Low cost improvements for breweries

Cost saving measures, productivity enhancements and optimisation opportunities for brewers

TASK	SUB-TASK/DETAIL	COMPLETE?
Measure energy intensity	A. Calculate the energy required per hL of beer produced	
	B. Get relevant utilities bills production output	
	C. Use of Energy benchmarking tool	
	D. Refer to benchmarking for optimal energy intensity and cost saving opportunity	
Basic energy saving maintenance	A. Conduct energy awareness training for staff to be efficient energy users	
	B. Switch off equipment to when not in use either manually or programmed	
	C. Check for leaking utilities (steam/air/CO2/glycol)	
	D. Check insulation is in good condition on pipes and equipment	
	E. Implement appropriate scheduling to regularly perform basic energy maintenance	
	F. Regular inspection of steam traps and safety valves for correct operation	
Steam Boiler operations	A. Measure and monitor the boiler efficiency	
	B. Check your boiler is operating at the optimum efficacy according to OEM specifications	
	C. Check your steam distribution system is at optimised pressure	
	D. Check the boilers are operated under strict boiler water quality controls	
	E. Optimise boiler blow down and cycle rates	
	F. Ensure annual maintenance and cleaning has been undertaken	
	G. Check condensate is recovered and at a target 95% recovery	
Mash Tun	A. Optimise malt transfer and conveying to reduce damage to malt and dust creation	
	B. Ensure mash strike temperature is as high as it can be	
	C. Target mash in temperature without the need for live steam	
Kettle **heat recovery opportunity (webinar)*	A. Optimise boil time for gravity and do not adjust post-boil	
	B. Measure and monitor the kettle evaporation regularly	
	C. Check variability with kettle evaporation is within 1%	
	D. Check evaporation rate is averaging 4% or lower over consecutive brews	
	E. Calculate hop utilisation	
	F. Further optimise boil times for hop utilisation and volatile removal	
Wort Cooler	A. Measure and monitor the wort cooler hot water ratio	
	B. Check this ratio is less than 1:1	
	C. Check the heat exchanger efficiency is known and +95%	
	D. Ensure the efficiency increases post wort cooler CIP	
	E. Inspect the plates annually for damage/fouling	
	F. Check the hot water regularly for wort contamination	
Hot water storage	A. Check the temperature of the hot water storage tank is as low as possible	
	B. Check the hot water make up from wort cooler is at target temperature	
	C. Ensure the hot water tank requires minimal to no live steam to maintain temperature	

Refrigeration **heat recovery opportunity (webinar)*	A. With multiple compressors ensure control philosophy uses a sequencing procedure	
	B. Undertake a site refrigerant energy balance been to measure overall loads	
	C. Check the secondary refrigerant regularly for contamination i.e glycol density	
	D. Ensure all refrigeration lines have been insulated	
Clean in place / out of place	A. Check temperatures are at target and do not overshoot and run too high	
	B. Check hot water volume does not exceed <80°C	
	C. Recover and reuse hot water where possible	
Fermentation	A. Avoid crash cooling and cool fermentations tanks at a steady state such as 1°C/hr	