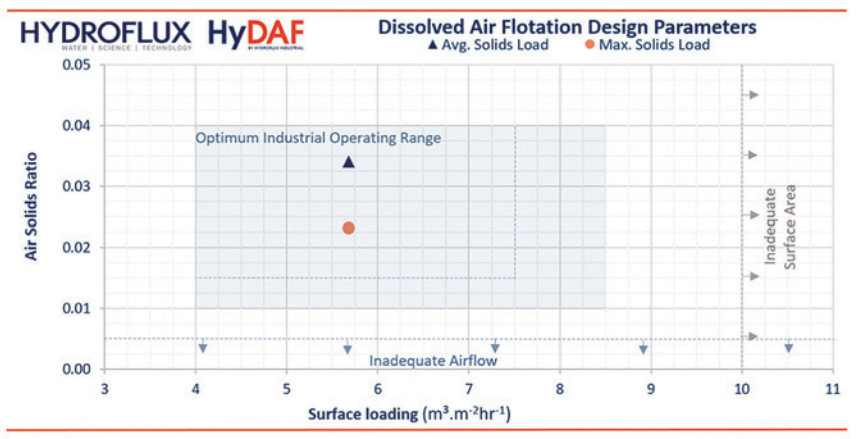
There could be deemed to be two general areas to a DAF design, being firstly, the actual hardware and secondly, the process. The hardware could be defined as the actual DAF vessel, the sludge removal technology, an efficient means of dissolving air in water and injecting it at the inlet of the DAF and a system that ensures laminar conditions. We would have to assume that most DAF manufacturers have this part of the equation correct otherwise they wouldn't have built enough systems to devise their catalogue.

The process side of the equation is where knowledge, experience, skill and - equally as important - having the ability to apply the technology to the application is critical. The most commonly overlooked aspect of designing a DAF is getting the air-to-solids ratio correct.

This is basically a ratio of the mass of air that is dissolved and released into the incoming stream to the mass of solids that are present. Many text books will suggest a range of anywhere between 0.01 and 0.2, but this is 20-fold difference.

Given that the pumps used to generate the dissolved air stream are by far the most power-hungry component in a DAF system, if you are generating 20 times as much dissolved air than you need to, you are paying way too much in electricity.

> ***"The specific design and features of the treatment plant do matter and not only because the unit is expected to fulfil its duties. An incorrectly designed system can absorb considerably more power than it needs to, and it can take up unnecessary space."***



The dissolved air flow also affects the surface loading rate. Thus for a given size DAF system with a defined surface area, decreasing the recycle stream flow will reduce the surface loading rate, thereby allowing treatment of a greater flow in the same unit.

Like many DAF suppliers, Hydroflux has adopted a range of standard DAF vessels, the design of which is based on ensuring that the hardware is optimised from a process point of view and also that it is designed for economical fabrication.

How we apply the range is where we differ. At Hydroflux, we have a deep understanding of both DAF systems and the DAF process. We design each DAF system to suit the application in question.

Our intelligent software program considers a wider range of factors including solids load, temperature, surface loading rate, solids loading rate, fluid density and air solubility. This is to ensure that the dissolved air system is ideal for your application and not simply based on a text book guideline. Furthermore, one would be hard pressed to find a DAF related project that at least one of our engineers does not have knowledge of or experience in.

DAF systems are not inexpensive and are required to be extremely reliable - often having to operate 24 hours a day, 365 days a year. So making sure that your system is designed specifically to meet your needs is of paramount importance.

The capital cost for a properly designed DAF system may be a little more, but it may actually be a lot less, and you can be assured that a DAF system from Hydroflux will present far less problems and certainly incur lower costs in the long term.

A Hydroflux HD200 HyDAF System at a Brewery Specifically Designed for Removal of Anaerobic Biomass from Wastewater

FEATURE STORY: WHEN WATER GIANTS COLLIDE - Continued

"The HUBER and EPCO businesses have installation experience and over 1000 references throughout the Australian and Pacific region dating back to the 1960s."

A Hydroflux Epco 45 m diameter LogMAX ® clarifier installed at Gibson Island Sewage Treatment Plant

"The HUBER and EPCO businesses have installation experience and over 1000 references throughout the Australian and Pacific region dating back to the 1960s, as well as exclusive access to the latest world-leading wastewater technology and processes," said Hydroflux Director John Koumoukelis.

"EPCO Australia also designs, manufactures and installs equipment in all categories of the managed water cycle."

