Steam System Optimization: Elevating Reliability, Unlocking Capacity

Excel

Canada's Leading Pharmaceutical Manufacturer | 73% Load Reduction | $250K+ Annual Savings

The Challenge

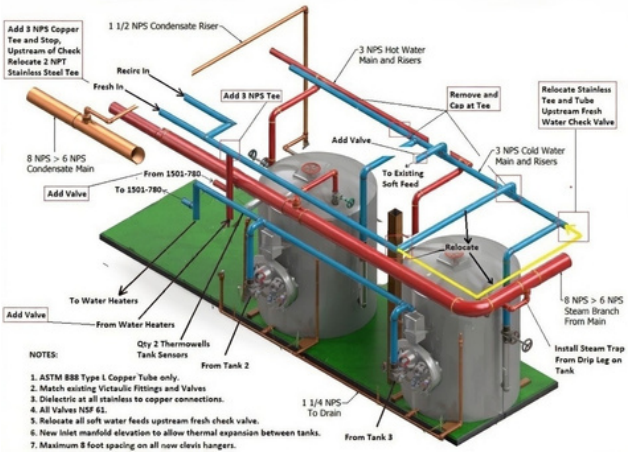
A major Canadian pharmaceutical manufacturer faced recurring failures in critical heat exchangers within their steam system. Initial diagnosis revealed undersized steam traps and inadequate condensate pumping on their DHW system. Further analysis found the root cause of wider failures to be excessive back-pressure straining heat exchangers plant-wide while consuming significant engineering resources on reactive retrofits.

Our Approach

Excel conducted a comprehensive top-down steam plant analysis, leveraging the client's building automation system (BAS) data and implementing targeted lean measurement on unmetered systems. We identified high levels of unrecovered condensate and vent energy as primary culprits

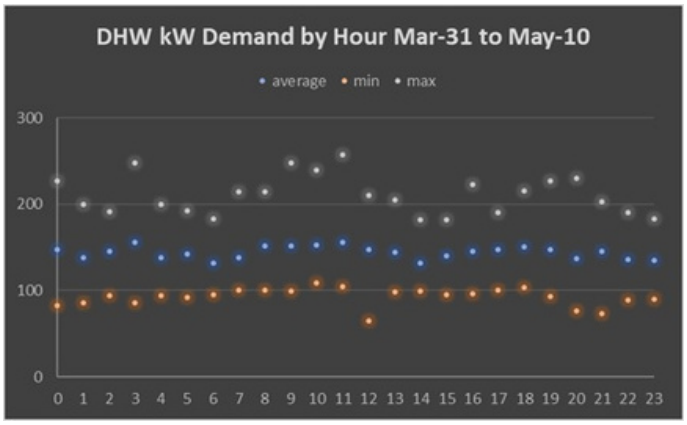
The Solution

- Captured vent energy to preheat DHW
- Replaced DHW steam heat exchangers with direct hydronic injection into 2,000-gal storage
- Reduced instantaneous DHW load from 5,500 to 1,500 MBTU/hr (73% reduction)
- Recovered condensate heat for glycol heating



Results & Impact

The project delivered transformative outcomes beyond energy savings. Reliability across critical heat exchangers improved dramatically, eliminating chronic failures and enhancing plant resiliency. Most importantly, significant capital engineering resources - previously tied up in reactive retrofits - were redirected toward production improvements and expansion initiatives.



Constant heat exchanger issues were pulling focus from production goals. Excel's comprehensive approach eliminated these chronic problems.

Metric	Before	After	Improvement
System Reliability	Frequent failures	Vastly improved	Eliminated chronic issues
Steam Plant Efficiency	65%	75%	+10 percentage points
DHW Load	5,500 MBTU/hr	1,500 MBTU/hr	73% reduction
Annual Gas Savings	—	$250,000+	Significant reduction

Ready to optimize your steam systems? Contact Excel for a complimentary plant assessment.