Boiler Banking (Hot Standby) Fuel Loss

Fuel burnt to keep a boiler banked (hot standby) from the full-load heat input, the standing loss share, the banked hours and the fuel calorific value.

Method: Energy balance definitions; standing loss from a site measurement of fuel burnt while banked

Input parameters

Unit system: SI

Parameter	Value	Unit
Full-load heat input	25.000	MW
Standing loss (share of full-load input)	3.0000	%
Hours banked	1,000.0	h
Fuel GCV	23,000	kJ/kg
Fuel price per tonne	9,000.0	

Calculated results

Parameter	Value	Unit
Energy lost	2,700.0	GJ
Fuel burnt	117.39	t
Cost	1,056,522	

Notes for this case

- Measure the standing loss by the fuel burnt over a banked period; insulation and closed dampers lower it.

Formula and method

$$E = \dot{Q}_{100}\, l\, t, \quad M = \frac{E}{GCV}, \quad C = \frac{M}{1000\ \mathrm{kg/t}}\, c$$

Variables

$\dot{Q}_{100}$	Full-load heat input	W
l	Standing loss (share of full-load input)	-
t	Hours banked	s
GCV	Fuel GCV	J/kg
c	Fuel price per tonne	-
E	Energy lost	J
M	Fuel burnt	kg
C	Cost	-

Method and standards

Definitions. The standing loss has no general published value; measure it as the fuel burnt over a banked period divided by the full-load fuel rate.

Assumptions and limits

- Constant loss. The input is capped at 20 % of full-load input as a plausibility limit; real standing losses are a few per cent with dampers closed.

References

- Energy balance definitions; standing loss from a site measurement of fuel burnt while banked

Report details

Report reference	FCC-WNR2-MBAA (the same inputs always give the same reference)
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Calculator	Boiler Banking (Hot Standby) Fuel Loss
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Release checks	2 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/boilers/boiler-banking-loss

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.