

Project title: Low energy dewatering

Main applicant: Evergreen Water Solutions (EWS)

Technology developer: Evergreen Water Solutions (EWS)

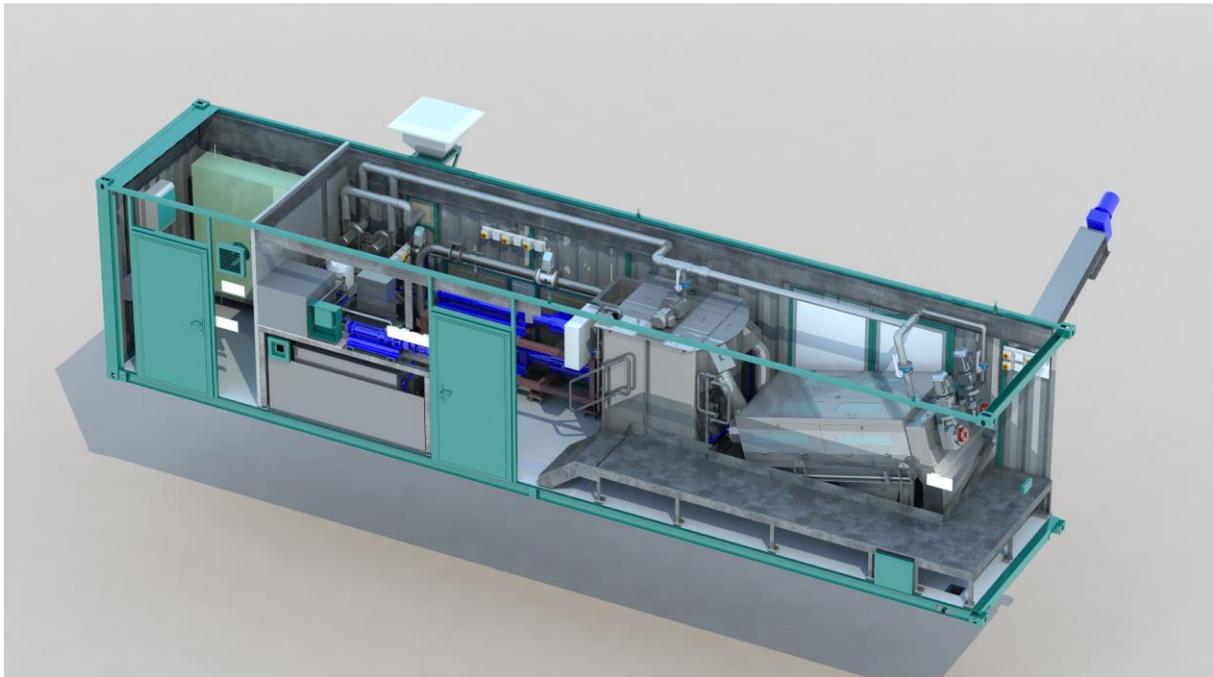
Industry partners: United Utilities

Demonstration capital cost: £1,538,046.00

Funding awarded: £782,827.60

Project timeline: January 2020 to March 2021

Photo:



Project description: The proposed project is to install and demonstrate a novel dewatering technology, on which Evergreen Water Solutions have been collaborating with technology manufacturer AMCON. The technology will be deployed at United Utilities' Davyhulme waste water treatment works for dewatering sludge from waste water. The technology allows for a slow mechanical dewatering process that achieves water removal of up to 65% by utilising a slow rotation of fixed and moving rings.

The energy reduction compared to a centrifugal-type technology can be significant and the demonstration project is set to achieve a 70% reduction. This trial will demonstrate that advances and development in the technology, allow it to be utilised at the scale required for higher throughputs, whilst achieving a dry solids content of 25%, which is comparable to traditional centrifugal operations. The unit will be built as a containerised solution, allowing for lower cost installation, and in the case of the demonstration project, allow trials on dewatering applications for both raw and digested sludges. It also allows for the demonstration to be carried out in parallel to existing operations, providing a direct like-for-like comparison.

Size of target market: The immediate market would be waste water treatment, with the sector estimated to have c. 600 dewatering units of the centrifugal type. Demonstrating a 70-90% reduction

in energy consumption, whilst maintaining equivalent dewatering levels, would encourage market uptake.

Further industrial sectors which have similar dewatering requirements for sludges are: food (DAF sludge), fats, oils and grease sludge, refineries, beverages and pulp and paper.

Barrier to market: The main barrier to market is demonstration of the efficiency compared to a conventional centrifuge solution, whilst maintaining the required quality of dewatered sludge. There is also a need to prove the reliability of the equipment and demonstration of the whole life cost. Integration of the technology into existing facilities is critical and demonstration of the containerised solution with limited footprint is important.

Initial TRL: 7-8

Targeted final TRL: 9

Estimated energy and carbon savings: The main benefit from the demonstration is an energy efficiency saving of 70-90% compared to existing centrifugal solutions. In terms of the demonstration site, this would represent a 16% reduction in total electricity consumption for the site. The proposed technology would expect to deliver a specific energy consumption of 15kWh per tonne of sludge compared to a 50kWh per tonne of sludge for traditional centrifugal methods.

Further benefits can be achieved through improved liquor quality and reduction in subsequent treatment costs. It is also expected that there would be lower maintenance costs compared to traditional dewatering technologies.

Why IEEA funding was important to this project:

Funding from the IEEA was important to Evergreen Water Solutions on this project as it has enabled further investment in innovation and research and development. Without the funding there would not have been the resources to test theoretical solutions and innovation in sludge dewatering. Once the technology has been successfully demonstrated in an operational environment, the aim is to take the product to market as a proven, low cost and energy saving dewatering solution.