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15-Point Steam Health Self-Audit Checklist

Objective: Quickly assess the operational efficiency, safety, and reliability of your plant's steam system.

Section	Checkpoint	Ask Yourself / Verify	Impact if Not OK	Remark "Yes" or "No"
Boiler Operation	Stack Temperature	Is your stack temperature within $\pm 10^{\circ}\text{C}$ of design?	Each $+20^{\circ}\text{C}$ rise $\approx -1\%$ efficiency	
	O ₂ Level	Is O ₂ maintained at 3–4% (oil/gas) or 5–6% (solid fuel)?	Excess air = fuel wastage	
	Blowdown Rate	Is blowdown 2–3% (with recovery)?	Every $+1\%$ BD $\approx -0.25\%$ efficiency loss	
	Feedwater Temperature	Is feedwater $\geq 85^{\circ}\text{C}$ (with deaeration)?	Cold feed \rightarrow higher fuel use	
	Fuel-to-Steam Ratio	Is actual kg fuel/kg steam within design $\pm 3\%$?	Indicates combustion or load issues	
	Water Treatment	TDS in Boiler Water	Is TDS within OEM limits?	Scaling \rightarrow heat transfer loss





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	Condensate Recovery	Is $\geq 60\%$ of condensate being returned?	Each 10% lost = +1% fuel cost	
	Softener/DM System	Are regenerations done as per hardness levels?	Poor quality water \rightarrow tube scaling	
Steam Distribution	Steam Trap Health	Has every trap been tested in last 6 months?	15–20% traps typically fail silently	
	Flash Steam Recovery	Is flash steam recovered or vented?	Lost flash = latent heat loss	
	Insulation Condition	Are steam lines & valves fully insulated ($\leq 5\%$ loss)?	Bare valves = 3–5% line loss	
Condensate Return	Condensate Temp	Is return condensate $\geq 80^{\circ}\text{C}$?	Indicates healthy heat recovery	
	Condensate Pump Operation	Are pumps auto-controlled (no continuous overflow)?	Constant overflow = waste	
Controls & Monitoring	Burner Tuning / O_2 Trim	Was burner tuned or O_2 trim	O_2 drift \rightarrow efficiency loss	





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		checked in last quarter?		
	Data Trending	Do you log stack temp, O ₂ , BD%, and steam load weekly?	No data → invisible inefficiency	

Steam Insight Series – Week 1
SEACPL × Cheema Boilers Limited
Engineering Partnerships that Power Industry

Share your Checklist on email: jaydip.gandhi@gmail.com



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