Equivalent Annual Cost: Comparing Options with Different Lives

Equivalent annual cost of two equipment options with different capital costs, running costs, lives and salvage values, to compare them fairly.

Method: EAC = C·CRF − S·SFF + O (engineering economics, annual worth method)

Input parameters

Unit system: SI

Parameter	Value	Unit
Option A capital cost	1,500,000	
Option A annual running cost	600,000	
Option A life (years)	8.0000	
Option A salvage	100,000	
Option B capital cost	2,600,000	
Option B annual running cost	420,000	
Option B life (years)	15.000	
Option B salvage	200,000	
Discount rate	10.000	%

Calculated results

Parameter	Value	Unit
Option A equivalent annual cost	872,422	
Option B equivalent annual cost	755,537	
Cheaper option (1 = A, 2 = B)	2.0000	

Notes for this case

- Assumes each option is replaced like for like at the end of its life.

Formula and method

$$EAC = C\frac{i(1+i)^n}{(1+i)^n-1} - S\frac{i}{(1+i)^n-1} + O$$

Variables

C_A	Option A capital cost	-
O_A	Option A annual running cost	-
n_A	Option A life (years)	-
S_A	Option A salvage	-
C_B	Option B capital cost	-
O_B	Option B annual running cost	-
n_B	Option B life (years)	-
S_B	Option B salvage	-
i	Discount rate	-
EAC_A	Option A equivalent annual cost	-
EAC_B	Option B equivalent annual cost	-
best	Cheaper option (1 = A, 2 = B)	-

Method and standards

Annual worth.

Assumptions and limits

- Like-for-like replacement.
- At a zero discount rate EAC = (C − S)/n + O.

References

- EAC = C·CRF − S·SFF + O (engineering economics, annual worth method)

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/general/economics/equivalent-annual-cost

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.