CASE STUDY

How Brightshield Restored Critical Exchanger Flow and Prevented Water Treatment Upsets

CHALLENGES

Facility expansion strained water systems as fouled exchangers restricted flow to as low as 6–12 m³/h, well below design capacity. This limited throughput increased the risk of thermal shock, solids precipitation, and water treatment upsets. Previous mechanical cleaning was labour-intensive and failed to restore performance.

SOLUTIONS

Guardian Chemicals Brightshield Process, an advanced chemical cleaning program was applied. Designed for rapid turnaround and effective removal of organic and inorganic fouling, no mechanical lancing was required, and each exchanger was cleaned and restored to service in under 24 hours.

RESULTS

Efficiency Recovered, Risk Reduced

Brightshield restored exchanger capacity, reduced thermal shock risk in the skim tank from cold pond water, improved cooling, and eliminated the need for mechanical cleaning, ensuring reliable performance as production increases.

Flow Restored

Exchanger Unit A → Flow rate increased by 150%
Exchanger Unit B → Flow rate increased by 400%

Eliminated Process Upset Risk

Increased heat exchanger capacity by removing fouling eliminated process upset risk from thermal shock.

AT A GLANCE

A pair of severely restricted heat exchangers at an oil sands facility threatened thermal balance and water treatment stability. Guardian Chemicals Brightshield Process, restored flow up to 5X faster without mechanical lancing. The exchangers were back online in under 24 hours with reduced labour and lower risk of process upset.

KEY METRICS

<24 HOURS
TO RESTORE FLOW

UP TO 400% INCREASE
IN HEAT EXCHANGER CAPACITY

ELIMINATED
PROCESS UPSET RISK

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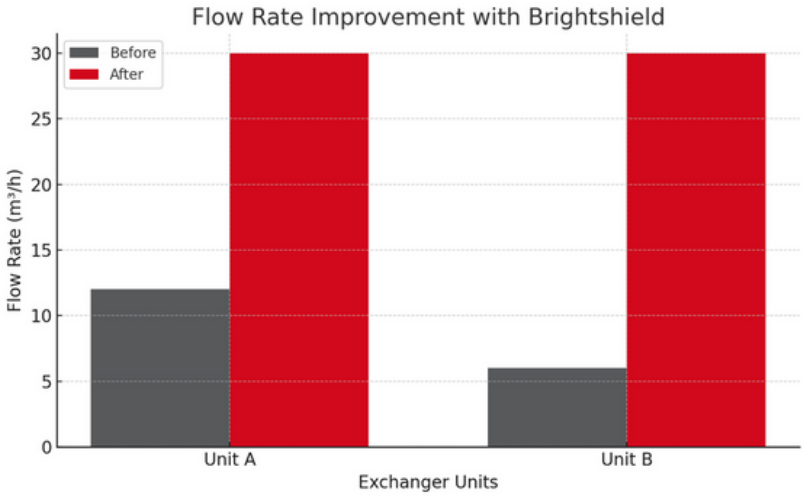
DATA

The chart and table below provide a visual summary of flow rate improvements achieved with the Brightshield process. These metrics validate the solution's effectiveness and highlight the operational benefits—including faster turnaround, reduced labour, and improved system stability.



Metric	Before	After
Flow Rate (Unit A)	12 m³/h	30 m³/h
Flow Rate (Unit B)	6 m³/h	30 m³/h
Downtime	—	<24 hrs
Labour Requirement	High	Reduced
System Impact	Unstable	Improved glycol cooling & water treatment stability