GWI

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ASSESSING THE MARKET FOR ANAEROBIC WASTEWATER TREATMENT TECHNOLOGY

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AQUAHD

CENTRIFUGAL SOLIDS SEPARATION

Israeli start-up AquaHD, working with the Terralab incubator, one of Israel's leading clean-tech investors, has developed a suspended solids removal technology based on harnessing drag and centrifugal forces in a method "not done before."

The premise is similar to a hydrocyclone, where water coming into the chamber, which has a "unique" structure, is spun to create a centrifugal force. Particles in the water are subjected to forces of 6-7g, and are pushed to the outside structure within the unit forming flocs, before being caught in certain areas. The particles - both organics and inorganics - are then expelled with a percentage of the flow, usually between 2% to 8%, differing from facility to facility. The technology relies on physical forces with no moving parts within the structure, and can apparently operate with solids loads up to 4,000 parts per million (ppm).

The technology targets particles of between 1-1800 microns, its ability to effectively create flocs through circulation of the water means it can attain removal of particles at the lower range. Velocity generated at the inlet is usually between 2.2-2.5 metres per second, which could potentially break if using a strainer, and inlet pressure is usually 0.8-1.2 bar.

According to AquaHD, the technology has an up to 80% smaller footprint compared to clarifiers for treating the same volume of water. One unit has a capacity of 20m3/hour, and the modular nature of the technology allows any number of units according to the flow. The company will target small to medium flows (e.g. 500m3/hour) initially, before considering larger projects. As well as replacing clarifiers, the technology can act as membrane pre-treatment and replace automatic self-cleaning filters.

AquaHD, founded in 2015, has run pilots with both municipal and industrial clients. It has run two pilots with Mekorot, the Israeli national water company, treating surface water, including a pilot treating water from the river Jordan. During this pilot the technology produced effluent with turbidity of around 15 NTU or lower, and continued to perform adequately when incoming turbidity spiked to 160 NTU (effluent remained around 20 NTU). A contract for a third pilot was recently signed. It has also piloted on high-solids wastewater from a metal coatings factory. It is yet to test on particularly oily wastewaters.

Its go-to-market strategy follows two main avenues: selling units to OEMs that incorporate the technology into their systems, and selling small and medium-size full solutions directly to end-users. AquaHD anticipates its first sales in the coming months.

Treatment category:

Potential applications:

Potential industries:

USP: No moving parts means there is no risk of clogging, meaning maintenance requirements are very low. Also saves considerably on physical footprint.

Funding stage: Seed. Seeking to raise $2m

Stage of development: Third-party pilot testing. Patenting process underway.

CEO: Daniel Ityel
Website: http://www.aquahd.net

Star rating: ★☆☆

EXPERT COMMENT

Key to success will be the life cycle cost of energy necessary to achieve the 6-7 g forces compared to the additional space required by a big clarifier. The opportunity for the technology would be to produce the same treated water quality and footprint for expensive MBRs with their process combined with a commodity UF membrane.

The market opportunity for clarification of surface water for potable use may not be terribly significant except perhaps for emerging markets where space is a premium (e.g. China, India).

Joe Zuback, Global Water Advisors

ICON KEY

Treatment categories:
- Dissolved solids removal
- Suspended solids removal

Applications:
- Desalination
- Drinking water
- Wastewater

Industries:
- Food & Beverage
- Industrial
- Municipal
- Pulp & Paper
- Power

Star rating system:
- ☆☆☆ Unrated
- ★☆☆ Interesting
- ★★☆ Worth a detour
- ★★★ Worth a journey