Levelised Cost of Electrolytic Hydrogen (LCOH)

Levelised cost of hydrogen from electrolyser capital and operating cost, capacity factor, specific energy and electricity price, with a breakdown per kg.

Method: Levelised cost with a capital recovery factor

Input parameters

Unit system: SI

Parameter	Value	Unit
Electrolyser rating	100.00	MW
Installed cost (currency per kW)	1,000.0	
Fixed O&M (fraction of capital cost per year)	3.0000	%
Discount rate	8.0000	%
Economic life (years)	20.000	
Capacity factor	50.000	%
System specific energy	55.000	kWh/kg
Electricity price (currency per kWh)	0.030000	

Calculated results

Parameter	Value	Unit
Capital recovery factor	10.185	%
Hydrogen per year	7,963.6	t
Capital cost per kg	1.2790	
O&M cost per kg	0.37671	
Electricity cost per kg	1.6500	
Levelised cost of hydrogen per kg	3.3057	

Notes for this case

• LCOH = (CRF·C + O&M)/m_H₂ + c_e·e, CRF = i(1 + i)ⁿ/[(1 + i)ⁿ − 1]. Stack replacement, water, compression and storage are not included; add them as extra O&M or capital. At 55 kWh/kg each 0.01 per kWh of electricity adds 0.55 per kg.

Formula and method

$$LCOH = \frac{CRF \cdot C + f_{O\&M} C}{m_{H_2}} + c_e e, \quad CRF = \frac{i(1+i)^n}{(1+i)^n - 1}$$

Variables

P	Electrolyser rating	W
C_{cap}	Installed cost (currency per kW)	-
$f_{O\&M}$	Fixed O&M (fraction of capital cost per year)	-
i	Discount rate	-
n	Economic life (years)	-
CF	Capacity factor	-
e	System specific energy	J/kg
c_e	Electricity price (currency per kWh)	-
CRF	Capital recovery factor	-
m_{H_2}	Hydrogen per year	kg

c_{cap}	Capital cost per kg	-
$c_{O\&M}$	O&M cost per kg	-
c_{el}	Electricity cost per kg	-
$LCOH$	Levelised cost of hydrogen per kg	-

Method and standards

Levelised cost of hydrogen.

Assumptions and limits

- Constant prices; no taxes, subsidies or inflation.

References

Levelised cost with a capital recovery factor

Report details

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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/environmental/hydrogen-fuel-cells/levelised-cost-of-hydrogen

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.