



Case Study

IMPERIAL OIL

HydroFLOW® reduced antiscalant use in an oil sands heat exchanger system by eliminating calcium carbonate scale, enabling chemical-free operation and delivering a return on investment in under eight months.

Overview

Imperial Oil is one of Canada's largest integrated energy companies, focused on the safe and responsible development of Canada's oil sands. At its Kearl K2 site, heat exchangers are a vital part of production, but scale build-up—particularly from calcium carbonate—posed significant operational challenges. To combat this, Imperial explored innovative alternatives to conventional chemical treatment.

Three *HydroFLOW* 24" Custom units were installed on the mild steel input pipes to heat exchangers. The goal was to reduce Antiscalant Chemical use, to stop CaCO_3 scale, while maintaining or improving operational capabilities of Heat Exchangers.

Challenge

The K2 facility treats approximately 200,000 m³ of industrial water daily. To mitigate scale formation, the site used two commercial antiscalants: Depositrol and Genguard GN7007. These chemicals were essential in maintaining exchanger efficiency but incurred high ongoing costs.

Additional challenges included:

- Continuous chemical dosing
- Regular maintenance shutdowns
- Manual cleaning requirements
- Risk of performance degradation if scaling occurred

The objective was clear: find a reliable, long-term solution.

Solution

A 12-month pilot study was launched in collaboration with *HydroFLOW*, involving:

- Installation of three *HydroFLOW* Custom 24" units on exchanger inlet pipes.
- Use of a sidestream exchanger for live testing and performance monitoring.
- Gradual reduction of antiscalant levels from 2.0 ppm to 0.0 ppm.
- Isolated chemical testing to ensure no interference from other additives.
- Operator training on unit monitoring and maintenance practices.

Throughout the trial, only the antiscalant dosage was adjusted to isolate results and confirm the effect of *HydroFLOW* treatment.

Results

After one full year of operation, the trial confirmed:

- **Chemical Elimination** – Antiscalants reduced to zero without scale build-up
- **Cost Savings** – ROI achieved in just 7.2 months through chemical reduction alone
- **System Performance** – Heat exchanger efficiency maintained without interruption
- **Scalability** – A second system was approved for installation at the K1 plant

Imperial Oil's technical team endorsed the results, confirming *HydroFLOW* as a scalable solution for long-term water treatment efficiency in high-demand industrial settings.

HydroFLOW® Installation



Unit Installed #1



Unit Installed #2



Unit Installed #3

Summary

The benefits of using *HydroFLOW* technology to reduce antiscalant chemical usage in heat exchanger systems were evaluated at Imperial Oil's Kearl K2 oil sands facility in Alberta, Canada. Over the course of a year, the system was monitored while antiscalant levels were gradually reduced from 2.0 ppm to zero.

All operational metrics—including scale prevention, heat exchanger performance, and system reliability—were maintained without the use of traditional scale inhibitors.

Most significantly, the use of *HydroFLOW* resulted in measurable improvements in efficiency and cost savings:

- Antiscalant usage reduced by 100%
- Operational ROI achieved in just 7.2 months
- Long-term maintenance simplified
- Second system approved for installation at K1 plant

The trial confirmed that *HydroFLOW* offers a sustainable, chemical-free approach to industrial scale prevention with long-term value.



HydroFLOW® units are working all over the world on multiple applications, treating carbonate and non-carbonate scaling and filtration issues in a wide variety of industries.

- From homes to heavy industry
- From spas to steel mills
- Suitable for any pipe material
- From 15mm to 1500+mm OD pipe diameter

Would you like a free consultation?

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