

Steam Efficiency Ideas

For businesses

Business
Resource Efficiency 

City West Water's award winning steam system efficiency program identified a number of common measures to improve steam system efficiency.

Steam is used widely in many industries and manufacturing processes as a heat source and for cleaning and sterilisation.

Steam systems are commonly found in manufacturing, food refining and meat processing, in commercial laundries and in hospitals. In the food, paper and cardboard manufacturing sectors, steam systems can account for over half the total energy use.

Heating water to create steam uses vast amounts of water and energy. Producing steam efficiently can help reduce water and energy consumption and carbon pollution, reducing costs.



Need more help?

For more advice on improving boiler and steam efficiency, speak to your Resource Management Consultant, and ask how you can access free water meters through the WaterMAP program.

Visit citywestwater.com.au/business/steam_efficiency.aspx

These nine tips to improve your steam system efficiency were common items identified as part of steam system audits undertaken by City West Water with its customers. Businesses contemplating implementing any of these measures should consult a qualified boiler professional before taking action.

Tips to improve steam system performance include:

- 01 Check pipes and connections regularly for steam trap failure and steam leaks**
Steam trap failure and leaks in pipes and connections can cause large losses of energy. A regular steam trap management program can help identify problems early and prevent large energy losses. Use steam trap leak detection equipment for self-monitoring.
- 02 Ensure steam delivery pipes and valves are adequately insulated to conserve heat**
Better insulation will not only conserve heat but also prevent burns and increase awareness for occupational health and safety.
- 03 Keep flue gas temperature low and minimise excess air and combustibles in boiler combustion**
Install a boiler and burner management system to maximise fuel efficiency and optimise boiler performance.
- 04 Automate blowdown and minimise flash steam**
Use automated blowdown controls that are based on conductivity or total dissolved solids (TDS) rather than those based on time to ensure blowdown is only performed when required.
- 05 Recover heat from flash steam created during blowdown**
Install either a flash vessel or heat exchanger to recover waste heat. Waste heat can be used for heating boiler make-up water and other low pressure steam applications.
- 06 Optimise boiler start up and shut down procedures**
Simple procedural and behavioural changes can often lead to improvements with significant savings and needing little or no capital investment. An example is isolating the main steam lines from the boiler during shut down to maintain boiler pressure and temperatures. This can minimise your gas usage, start-up time and ultimately reduce energy costs and greenhouse gas emissions. Refer to the case study featuring Victoria Wool Processors at citywestwater.com.au/business/steam_efficiency.aspx
- 07 Eliminate (where possible) direct steam applications**
Condensate that is collected after a direct steam process is contaminated. Install a heat exchanger, jacket or a secondary heating loop to prevent contamination and maximise condensate return to the boiler.
- 08 Improve water treatment and consider boiler water pre-conditioning**
The quality of boiler feedwater can affect blowdown requirements, heat transfer and contaminant carryover into steam. Invest in low energy and cost effective treatment systems to improve feedwater quality to increase overall boiler efficiency.
- 09 Maximise the return of condensate to the boiler**
Collect condensate from steam traps and return it back to the boiler. This will eliminate the need to re-heat and treat make-up water, saving energy and saving on use of water treatment chemicals.

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