

## Innovative S-Disc Thickener Technology Replaces Gravity Thickener, Improves Performance of Digester.



***“With our Gravity Thickeners we were lucky to get 2.3 % DS concentration on the thickened sludge. Our Digesters were too thin. Now with our Disc Thickener, we are consistently producing 5.5% DS”  
- Tracy Wallace, Plant Superintendent***

The Santa Margarita Water District’s Chiquita Water Reclamation Facility began planning and implementing a series of upgrades and improvements to their facilities. One of the areas of focus was upgrading of their existing gravity thickeners to improve performance of their anaerobic digester. The activated sludge (WAS) and the Waste Sludge (WSL) from Trickling filter and Solid Contact Basin is combined right before it enters the existing Gravity Thickener. Chiquita WRF adds water to be able to convey the sludge to the thickener. This technique creates different parameters than is typically found in other similar type installations. Feeding at a rate ranging from 0.4 – 0.8% DS, the gravity thickener was only able to achieve a maximum result of 2.7% DS resulting in an under loaded digester.

## Goals and Objectives

Evaluations of various mechanical thickening technologies indicated that output results from the thickener of 5 – 6% DS were possible. In the consideration of the technologies it was also important that the systems evaluated be easy to retrofit, install, energy efficient, operate, and maintain. In the evaluation, Gravity Belt Thickeners, Drum Thickeners, and Disk Thickener were evaluated.



## Solution

After careful evaluation the HUBER Technology S-Disc Thickener was selected for further evaluation. Design of the equipment began in early 2008 with an order to build the unit in December 2008. The S-Disc Thickener Size 2 was delivered installed and started up in the Fall of 2009.

The design of the new thickener at Chiquita is located on the edge of the existing gravity thickener. This allows the thickener output to be conveyed from the thickener to the storage tank by gravity.

“Sure, we would add another machine if capacity needed to be increased, without any further thought.”

- Tracy Wallace, Plant Superintendent

The thickened sludge will drop into a pipe that will convey the sludge into the old gravity thickener (storage tank) which is at a lower elevation

## Performance

The sludge disk thickener was required to achieve the following performance of sludge thickening

- Accept 0.4-0.9% DS inlet feed rate of sludge
- Produce 3-6% DS Thickened consistency (with an inlet of about 0.1-0.5%)
- Produce 5% DS output if supplied a 0.3% DS or better feed of activated sludge.

After two years operation the plant reports that S-Disc Thickener is consistently producing a 5.5% DS average with an ~0.6% DS average feed at a steady flow of 107 gpm (60 gpm activated, 7 gpm trickling, 40 gpm service water) running 24 hours a day. Earlier in the operation different combinations were tested. Operating at the factory set angle of inclination and feeding the unit at a rate of 170 gpm with an incoming sludge concentration 0.8% DS the S-Disc Thickener produced a 6.5% DS average / 7% DS maximum output from the machine. In order to serve the production needs of the plant the staff experimented with a shallower angle to produce their current 5.5% DS.

## The supporting cast

HUBER's experience with municipalities and with wastewater processes is extensive as is its knowledge of the technologies it provides. This industry-technology insight allows HUBER to work with organizations to ensure that systems are geared to perfectly match up to immediate tactical challenges and long-term strategic goals.