

122,500 Kilograms (270K Pounds) of fuel saved annually through steam and condensate system improvement for a beverage MNC

 **Thailand**

 **Beverage**

Problem

A beverage MNC in Phra Nakhon Si Ayutthaya, Thailand, was facing several issues with its steam and condensate system. Float traps at the Bottle Washer lines 4, 5, 6 and 7 were causing low process temperatures, resulting in condensate stalling. The operator needed to open the bypass valve periodically to evacuate condensate leading to steam and condensate loss. The lines also utilised an electrical pump and tank system to return condensate, however due to frequent issues with the pump, condensate was drained locally.

Solution

Forbes Marshall conducted a plant-wide study. We recommended and implemented solutions at Bottle Washer lines 4, 5, 6 and 7:

- Replaced the float trap with a steam-operated pump trap (SOPT) at Bottle Washer lines 4 & 6 to improve process temperatures and eliminate condensate stalling.
- Replaced the float trap and condensate recovery system with a combination of a steam-operated pump trap (SOPT) and a steam-operated pressure-powered condensate recovery pump (PPPPU) at Bottle Washer lines 5 & 7. Enabling recovery of condensate at high temperature to the feedwater tank.
- Installed a condensate recovery meter (CRM 485R) at Bottle Washer lines 5 & 7.

Before



Condensate recovery by electric pump

After



Steam-operated pump trap (SOPT) installed at **Bottle Washer Line 4.**



Steam-operated pump trap (SOPT) installed at **Bottle Washer Line 6.**

After



Steam-operated pump trap (SOPT) and a steam-operated pressure powered condensate recovery pump (PPPU) installed at **Bottle Washer Line 7.** The condensate recovery meter (CRM) shows totalised flow rate and temperature

After



Steam-operated pump trap (SOPT) and a steam-operated pressure powered condensate recovery pump (PPPU) installed at **Bottle Washer Line 5.** The condensate recovery meter (CRM) shows totalised flow rate and temperature

Benefits delivered

Temperature of condensate recovered to feedwater tank >90°C (>194°F)

Condensate recovery factor improvement 25%

Fuel savings 350 Kilograms (772 Pounds) per day i.e. 122,500 Kilograms (270K Pounds) per year

Water savings 8,820 Tonnes (2.3 million Gallons) per year

Annual monetary savings THB 2,520,081 (~USD 79,162 *converted based on exchange rate)

