

# Adaptive mixer helps water reuse facility avoid costly treatment operation shutdowns

Innovative mixing technology resolves constant build up and settling of lime softener sludge

One of the fastest growing communities in the nation, Chandler, Arizona, has transformed from a small agricultural town at the turn of the 20th century to the innovation and technology hub of the Southwest.

The Ocotillo Brine Reduction Facility (OBRF) is a water reuse facility that supports a microchip manufacturing facility in the City of Chandler. The treatment operation processes 1.5 million gallons of water a day that is treated to drinking standards. The treated water is then reused by a neighboring manufacturer, minimizing its need for potable water from the city.

## Challenge

To treat the facility influent, OBRF uses a cold lime softening process, which removes water hardness, alkalinity and other constituents. The resulting sludge is then dewatered and the filtrate is sent to the head of the plant for treatment. But the lime in the sludge was settling in the equalization basin. This settling was quickly reducing the capacity of the basin and resulted in shutdowns of the treatment process operation for at least two days every several months. Each event carried a \$15,000 price tag and forced the manufacturing facility to rely on potable water during the shutdown.

“The major issue we were having with the EQ basin was the sludge was settling out, causing numerous issues to flow and storage in that basin,” said Anthony Flemings, utilities maintenance supervisor, Chandler, Arizona.

OBRF reached out to Xylem representative JCH, Inc. for a solution. Because the level of the equalization basin fluctuated several times per day, sometimes by as much as 15 feet, JCH recommended Flygt adaptive mixers. These mixers are able to automatically adjust the amount of thrust required to effectively mix the basin due to the varying water depths.



The Ocotillo Brine Reduction Facility (OBRF) in Chandler, Arizona, supports a nearby microchip manufacturing facility.

- CUSTOMER:** Ocotillo Brine Reduction Facility (Chandler, Arizona)
- CHALLENGE:** Lime at the water reuse facility was constantly building up and settling in the equalization basin, which resulted in having to shut down the treatment process operation for at least two days every several months.
- XYLEM SOLUTION:** A Flygt adaptive mixer was installed in the equalization basin to accommodate the varying levels of thrust required to mix the basin. The solution has eliminated the need for tank cleanings and has reduced costs associated with downtime.

## Solution

Using the adaptive mixer's built-in process control functions, operators at OBRF were able to build a level-versus-thrust curve and vary the speed of the mixer. The speed of the mixer was changed based on input from a basin level transducer directly into the process controller, and the result was that the thrust would be increased or decreased as needed.

Explained Ethan Willits, lead engineer, JCH. "We create a bulk flow sending all of the lime through that intensive mixing process in the mixer jet, [this results in] a quasi-homogenous mixture and that's how we keep the lime from settling out.

## Results

Since installing a Flygt adaptive mixer in March 2020, Flemings said OBRF has not experienced any issues with sludge settling out.

"We haven't had to shut down and we have a cost savings," said Flemings. "Our manufacturing facility is happy because they don't have to rely on potable water."



Lime sludge being resuspended by Flygt Adaptive mixer.



A Flygt adaptive mixer inside the tank.

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