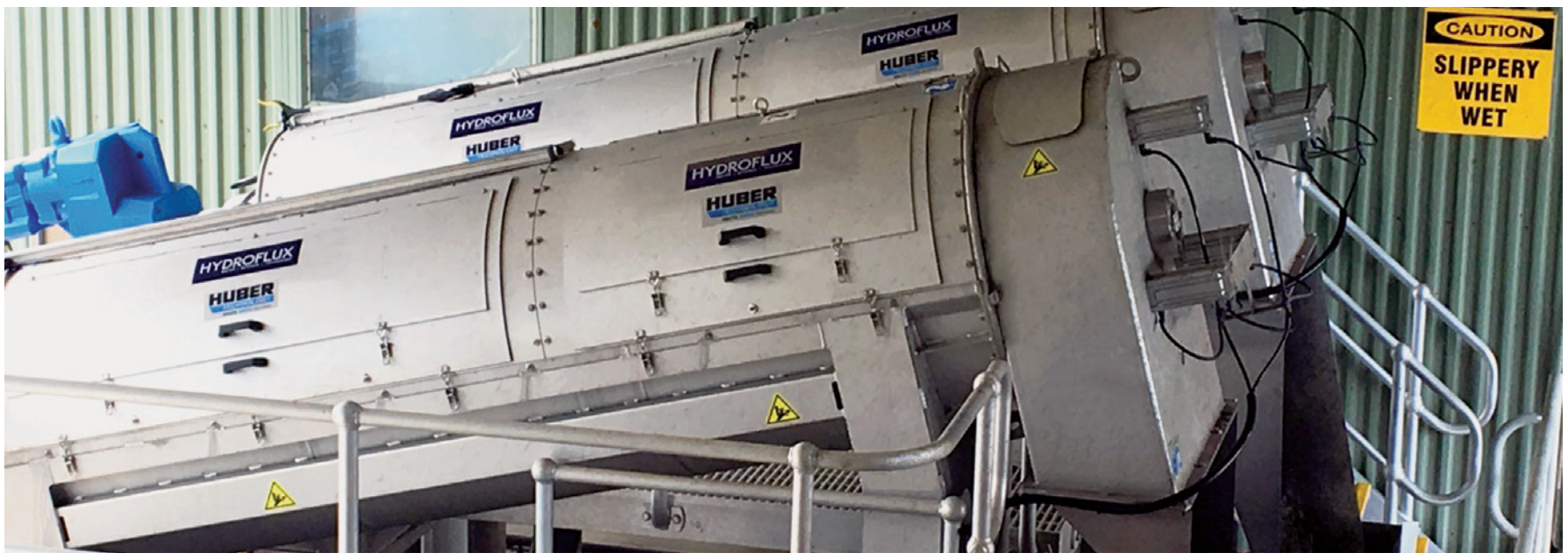
As Hydroflux Epco, the combined powerhouse provides a wide range of wastewater treatment systems that incorporates EPCO's technologies for the municipal, industrial and mining markets. According to Koumoukelis, "Combining these two well-known businesses under one banner will enable us to deliver unrivalled experience, expertise, support and services to both existing and new customers."

"It will also enable us to play a bigger role in supporting sewage treatment plant contractors and making further inroads into the mining and resources sectors, which are very strategic markets for the Hydroflux Group," he said.

"In essence, combining Hydroflux HUBER and EPCO Australia gives the market access to a one-stop shop for a complete range of products and services across the entire treatment process."

Hydroflux will continue its exclusive partnerships with HUBER Technology, Aquaconsult for AEROSTRIP and Organica Water.

Advanced Screw Press Technology for Bribie Island WWTP



Dual screw presses and conveyor installed at Bribie Island WWTP

FEATURE STORY

BY LUIS BASTOS, DIRECTOR, HYDROFLUX EPCO

Hydroflux Epco has recently completed an upgrade of Bribie Island sewage treatment plant's entire sludge management facility.

"Our customers are choosing HUBER Q-PRESS® over centrifuges because of their outstanding performance – with the lowest energy demand."

A key part of the upgrade involved installing new HUBER Q-PRESS® Inclined Rotary Screw Presses to replace the old belt press technology.

"The latest generation of these screw presses – the HUBER Q-PRESS® – is proving very popular in both the Australian and international markets.

This is because not only does it reduce sludge volumes and disposal costs by up to 80 per cent, but also because it is so energy efficient leading to significant power reductions" says Luis Bastos, Director of Hydroflux Epco Pty Ltd.

"Our customers are choosing HUBER Q-PRESS® over centrifuges because of their outstanding performance – with the lowest energy demand compared with centrifuges, we spin at 0.5 rpm compared with 3000 rpm of centrifuges – and significantly less maintenance compared with centrifuges. The power demand is 90% less."

"When you add in the fact we achieve 95% capture or better without the use of downstream screens, it is little wonder that in our view these are the best screw presses in the market," he adds.

There are two HUBER Q-PRESS® units at Bribie Island that are processing a total of 9 L/s of Waste Activated Sludge. The final cake solids is 18% dry solids and the capture was tested to be 95 – 96%.

The HUBER Q-PRESS® is a high performance low energy sludge dewatering technology that is available in a variety of sizes. The technology is suitable for municipal WAS, digested sludge, primary sludge and industrial sludge streams.

Globally the Q-PRESS® technology has been very successful, with rapid uptake in Germany, Sweden, Norway, France and the US.

Australia is no exception. HUBER presses are operating in every state of Australia.

Cake Solids >18% on WAS

Hydroflux Group Receives Multiple GRS Certifications

The Hydroflux Group of specialist water and wastewater companies recently received a number of Management System accreditations from the independent ANZ certifying body, Global Registrar of Systems Pty Ltd (GRS). These internationally recognised accreditations include ISO 9001:2015, OHSAS 18001:2007, AS/NZS 4801:2001 & ISO 14001:2015.

