

WASTEWATER

# Centrifuge Struvite Control Case Study Canada

*Hydro*FLOW® i160 prevented struvite blockages in centrifuge ports and centrate discharge pipework at Woodward Avenue WWTP. Remaining deposits were softer and easier to remove.

| ✓ | ↓ | >$50k | <1 year |
|---|---|---|---|
| No Port or Pipe Blockages | Hard Struvite Build-Up | Projected annual saving per unit | Estimated payback per unit |

## ⇄ BEFORE & AFTER

**BEFORE**

- Struvite blocked ports and centrate pipework
- Hard deposits damaged centrifuge barrels
- Build-up appeared after roughly 400 hours

**AFTER**

- ✓ Centrifuge ports and discharge pipes stayed clear
- ✓ Remaining deposits were softer to wash off
- ✓ Barrel and slot-ring damage greatly reduced



BEFORE

*Barrel area before treatment*



AFTER

*Barrel area after trial*

## OVERVIEW

Woodward Avenue Wastewater Treatment Plant in Hamilton, Ontario, has a reported average daily treatment capacity of 409 million litres. The facility uses conventional activated sludge treatment, anaerobic digestion and centrifuges to dewater digested sludge. Four Alfa Laval G2 centrifuges were affected by struvite accumulation, prompting an evaluation of *Hydro*FLOW® technology.

## CHALLENGE

Struvite accumulation caused frequent maintenance, equipment damage and costly centrifuge repairs.

- Significant deposits could develop after around 400 operating hours.
- Centrate discharge piping and machine ports became blocked.
- Hard build-up abraded barrel and slot-ring surfaces.
- An off-site barrel rebuild cost more than $70,000 and took weeks.

## SOLUTION

A *Hydro*FLOW® i160 was installed on the stainless-steel sludge feed line upstream of a G2 centrifuge to reduce struvite build-up in the centrifuge and centrate discharge pipework.

**UNIT INSTALLED**
**1 × *Hydro*FLOW® i160**

**PIPE**
**6" stainless-steel sludge feed**

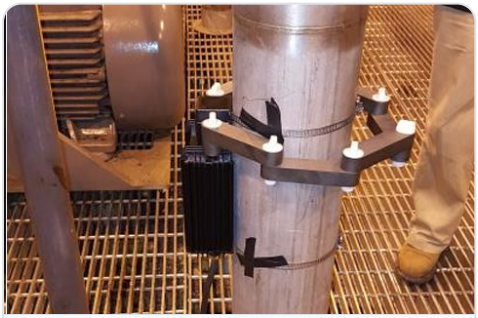
**INSTALLATION POINT**
**Approximately 6 ft before centrifuge**

**TRIAL**
**Three-month onsite trial**




INSTALLATION

*HydroFLOW® i160 installation and signal check*



PIPEWORK

*i160 on incoming sludge feed line*

## RESULTS

**No Blocking Build-Up**
Struvite no longer accumulated enough to block ports and centrate piping.

**Softer Deposits**
Remaining deposits were softer and easier to remove with pressure washing.

**Longer Between Maintenance**
Centrifuges operated substantially longer between maintenance interventions.

**Less Barrel Damage**
Slot-ring damage stopped, while barrel damage was almost eliminated.

**Projected Maintenance Savings**
Projected maintenance and repair savings exceeded $50,000 annually per centrifuge

**Estimated Payback Under a Year**
The customer's reported return on investment was under one year per unit.

## TESTIMONIAL

> *"Well, I put my backside on the line to try this technology and I am very pleased with the results, it has done what we were told it would do"*
>
> — Darren Lister, Mechanical Supervisor

KEY TAKEAWAY

## Summary

At Woodward Avenue WWTP, *Hydro*FLOW® reduced hard struvite build-up, preventing blockages in centrifuge ports and discharge pipes. Softer deposits and less equipment damage reduced maintenance needs, with projected savings exceeding $50,000 annually per centrifuge and payback under one year.

## ADDITIONAL PHOTO EVIDENCE



BEFORE

*Struvite deposits on centrifuge barrel*



BEFORE

*Heavy struvite build-up on barrel*



BEFORE

*Struvite deposits around slot-ring*



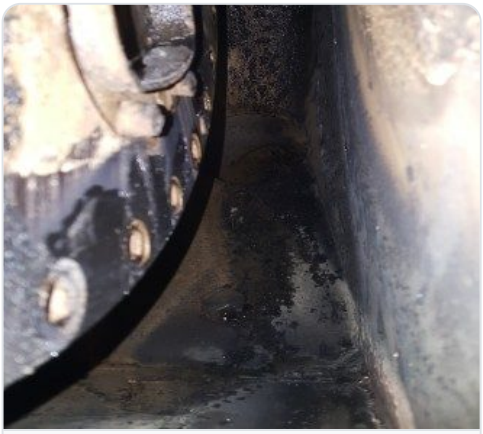
BEFORE

*Hard crystalline struvite deposit*



BEFORE

*Hard deposits inside centrifuge*



AFTER

*Centrifuge discharge opening after treatment*

HYDROPATH

**Reduce struvite maintenance in dewatering**

Discuss protection for centrifuges and centrate discharge lines.

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