Steam Trap Survey: Annual Loss from Failed Traps

Annual steam and money lost from failed-open and leaking steam traps found in a survey, from counts, loss per trap, hours and steam cost.

Method: Loss = Σ n × loss rate × hours

Input parameters

Unit system: SI

Parameter	Value	Unit
Traps failed open (blowing)	12.000	
Loss per failed-open trap From an orifice estimate at the line pressure or the trap maker.	25.000	kg/h
Traps leaking	20.000	
Loss per leaking trap	6.0000	kg/h
Hours per year	8,000.0	h
Steam cost per tonne	2,500.0	
Repair or replacement cost per trap	9,000.0	

Calculated results

Parameter	Value	Unit
Steam lost per year	3,360.0	t
Cost per year	8,400,000	
Payback of repairs (months)	0.41143	

Notes for this case

- Survey a few times a year; trap failures typically run at several per cent of the population annually.

Formula and method

$$m = (n_f \dot{m}_f + n_l \dot{m}_l) t, \quad C = \frac{m}{1000}\, c, \quad t_{pb} = \frac{12\,(n_f + n_l)\, C_r}{C} \text{ months}$$

Variables

n_f	Traps failed open (blowing)	-
$\dot{m}_f$	Loss per failed-open trap	kg/s
n_l	Traps leaking	-
$\dot{m}_l$	Loss per leaking trap	kg/s
t	Hours per year	s
c	Steam cost per tonne	-
C_r	Repair or replacement cost per trap	-
m	Steam lost per year	kg
C	Cost per year	-
t_{pb}	Payback of repairs (months)	-

Method and standards

Sum of losses.

Assumptions and limits

- Average loss rates; the steam cost c is per tonne, so the mass in kg is divided by 1 000.
- With no cost lost, the payback is not shown.

References

- Loss = Σ n × loss rate × hours

Report details

Report reference	FCC-K28Y-29WJ (the same inputs always give the same reference)
Generated	17 November 2026, 19:50 UTC
Calculator	Steam Trap Survey: Annual Loss from Failed Traps
Method last reviewed	12 November 2026
Software release	FireCAD Calc, release of 17 November 2026
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/environmental/carbon-energy/steam-trap-survey-loss

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.