Boiler House Auxiliary Energy per Tonne of Steam (Period Totals)

Auxiliary power consumption of a boiler house in kWh per tonne of steam from feed pump, fan and other energy, with the shares and the power cost per tonne.

Method: Energy audit definitions (auxiliary energy per unit output)

Input parameters

Unit system: SI

Parameter	Value	Unit
Feed pump energy in the period	2,400.0	kWh
Fan energy (FD, ID, PA, SA) in the period	3,000.0	kWh
Other auxiliaries (fuel and ash handling, water treatment, lighting)	1,100.0	kWh
Steam generated in the period	200.00	t
Electricity price per kWh (your currency)	8.0000	

Calculated results

Parameter	Value	Unit
Auxiliary power per tonne of steam	32.500	kWh/t
Power cost per tonne of steam (your currency)	260.00	
Total auxiliary energy	6,500.0	kWh
Share of feed pumps	36.923	%
Share of fans	46.154	%

Formula and method

$$E = E_{fw} + E_{fan} + E_o \qquad SPC = \frac{E}{m_s} \qquad C_t = SPC \cdot c_e \qquad s_{fw} = \frac{E_{fw}}{E} \qquad s_{fan} = \frac{E_{fan}}{E}$$

Variables

E_{fw}	feed pump energy	J
E_{fan}	fan energy	J
E_o	other auxiliary energy	J
m_s	steam generated	kg
c_e	electricity price per kWh	–
SPC	auxiliary energy per unit of steam	J/kg
C_t	power cost per tonne of steam	–
E	total auxiliary energy	J
s_{fw}	feed pump share	–
s_{fan}	fan share	–

Method and standards

Energy audit definition of specific auxiliary consumption; shown in kWh per tonne (1 kWh/t = 3.6 kJ/kg).

Assumptions and limits

- Energy and steam totals for the same period.

References

- Energy audit definitions (auxiliary energy per unit output)

Report details

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Release checks	3 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/boilers-power-plant/plant-performance/specific-power-consumption-steam

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.