



## Case Study - City of Orlando Wastewater Treatment Plant Belt Filter Press Struvite Scale Control & Enhanced Flocculation

Five month evaluation of Hydropath technology's ability to treat magnesium ammonium phosphate hexahydrate (Struvite,  $\text{NH}_4\text{MgPO}_4 \cdot 6\text{H}_2\text{O}$ ) scale and to enhance flocculation resulting in reduced polymer usage

Updated on: May 7, 2014

**Location:** City of Orlando Wastewater Treatment Plant. Address: 5100 LB McLeod Rd., Orlando, FL 32811

**Application:** Struvite accumulation in belt press #5.

**Belt press make and model:** AshBrook - Klam press.

**Polymer dosing equipment:** Custom made anionic polymer injection.

**Installer:** Allied Group - *HydroFLOW* distributor in Florida. **Phone:** 407-908-9694 **Email:** [jbarfield01@cfl.rr.com](mailto:jbarfield01@cfl.rr.com)

**Device:** *HydroFLOW* 12" custom water conditioner.

**Installation date:** November 23, 2013

**Last inspection:** April 30, 2014

**Background:** The belt presses at the City of Orlando Waste Water Treatment Plant suffer from severe Struvite scale accumulation which greatly impedes the equipment's productivity and effectiveness. The plant's management team decided to evaluate *HydroFLOW*'s ability to relieve the above mentioned problem on one of the belt presses.

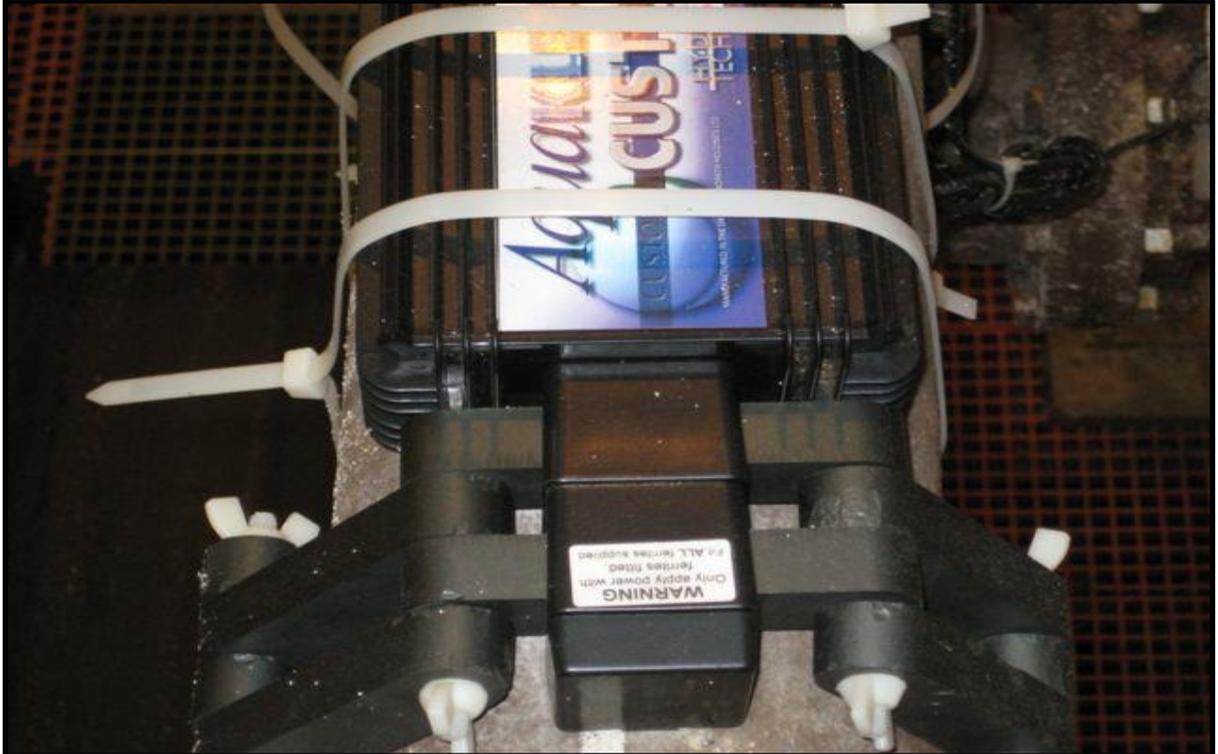
**Main success factor:** Prevent new Struvite scale accumulation and gradually remove existing Struvite deposits.

**Secondary success factor:** Reduce polymer usage due to better belt press operating efficiency with Struvite scale removed and enhanced floc formation requiring lower polymer usage.

**Belt Press - Two belts, two meters wide**



Installed custom 12" device



Drum



Before - Hard scale and bridged-over holes



After 150 days of *HydroFLOW* operation - Minimal scale

Side of Drum



Before - Hard scale



After 150 days of *HydroFLOW* operation - Very little scale, no chemical or mechanical scale removal performed

Pan



Before - 5mm of hard scale



After 150 days of *HydroFLOW* operation - 1mm of brittle scale remains



**Observations:**

- The *HydroFLOW* device prevented Struvite scale accumulation and gradually removed existing Struvite scale deposits.
- Polymer is automatically dosed using a custom made system. *HydroFLOW's* ability to enhance the flocculation of suspended solids allowed a significant reduction in polymer usage. Average polymer usage per day reduced by approximately 20%.



## CITY OF ORLANDO

May 7, 2014

To whom it may concern:

A *HydroFLOW* unit was installed on November 23, 2013 for a 60 day demonstration at our Water Conserv II, WRF. This facility is designed for 21 MGD with fine bubble diffused aeration and waste activated sludge processed with Anaerobic Digestion (without Primary Clarifiers). It was installed on the Belt Filter Press Influent pipe downstream of anionic polymer injection. The Belt Filter Press was scheduled for cleaning due to Struvite encrustation at the time of the *HydroFLOW* demonstration.

After 10 days of use, there was a marked reduction in the amount of Struvite buildup and eventually the Struvite had softened to the point that it could be wiped off by hand. Usually the belts have to be removed from the Belt Filter Press and a hot water, high psi pressure washer is used to clean the units. During the demonstration, the unit was run continuously without any cleaning.

Additionally, there was approximately a 20% reduction in polymer usage. The Operations staff found that they were able to have better control of the polymer dosing. Production of a more consistent press cake was achieved.

I would recommend the installation of this unit. It will pay for itself in a short period of time labor and polymer savings.

Steve Shelnett

Plant Manager, Water Conserv II

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