

Beverage to fuel ratio improved by 34% for a beverage MNC

 Malaysia

 Beverage

Problem

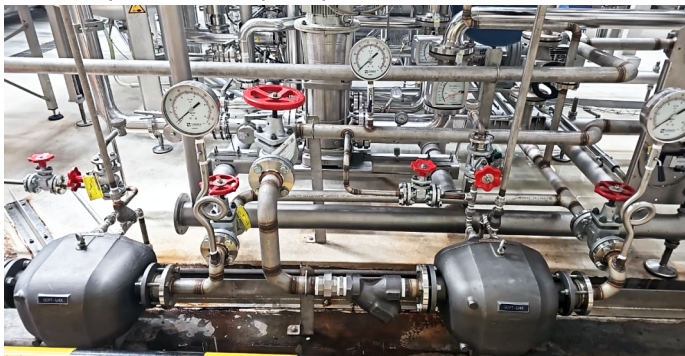
An aerated beverage MNC in Negeri Sembilan, Malaysia was facing several issues with its steam and condensate system. Six Warmers were experiencing pressure and temperature fluctuations and were running at reduced RPM (revolutions per minute). The pasteuriser was facing temperature variations and reduced throughput. Condensate recovery factor was 55% and flash steam was being vented.

Solution

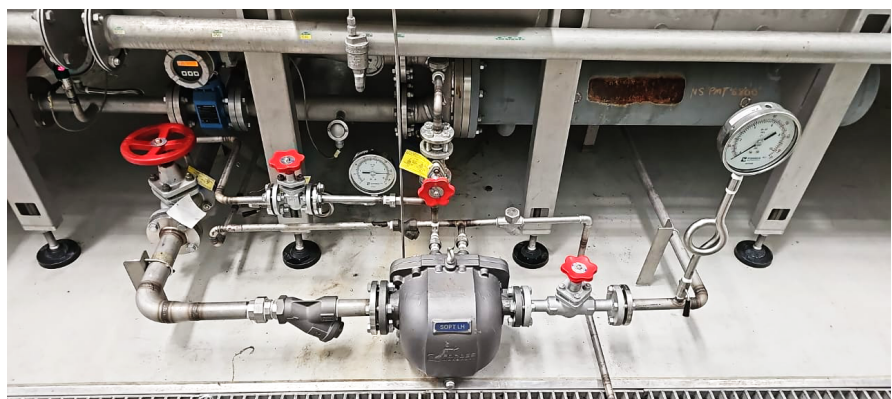
Forbes Marshall conducted a detailed plant study. We recommended and implemented the following at 6 production lines:

- Replaced the float trap with a steam-operated pump trap (SOPT) for all six Warmers. This enables achieving consistent pressure and temperature while running at Rated RPM.
- Replaced the float traps with steam-operated pump traps (SOPT) at the Pasteuriser. To keep the trap bypass valve closed, ensuring no steam loss. Enabling maintaining consistent temperature while running at rated throughput.
- Replaced the condensate collection tank and electrical pumps with six FlashJet™ Pumps (FJP). The FJP is compact, saves space and consumes zero electricity while ensuring 100% flash steam is recovered. Condensate is recovered at 100°C (212°F) as against 80°C (212°F) previously.
- Installed two steam flow meters.

Steam-Operated Pump Traps at the Pasteuriser



Steam-Operated Pump Trap at the Warmer



FlashJet™ Pumps (FJP) at 6 production lines



Benefits delivered

	Before	After	Savings per month
Average fuel consumption (per month)	16596 MMBtu	15809 MMBtu	787 MMBtu i.e. 4.7% decrease
Average makeup water to boiler (per day)	5.8 m ³ (1,532 Gallons)	2.4 m ³ (634 Gallons)	3.4 m ³ (898 Gallons) i.e. 58% decrease
Beverage to fuel ratio	91 Litres/sm ³ of natural gas (0.68 Gallons/ SCF gas)	122 Litres/sm ³ of natural gas (0.91 Gallons/ SCF gas)	31 Litres/sm ³ of natural gas (0.23 Gallons) i.e. 34% increase
Condensate recovery	55%	95%	40% increase
Flash steam recovery	0%	100%	100% increase
Carbon footprint reduction (per year)		671,458 Kilograms (1.48 million Pounds)	
Annual monetary savings		USD 133,610 (~MYR 563,901* *converted based on the exchange rate)	

