PV Inverter Weighted Efficiency (European and CEC)

European and Californian (CEC) weighted efficiencies of a PV inverter from its efficiency curve at part loads, the figures used to compare inverters.

Method: European and CEC weighted inverter efficiency

Input parameters

Unit system: SI

Parameter	Value	Unit
Efficiency at 5 % load	92.000	%
Efficiency at 10 % load	95.000	%
Efficiency at 20 % load	97.000	%
Efficiency at 30 % load	97.600	%
Efficiency at 50 % load	97.900	%
Efficiency at 75 % load	97.800	%
Efficiency at 100 % load	97.500	%

Calculated results

Parameter	Value	Unit
European weighted efficiency	97.322	%
CEC weighted efficiency	97.630	%
Peak efficiency of the points entered	97.900	%

Notes for this case

• European weights 0.03/0.06/0.13/0.10/0.48/0.20 at 5/10/20/30/50/100 % load (a cloudy central-European irradiance profile); CEC weights 0.04/0.05/0.12/0.21/0.53/0.05 at 10/20/30/50/75/100 % (sunnier climate). Use efficiencies at the nominal DC voltage.

Formula and method

$$\eta_{EU} = 0.03\eta_5 + 0.06\eta_{10} + 0.13\eta_{20} + 0.10\eta_{30} + 0.48\eta_{50} + 0.20\eta_{100}$$

$$\eta_{CEC} = 0.04\eta_{10} + 0.05\eta_{20} + 0.12\eta_{30} + 0.21\eta_{50} + 0.53\eta_{75} + 0.05\eta_{100}$$

Variables

η_5	Efficiency at 5 % load	-
η_{10}	Efficiency at 10 % load	-
η_{20}	Efficiency at 20 % load	-
η_{30}	Efficiency at 30 % load	-
η_{50}	Efficiency at 50 % load	-
η_{75}	Efficiency at 75 % load	-
η_{100}	Efficiency at 100 % load	-
η_{EU}	European weighted efficiency	-
η_{CEC}	CEC weighted efficiency	-
η_{max}	Peak efficiency of the points entered	-

Method and standards

Weighted inverter efficiency.

Assumptions and limits

- Weights fixed by convention; one DC voltage.

References

European and CEC weighted inverter efficiency

Report details

Report reference	FCC-CX76-MMWB (the same inputs always give the same reference)
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Calculator	PV Inverter Weighted Efficiency (European and CEC)
Method last reviewed	17 November 2026
Software release	FireCAD Calc, release of 22 November 2026
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/electrical/solar-pv/inverter-weighted-efficiency

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.