



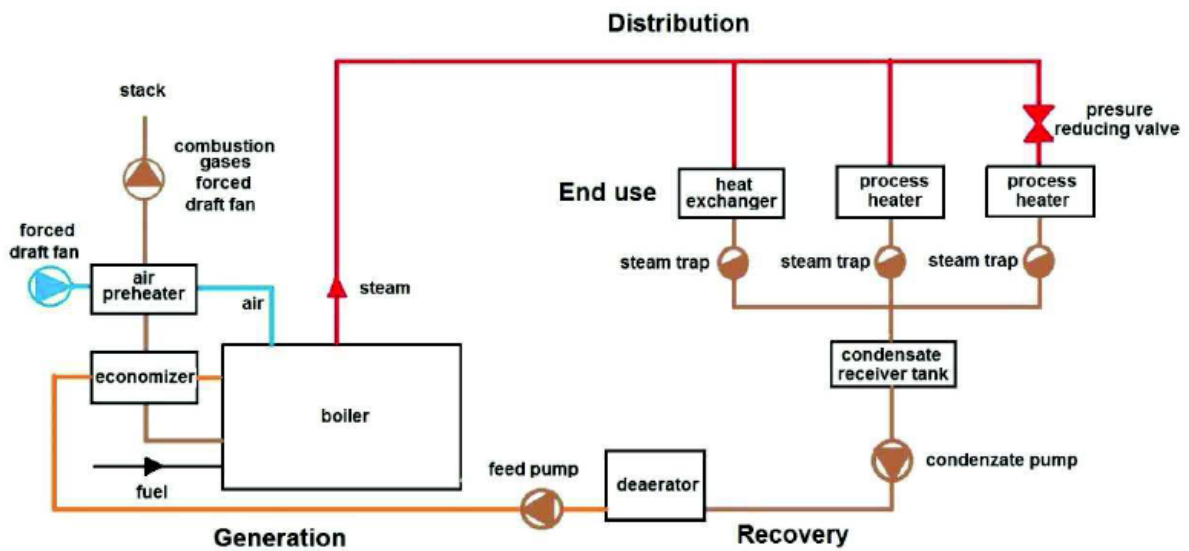
List of Steam measures

Measure description	Investment	Non Energy Benefits	
		Multiply factor	Pay Back Time including NEB's
Steam generation	Pay Back Time generic		
Install economizer and/or air preheater	2,78	1,30	2,14
Minimize excess air (oxygen rate sensor)	1,70	1,30	1,31
Clean boiler heat transfer surfaces	1,28	1,40	0,92
Improve water treatment to minimize boiler blowdown	1,26	1,40	0,90
Install an automatic boiler blowdown controller	1,73	1,50	1,16
Recover energy from boiler blowdown	3,21	1,20	2,68
Add steam accumulator	1,39	1,40	0,99
Optimize deaerator operations	0,27	1,40	0,19
Investigate fuel switching		1,10	
Minimize the number of operating boilers	0,00	1,40	0,00
Install variable speed control for fans, blowers and pumps	1,88	1,50	1,25
Repair or add boiler insulation (incl. feed water tank)	1,28	1,30	0,99
Low Nox burner	2,00	1,40	1,43
Combined heat and power unit	1,88	1,50	1,25
Install a steam generator	1,01	1,30	0,78
Steam distribution			
Repair steam leaks	0,20	1,50	0,13
Minimize vented steam	1,44	1,50	0,96
Ensure that steam system piping, valves, fittings, and vessels are well insulated	0,30	1,50	0,20
Implement an effective steam trap maintenance programme	1,02	1,50	0,68
Isolate steam from unused lines	4,09	1,50	2,73
Utilize backpressure turbines instead of pressure reducing valves	4,16	1,50	2,77
Drain condensate from steam distribution	2,23	1,50	1,49
Check if distribution lines used are optimized for the current steam use	8,11	1,50	5,41
Check no. and location of steam traps and detect lack/excess of steam traps	0,30	1,50	0,20
Steam end use			
Eliminate or reduce the amount of steam used by process	1,99	1,20	1,66
Use steam at as low pressure as possible	0,00	1,50	0,00
Check that heat flows in each specific process are exchanged to optimize the use of heat	0,83	1,30	0,64
Condensate recovery			
Implement an effective steam-trap management	0,25	1,50	0,17
Recover as much as possible of available condensate	2,86	1,40	2,04
Recover condensate at the highest possible thermal energy	2,50	1,50	1,67
Flash high pressure condensate to make low pressure steam	1,60	1,30	1,23



FACTSHEET

Steam Efficiency: Measures



The measures apply 4 phases of the steam process: steam generation.