Debottlenecking the PET Warmer line, saving 15.47 Kilolitres (4,087 Gallons) fuel per year for a beverage multinational company

Thailand | Beverage

Problem

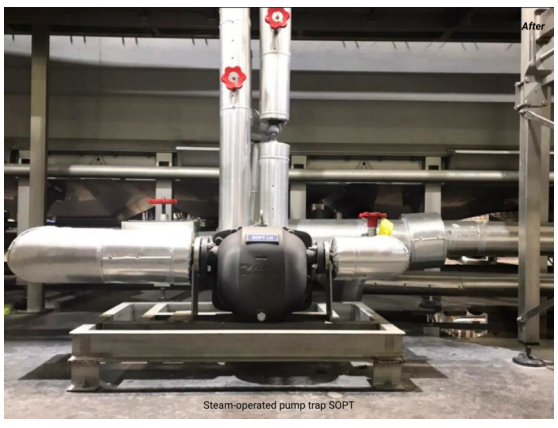
A beverage MNC in Pathum Thani, Thailand was facing two scenarios in their PET line warmer:

1. Condensate temperature was 50°C (122°F), indicating stalling in the heat exchanger. This was impacting the process temperature (significant variation with respect to the set point) and heating time (which was longer).
2. Process temperature was exceeding the set point temperature by 10°C (50°F).

The plant was facing temperature variations against desired and delayed heating times at PET Warmer 9. Condensate was being recovered through trap pressure. Additionally, there was a 15-metre (49 foot) lift in the condensate line after the trap.

Solution

Forbes Marshall conducted a plant-wide audit. Our recommendations for PET Warmer 9 involved installing a steam-operated pump trap (SOPT), eliminating the lift in the condensate line and using a pressure powered pump package unit (PPPPU) to transfer condensate to the boiler feedwater tank. A condensate recovery meter was also installed for real time accurate monitoring. These measures addressed the temperature issues in the Warmer and increased the condensate temperature from 50°C (122°F) to 86°C (186.8°F).



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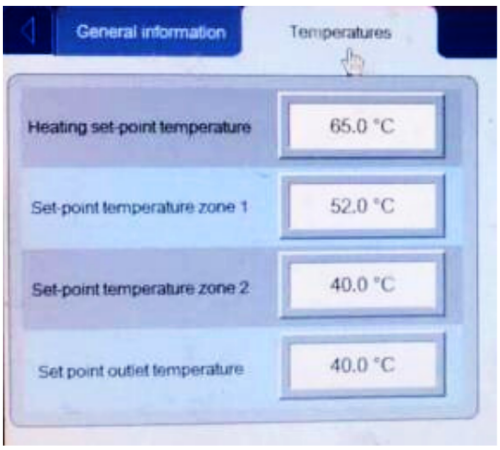
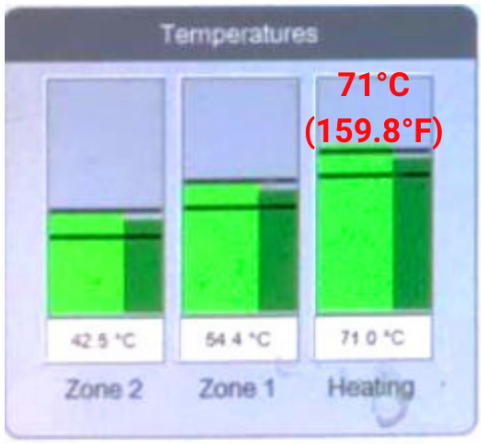
Before

Set Point

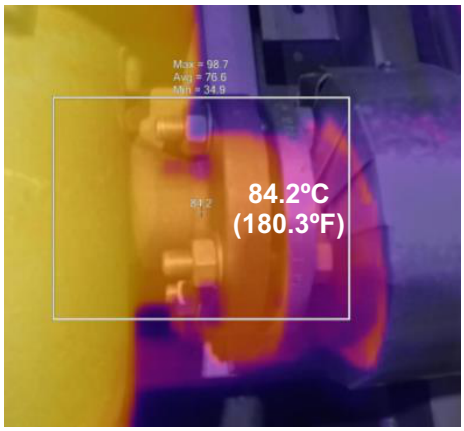


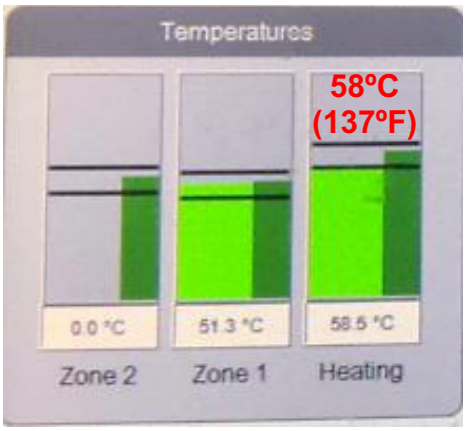
Actual



After

Condensate recovery meter





Benefits delivered	
Condensate temperature improved from	50°C (122°F) to 86°C (186.8°F)
Steam saved annually	209,000 Kilograms (461K Pounds)
Fuel saved annually	15.47 Kilolitres (4,087 Gallons)
Water saved annually	2,396 Kilolitres (632K Gallons)
Co_2e reduced annually	40MT (88K Pounds)
Annual monetary savings	THB 355,306 (~USD10,900*) **converted based on exchange rate*