Power Unit Converter (kW, hp, kcal/h, Btu/h, TR)

Convert power and heat duty between watts, kilowatts, megawatts, kcal/h, Btu/h, MMBtu/h, mechanical and metric horsepower and tons of refrigeration.

Method: NIST SP 811 (2008); Appendix B conversion factors

Input parameters

Unit system: SI

Parameter	Value	Unit
Power (choose its unit)	100.00	kW

Calculated results

Parameter	Value	Unit
watt	100,000	W
kilowatt	100.00	kW
megawatt	0.10000	MW
kilocalorie per hour	85,985	kcal/h
megacalorie per hour	85.985	Mcal/h
Btu per hour	341,214	Btu/h
million Btu per hour	0.34121	MMBtu/h
horsepower (mechanical, 550 ft·lbf/s)	134.10	hp
metric horsepower (PS)	135.96	hp (metric)
ton of refrigeration (12 000 Btu/h)	28.435	TR

Notes for this case

• Mechanical horsepower is 745.70 W; metric horsepower (PS) is 735.50 W; electrical horsepower is 746 W exactly (134.048 hp electrical, 0.04 % fewer than mechanical). Boiler horsepower is a steaming rate: see the boiler rating converter.

Formula and method

$$1\ \text{kW} = 859.845\ \text{kcal/h} = 3412.14\ \text{Btu/h}$$

$$1\ \text{hp} = 745.70\ \text{W}, \quad 1\ \text{TR} = 12\,000\ \text{Btu/h} = 3516.85\ \text{W}$$

Variables

P	Power (choose its unit)	W

Method and standards

Exact or defined factors from NIST SP 811.

Assumptions and limits

- Boiler horsepower is a steaming rate: use the boiler rating converter.

References

• NIST SP 811 (2008)
• Appendix B conversion factors

Report details

Report reference	FCC-J58X-YPFA (the same inputs always give the same reference)
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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/unit-conversions/power-unit-converter

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.