

# DEHYDRIS™ TWIST– PERFORMANCE ON SLUDGE IN AUSTRALIA



*Paper Presented by:*

**Michael O’Connell**

*Author:*

**Michael O’Connell, Plant Manager,**

Suez



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# DEHYDRIS™ TWIST– PERFORMANCE ON SLUDGE IN AUSTRALIA

**Michael O’Connell & Emil Zhong**, SUEZ Water & treatment solutions Australia, Sydney,  
**Claude Prevot**, SUEZ Water & treatment solutions France, Paris, France

## 1.0 INTRODUCTION

Sludge production is a major problem due to disposal costs, which are constantly increasing to meet new stringent regulations. Increased dewatering efficiency, reducing sludge volume and therefore lower transportation and disposal costs and achieving auto-thermal characteristics for energy valorisation are among the major goals for many plant managers.

The innovative technology Dehydris™ Twist, a high efficiency dewatering system with a piston press is the effective answer to the aforementioned issues, by merging cost effectiveness and simplicity of operation with higher dewatering efficiency. This also offers the advantage of a significant reduction in the environmental impact on local disposal sites.

## 2.0 HIGHLIGHTS

- Dehydris™ Twist – an innovative boosted sludge dewatering system using piston press technology.
- Recently pilot tested on a range of sludge across Australia.
- Significant improvement in dewatering performance.
- Increased sludge dryness in comparison to conventional technologies.
- Is virtually unmanned for 24/ 7 for extended periods.
- Fully enclosed reducing odour and noise

## 3.0 METHODOLOGY/ PROCESS

Dryness is an important parameter for the final destination of all types of sludge. Dehydris™ Twist provides a high level of performance (high dryness and mass flow rate) as seen in various types of sludge treated in Europe. SUEZ therefore decided to commission trials In Australia to test the effectiveness of the solution locally.

In order to thoroughly test the system efficiency on different sludges from different treatment plants and processes across the country, SUEZ worked with a number of Australian water authorities to conduct Dehydris Twist pilot tests on a wide range of sludges in various locations. The trials were on three major categories of sludge - wastewater, drinking water and desalination water.

The pilot tests was undertaken with a demo model press (HPS 207), built in a container (*Figure 1*). Samples were collected from the sludge line before the dewatering stage, or polymer / coagulant dosing. Sludge conditioning is achieved by flocculation with polymer and with or without ferric chloride coagulation depending on sludge type and performance required.



**Figure 1:** *Dehydri™ Twist Pilot (HPS 207).*

#### **4.0 RESULTS/ OUTCOMES**

##### **Pilot test on wastewater sludge**

The piston press achieves significant improvement of sludge cake dryness over the existing dewatering technologies used. The cake dry solids point increases by 7 to 19% over existing belt filters and centrifuges.

##### **Pilot test on drinking water sludge**

The results on drinking water sludge shows that the piston press achieved a significant improvement in sludge Dry Solids (DS) being 24% higher than cake from existing centrifuges.

##### **Pilot test on sea water desalination sludge**

Trial results of the sludge on desalinated water shows cake DS is 24 to 28% higher than the centrifuge cake. The cake volume reduction is up to 58%.

#### **5.0 BUSINESS CASE EXAMPLE**

Thames water conducted a 3 year evaluation of options in 2010 to 2013. They then installed 1 full scale unit in 2013 at Oxford. Based on the results achieved which exceeded their expectations have now completed the purchase and installation of a further 18 units across 4 STP facilities based on a business case which showed a saving of 2 Million British Pounds per year saving in sludge removal costs across the 4 installations.

#### **6.0 CONCLUSION**

Significant improvement in dewatering performance has been obtained on all of the sludge tested. Results have shown the Dehydri™ Twist can achieve up to greater than 42% dry content through an entirely automated process and reduce cake volume by up to 58%. The Dehydri™ Twist technology is a viable solution to address the major sludge production issues which plant managers face.