207 Kilograms (59 Gallons) of furnace oil fuel saved daily for a Beverage MNC

Thailand | Beverage

Problem

A beverage MNC in Rangsit, Thailand was experiencing issues in their Pasteuriser Hot Fill line 3.

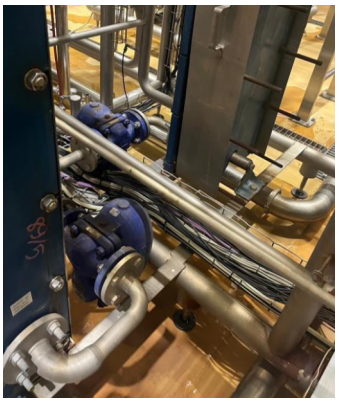
- During our assessment we observed the Pateuriser Hot Fill line 3 was using float traps, which were experiencing condensate stalling due to low process temperatures. Due to stalling the operator was keeping the trap bypass valve open, draining condensate locally.
- Additionally, the condensate line was lifted to a 5 meter height and recovery was by trap pressure. This further increased the backpressure on the float traps.
- Steam was being supplied at 5-6 barg and the PID control valve had to be manually opened to 100% to maintain targeted product temperature of 97°C (206.6°F).
- Issues of leakage detected in two of the three plate heat exchangers (PHEs).

Solution

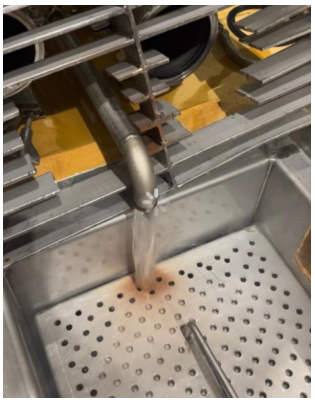
Forbes Marshall conducted trials at Pasteuriser Hot Fill line 3. The following solutions were recommended and implemented:

- 3 steam operated pumping traps (SOPT) at PHE 1, 2 & 3 were installed to address the issue of condensate logging seen when using a float trap.
- 2 steam operated pressure powered pumps (PPPPU) with a condensate recovery meter (CRM) were installed to recover condensate to the feedwater tank.

Before

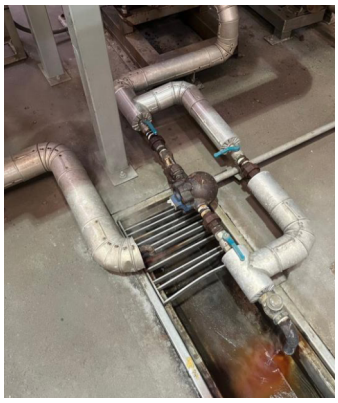


Float Traps installed at the PHE 1 & 2



Condensate being drained locally by opening trap bypass valve

Condensate line lifted to a 5 meter height, causing backpressure on the float traps



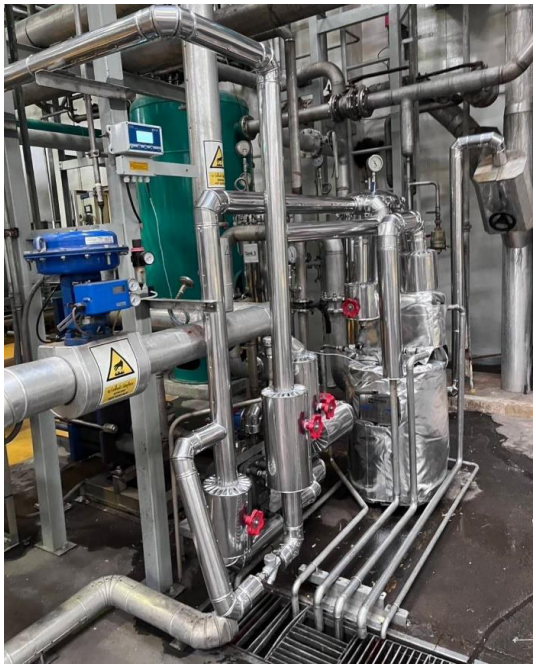
Stalling condition of the float trap at the PHE resulting in condensate being drained locally

After

A steam operated pumping trap (SOPT) installed at PHE 1 & 2, a steam-operated pressure powered pump (PPPPU), with a condensate recovery meter (CRM) installed to recover condensate to the feedwater tank

Root cause analysis

Condensate trials at the Pasteuriser Hot Fill line 3 with the plant team



A steam operated pumping trap (SOPT) installed at PHE 3, a steam-operated pressure powered pump (PPPPU), with a condensate recovery meter (CRM) installed to recover condensate to the feedwater tank

Benefits delivered

Furnace oil fuel saved daily	207 Kilograms (59 Gallons)
Water saved annually	1,455 Tonnes (384K Gallons)
Co_2e reduced annually	70 Tonnes (154K Pounds)
Annual monetary savings	THB 439,521 (~USD 13,407 *converted based on exchange rate)