Specific Energy Consumption and Saving against a Baseline

Specific energy consumption (energy per unit of product) for a baseline and current period, the improvement and the energy saved at current production.

Method: SEC = energy/production; saving = $(SEC_0 - SEC_1) \times P_1$ (ISO 50006 EnPI principle)

Input parameters

Unit system: SI

Parameter	Value	Unit
Baseline energy	520,000	GJ
Baseline production	100,000	
Current energy	540,000	GJ
Current production	112,000	

Calculated results

Parameter	Value	Unit
Baseline SEC (energy per unit of product)	5.2000	GJ
Current SEC (energy per unit of product)	4.8214	GJ
Improvement	7.2802	%
Energy saved at current production	42,400	GJ

Notes for this case

- Normalise for weather, product mix and capacity use before claiming savings (ISO 50006 energy baselines).

Formula and method

$$SEC = \frac{E}{P}, \quad E_s = (SEC_0 - SEC_1)P_1$$

Variables

E_0	Baseline energy	J
P_0	Baseline production	-
E_1	Current energy	J
P_1	Current production	-
SEC_0	Baseline SEC (energy per unit of product)	J per unit
SEC_1	Current SEC (energy per unit of product)	J per unit
ΔSEC	Improvement	-
E_s	Energy saved at current production	J

Method and standards

Ratio method.

Assumptions and limits

- Comparable operating conditions; simple ratio method without regression normalisation (ISO 50006 baselines).
- SEC is energy per unit of product in the same energy unit as the inputs.

References

- SEC = energy/production; saving = $(SEC_0 - SEC_1) \times P_1$ (ISO 50006 EnPI principle)

Report details

Report reference	FCC-Z0KA-YS4D (the same inputs always give the same reference)
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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/environmental/carbon-energy/specific-energy-consumption

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.