

# Optimised Sludge Dewatering

## Problem

Conventional operation of centrifugal decanters relies on manual adjustments of polymer or sludge feed rate. These adjustments are commonly too infrequent, leading to problems with chemical efficiency, dry cake quality, and solids capture rate. This can increase chemical consumption and disposal costs, and represents elevated operational risk due to high return loads to the biological process.

## Solution

With the RTC-SD system, the goal is to optimise the sludge dewatering process, reducing operating and sludge transport costs with a more stable sludge product.

## Benefits

Using a Claros Process Management module (RTC-SD) from Hach<sup>®</sup>, the amount of polyelectrolyte used in the decanter output is reduced by 15 - 20% as a result of working with a constant dry solids ratio (This may vary, depending on the mechanical and process performance of the plant).

Consistency and capture rate of dewatered sludge is also improved.

## About the Facility

The Wastewater Treatment Plant was commissioned on 6 July 2007, with a population equivalent in the region of 2 million. With a daily urban wastewater treatment capacity of 128,208 m<sup>3</sup>, it is a full biological wastewater treatment plant with classical activated sludge removal. Biogas containing circa 65% methane is produced as part of the treatment process. This biogas is converted to electrical energy in the biogas generator at the facility, meeting a portion of the plant's electricity requirements (approximately 59% recovery in 2016).

### Sludge dewatering with a centrifugal decanter

Centrifugal decanters are used at the plant for sludge disposal.

With two active centrifugal decanters, the dry solids content of the sludge after being processed is guaranteed to be 26 – 29%. There are three sludge pumps with a capacity of 50 m<sup>3</sup>/hour at the decanter feeds. The dewatered sludge in the decanter is emptied into trucks via conveyor belts; the resulting filtrate is fed to the venturi to be sent back to the pre-settling ponds.



Wastewater Treatment Plant from the air

## Solutions & Improvements

The RTC-SD system was installed in the sludge feed line to continuously measure the suspended solid content of the sludge fed to the decanters. The optimum amount of polyelectrolyte solution was added, depending on the suspended solid content and flow rate measurements. As a result, the sludge dewatering process was optimised and stabilised, and the amount of polyelectrolyte solution used was reduced by 15 – 20%.

### RTC-SD unit components

The system consists of the RTC-SD Module, a Hach SC1000 Controller and a Solitax Suspended Solids Measurement probe.

The RTC-SD components were integrated into the plant's automation system and the polyelectrolyte dosing was controlled by real-time, continuous measurements.

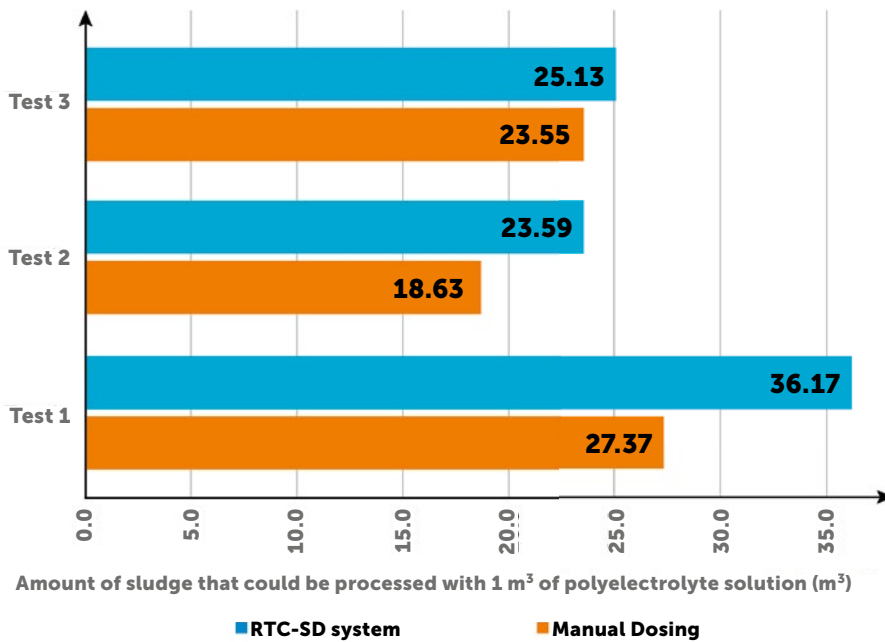


Decanters

## Results

The results of the study are shown in the graph below. An image of the commissioned RTC-SD system is also provided below.

### RTC-SD vs. Manual Dosing



RTC-SD system

### Summary

Looking at the data obtained in the study that is presented on the graph, it was agreed with the user that the RTC-SD system prevents fluctuations in the dry solids content of sludge and reduces the consumption of polyelectrolyte solution.

