CASE STUDY

BrightShield™ Restores Flow in Critical CSS Exchanger at Cold Lake Bitumen Facility

CHALLENGES

A critical heat exchanger was heavily fouled with oil, grease, and solids, cutting flow below 20 m³/h. With no time for sampling, Guardian used historical deposit analysis and fouling photos to quickly design an effective cleaning plan.

SOLUTIONS

Through the BrightShield™ Process, Guardian developed a custom chemical cleaning plan to meet the client's turnaround goals quickly and safely.

- **Initial Review:** The team looked at photos and past deposit info to plan the job — no lab testing needed.
- **Custom Cleaning Program:**
  - Step 1: 10 L of HotSoss mixed with 2 m³ of boiler feed water (BFW) to start the clean
  - Step 2: 40 L of Terrasol ULV with 2 m³ of BFW to remove oil and solids
  - Step 3: A final rinse with clean water and filter pots to catch any leftover debris
- **On-Site Support:** Guardian stayed on-site to monitor flow and make sure the cleaning worked as planned.

RESULTS

BrightShield™ exceeded expectations. Flow increased to 50 m³/h with the valve only 50% open, effectively tripling the exchanger's throughput under lower load.

- Operational continuity maintained. No shutdown required.
- Low chemical volume: Only 50 L total product used.
- Exchanger fully restored with flow and efficiency surpassing original targets.

AT A GLANCE

A CSS bitumen production facility in Cold Lake faced a severely fouled, "un-cleanable" heat exchanger. Using Guardian's BrightShield™ Process, including a tailored chemistry program, their team restored flow, eliminated fouling, and returned the system to optimal performance without disruption.

KEY METRICS

150%
INCREASE IN FLOW RATE WITH THE VALVE ONLY HALF OPEN

ELIMINATED
FLOW RESTRICTIONS

50 L
TOTAL VOLUME OF CHEMICAL REQUIRED TO CLEAN EXCHANGER

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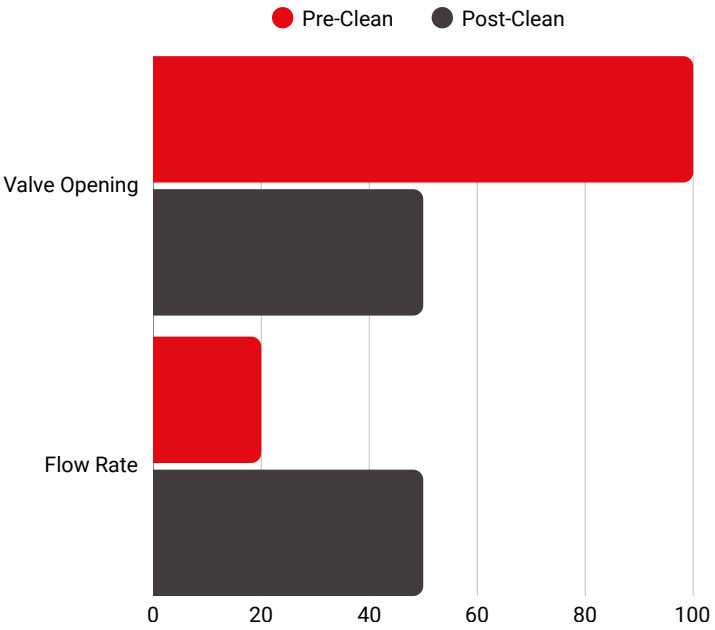
DATA



Pre-cleaning: The valve had to be fully open due to restrictions limiting flow. Even with the valve fully open, the flow rate was limited to 20 m³ per hour.

Post-cleaning: With flow restrictions eliminated, the valve did not need to be fully open to achieve desired flow rates. As such, the valve opening was reduced to 50%. At 50%, the flow rate was 50 m³ per hour, 1.5X the flow rate of the pre-clean fully open condition.