Hydrogen Fleet Demand, Electrolyser Size and Storage

Daily hydrogen demand of a fuel cell vehicle fleet, the electrolyser power to make it in the available hours, and the storage to cover days without production.

Method: Fleet hydrogen balance

Input parameters

Unit system: SI

Parameter	Value	Unit
Vehicles	20.000	
Distance per vehicle per day	250.00	km
Hydrogen use per 100 km (kg)	8.0000	
Electrolyser system specific energy	55.000	kWh/kg
Electrolyser operating hours per day	20.000	h
Days of storage	2.0000	

Calculated results

Parameter	Value	Unit
Hydrogen per day	400.00	kg
Electrolyser power	1.1000	MW
Electricity per day	22.000	MWh
Hydrogen storage	800.00	kg

Notes for this case

- Daily hydrogen = N·d·c/100; electrolyser power = m_d·e/t_op. Compression, dispensing losses and refuelling peaks need extra storage and margin.

Formula and method

$$m_d = \frac{Ndc}{100}, \quad P_e = \frac{m_d e}{t_{op}}$$

Variables

N	Vehicles	-
d	Distance per vehicle per day	m
c	Hydrogen use per 100 km (kg)	-
e	Electrolyser system specific energy	J/kg
t_{op}	Electrolyser operating hours per day	s
t_s	Days of storage	-
m_d	Hydrogen per day	kg
P_e	Electrolyser power	W
E_d	Electricity per day	J
m_s	Hydrogen storage	kg

Method and standards

Fleet hydrogen balance.

Assumptions and limits

- Daily average demand.

References

Fleet hydrogen balance

Report details

Report reference	FCC-2SRJ-FFMY (the same inputs always give the same reference)
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Calculator	Hydrogen Fleet Demand, Electrolyser Size and Storage
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/environmental/hydrogen-fuel-cells/hydrogen-fleet-electrolyser-sizing

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.