Adrian Minshull, CEO of Hydroflux proudly summed up how these accreditations reflect the Hydroflux Groups' values; "Receiving the GRS Accreditation is a validation of the Hydroflux Groups' Integrated Management System representing Quality, Safety and the Environment. This is a testament of our Groups' versatile team of professionals and their individual dedication and expertise."

SYSTEM CERTIFIED
GRS
OCCUPATIONAL HEALTH & SAFETY MANAGEMENT
OHSAS 18001: 2007
AS/NZS 4801: 2001

SYSTEM CERTIFIED
GRS
QUALITY MANAGEMENT
ISO 9001: 2015

SYSTEM CERTIFIED
GRS
ENVIRONMENTAL MANAGEMENT
ISO 14001: 2015

01 NEW EMPLOYEES

We just keep on growing. Over recent months the Hydroflux Group welcomes Thomas Kneebone, Kurt Hanley, Sean Cole-Hunter, Jasmin Nunn, Jeremy Wilson, Melissa Mecham, Paul Cobbin, Declan Creasey, George Paras, Tristan Boan, Duraid Bagati, Georgina Deng, and not forgetting Stuart Peterson, our most recent recruit operating out of the Suva office.

02 SYDNEY WATER SCREW CONVEYORS

Hydroflux EPCO delivered over 16 Dutch Spiral shaftless screw conveyors to the Malabar WWTP located in Sydney, which has one of the largest inlet works in Australia.

Shaftless screw conveyor technology was provided to transport screenings, grit and sludge from various parts of the treatment plant to the outloading bins.

03 WOODMAN POINT UPGRADE

Hydroflux were awarded the supply of 3600 AEROSTRIPS® for the 180MLD upgrade at Woodman Pt WWTP. This amounts to 14.4 km of diffusers and is the largest Aerostrip installation worldwide!

04 HYDAF FOR WA MINE

A specially designed dissolved air system has been supplied to Lynas Corporation at Mount Weld mine in WA to remove algae resins from water prior to treatment in a membrane plant.

05 ROAD TRAIN TO FIJI

Hydroflux are supplying several packaged sewage treatment plants to Fijian major resorts including Liku Liku, Malolo and in the Matamanoa Mamanuca group of islands.

06 TUNNELMAX™

Hydroflux Industrial has developed the TunnelMAX™ system — a robust treatment plant designed to efficiently handle and dewater spoil from large construction and tunnelling operations.

07 TI TREE BEND STP

Two HUBER Q800 Screw Presses were awarded to Hydroflux for the Ti Tree Bend STP in Launceston.

08 FREEDOM FOODS

Hydroflux Industrial have supplied another DAF treatment plant to the Freedom Foods Group.

For your chance to be in the draw for a $200 JB-HI-FI voucher simply complete the puzzle, scan and send this page to quiz@hydroflux.com.au. Entries close end April 2018

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High efficiency AEROSTRIP™ diffusers at Bunbury WWTP

SPOTLIGHT

LUIS BASTOS

What is your role at Hydroflux?

My role at Hydroflux Epco is to oversee the projects division and the Aeration product manager. I pride myself on exceeding our client's expectations and providing an effective solution to their needs.

What is the most unusual or interesting experience you have had at work?

I checked into a motel in a remote Queensland town after having spent the entire day onsite to find my room completely decorated in Elvis paraphernalia, including a full wall mural to the King. Needless to say I woke up humming jailhouse rock…

What is your most embarrassing moment at work?

My most embarrassing moment at work was when a personal email was forwarded to the entire company and learning the hard way that it is impossible to recall an email.

What do you like to do when you are not at work?

When I am not at work I enjoy travelling with my wife and anything related to football. It was a dream come true to combine both of these passions by travelling to the 2014 World Cup in Brazil.

What is your favourite piece of equipment? And why?

AEROSTRIP® Fine Bubble Diffusers – they are proven to be the most efficient and longest lasting diffuser on the market. Having visited the factory in Austria recently, I was amazed at the quality and attention to detail - every single diffuser and polyurethane membrane is tested prior to leaving the factory. I also have a soft spot for the Huber Q-PRESS.

ABOUT THE HYDROFLUX GROUP

The Hydroflux Group comprises eight companies based in Australia, Fiji and the UK, providing design and build, equipment, processes and operational services in water and wastewater treatment.

The groups skills and experience span across municipal and industrial water and waste water treatment with full aftersales support.

AUSTRALIA
Hydroflux Pty Ltd
Level 26, 44 Market St. Sydney NSW 2000 Australia
Phone: 1300 417 697
Email: info@hydroflux.com.au
www.hydroflux.com.au

United Kingdom and Europe
1000 Lakeside North Harbour Western Road Portsmouth PO6 3EZ
Int: +44 23 9270 4087
Email: info@hydroflux.uk
www.hydroflux.uk

Fiji and Pacific Islands
Suva Business Centre 217 Victoria Parade Suva, Fiji
Int: +679 773 6950
Fiji: 773 6950
Email: info@hydroflux.com.fj
www.hydroflux.com.fj