Simple Payback and Return on Investment

Simple payback period, return on investment and lifetime net saving of an energy or plant improvement from its cost, annual saving and life.

Method: Payback = I/(S − C); ROI = (S − C)/I

Input parameters

Unit system: SI

Parameter	Value	Unit
Investment	1,200,000	
Annual saving	450,000	
Extra annual running cost	30,000	
Life (years)	10.000	

Calculated results

Parameter	Value	Unit
Net annual saving	420,000	
Simple payback (years)	2.8571	
Simple return (net saving / investment)	35.000	%
Lifetime net gain	3,000,000	

Notes for this case

- Simple payback ignores the time value of money; see discounted payback and NPV.

Formula and method

$$t_{pb} = \frac{I}{S - C_{om}}, \quad ROI = \frac{S - C_{om}}{I}$$

Variables

I	Investment	-
S	Annual saving	-
C_{om}	Extra annual running cost	-
n	Life (years)	-
S_n	Net annual saving	-
t_{pb}	Simple payback (years)	-
ROI	Simple return (net saving / investment)	-
N	Lifetime net gain	-

Method and standards

Definitions.

Assumptions and limits

- Constant savings.
- With a net saving of zero or less the project never pays back and no payback period is shown.

References

- Payback = I/(S − C); ROI = (S − C)/I

Report details

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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/general/economics/simple-payback-roi

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.