



SOLID OXIDE ELECTROLYZER

SOEC

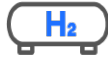


Background

FuelCell Energy's Solid Oxide Electrolyzer Cell (SOEC) is designed to produce hydrogen at 90 percent electrical efficiency and can reach 100 percent efficiency when using excess heat. The module's compact design and quiet operation makes it easy to site near energy sources. To complement renewables and optimize hydrogen production, the plant is designed to rapidly ramp up and down to follow changes in energy supply and consumer demand. The hydrogen produced can be stored long-term and transported, allowing energy from wind, solar, and nuclear to be available on demand.



H₂ From Curtailed Renewable or Nuclear Power



Energy Storage



H₂ for Mobility



H₂ for Pipeline Injection



Repowering



H₂ for Ammonia or Other Products

Specifications subject to change without notice. All specifications quoted at initial operation.

Hydrogen

Production Rate _____ ~600 kg/day

Pressure _____ 14.7 psia (1 bar(a))*

Performance (With and Without Heat Input)

Efficiency (HHV) With Heat _____ 100%

Electricity Consumption With Heat _____ 39.4 kWh/kg

Efficiency (HHV) No Heat _____ 90%

Electricity Consumption No Heat _____ 43.8 kWh/kg

Efficiency levels are +/- 2%.

Product Composition

H₂ _____ 99% dry basis, by volume

Purification and compression options available.

N₂ _____ ~1% dry basis, by volume

Ramping (Increasing or Decreasing)

0% - 100% load _____ 10% per minute

Optional Customer Steam Supply for Higher Efficiency (Saturated or Superheated)

Recommended Temperature Range _____ 259 - 295 °F (126 - 146 °C)

Recommended Pressure Range _____ 20.0 - 47.1 psig (1,379 - 3,254 mbar)

Recommended Flow Rate Range _____ 340 - 570 lb/hr (154 - 258 kg/hr)

*Optional compression is available and will add 2 to 4 kWh/kg power consumption depending on pressure level.

Module Dimensions (W x L x H)

Width: 8' Length: 40' Height: 10'

Width: 2.43m Length: 12.19m Height: 3.04m

There are two modules in a standard configuration.

Electrical Input

Plant Power Input _____ 1.1 MW

Voltage (3-phase) _____ 480 V (400 V Option)

Frequency _____ 60 Hz (50 Hz Option)

Water

Water Conductivity _____ < 1 µS/cm

Treatment options available for lower quality water.

Nominal Consumption _____ 1 gpm (5,451 SLPD)

Drainage for Maintenance _____ 46 gallons (174 L)

Sound Levels

Standard _____ < 72 db(A) @ 10 Feet (Option < 65)

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