Specific Fuel Consumption Converter (g/kWh, lb/hp·h, L/kWh)

Convert engine or generator specific fuel consumption between g/kWh, lb/(hp·h), kg/kWh and L/kWh, with the efficiency and heat rate it implies.

Method: Unit definitions per NIST SP 811 and the SI Brochure (exact where defined); Heat rate = SFC × NCV

Input parameters

Unit system: SI

Parameter	Value	Unit
Specific fuel consumption (choose its unit)	210.00	g/kWh
Net calorific value of the fuel	42,700	kJ/kg
Fuel density (for the volume figure)	840.00	kg/m³

Calculated results

Parameter	Value	Unit
SFC in g/kWh	210.00	g/kWh
SFC in lb/(hp·h)	0.34524	lb/(hp·h)
Volume consumption	0.25000	L/kWh
Fuel-to-power efficiency on NCV	40.147	%
Heat rate on NCV	8,967.0	kJ/kWh

Notes for this case

• Specific fuel consumption times the net calorific value is the heat rate; its reciprocal is the efficiency. 210 g/kWh of diesel at 42.7 MJ/kg is 8,967 kJ/kWh, 40.1 %. Engine data sheets quote SFC at the crankshaft (per kW mechanical); generator sets per kWe, which includes the alternator loss.

Formula and method

$$HR = SFC \cdot NCV, \quad \eta = \frac{1}{SFC \cdot NCV}, \quad SFC_v = \frac{SFC}{\rho}$$

Variables

SFC	Specific fuel consumption (choose its unit)	kg/J
NCV	Net calorific value of the fuel	J/kg
ρ	Fuel density (for the volume figure)	kg/m³
SFC_v	Volume consumption	m³/J
η	Fuel-to-power efficiency on NCV	-
HR	Heat rate on NCV	J/J

Method and standards

Specific fuel consumption.

Assumptions and limits

- Mass-based SFC; NCV basis.

References

Unit definitions per NIST SP 811 and the SI Brochure (exact where defined), Heat rate = SFC × NCV

Report details

Report reference	FCC-MWGQ-WSQS (the same inputs always give the same reference)
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Calculator	Specific Fuel Consumption Converter (g/kWh, lb/hp·h, L/kWh)
Method last reviewed	17 November 2026
Software release	FireCAD Calc, release of 22 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/unit-conversions/specific-fuel-consumption-converter

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.