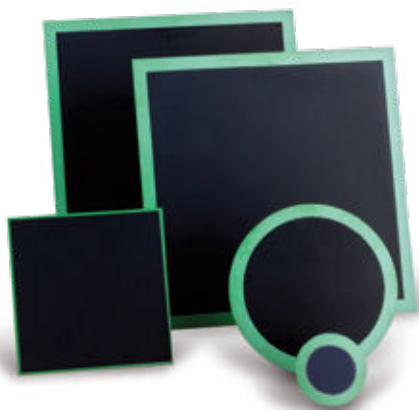


elcogen

World's most efficient solid oxide cells and stacks

Affordable green hydrogen

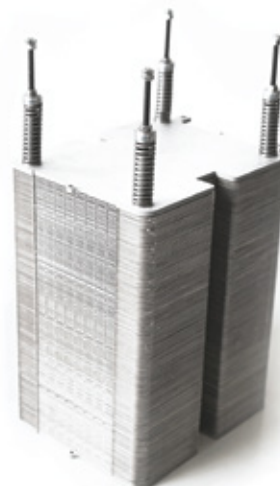
650°C One of the market lowest
operating temperature



elcoCell

Since 2001, Elcogen has been a manufacturer of clean energy technology that delivers affordable green hydrogen and emission-free electricity. We supply flexible, core solid oxide technology that sits at the heart of energy security and transition away from fossil fuels.

75% World record primary
energy conversion efficiency



elcoStack

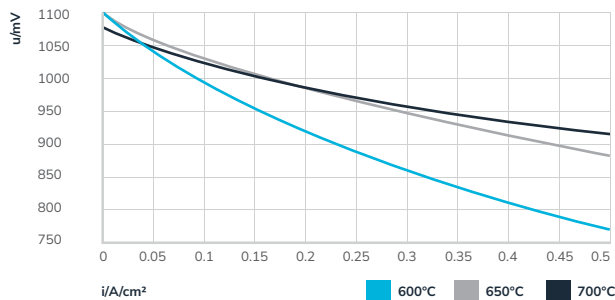
One of the market's lowest operating temperatures of just 650°C mean Elcogen can utilise low-cost materials designed for mass manufacture, while delivering longer system lifetimes. Elcogen has offices in Estonia and Finland and supplies more than 40 customers globally.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 823620

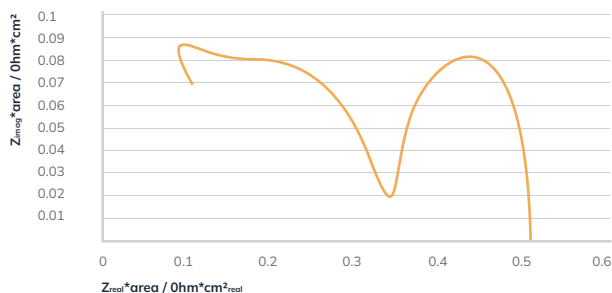
PS-SM-02

Elcogen Single Cell UI curve comparison

Anode feed: H₂902 mlpm; cathode feed: Air 2149 mlpmActive Area: 103.5 cm²; FU=0.2; AU=0.2

EIS at the temperature of 650°C

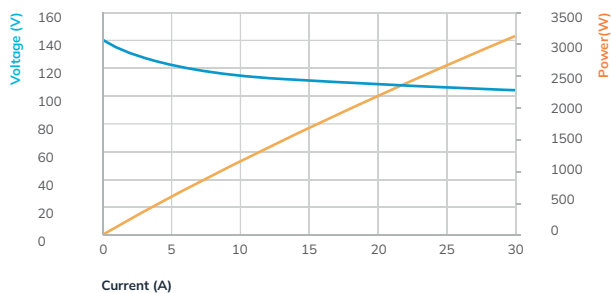
FU=0.4; AU=0.2



Elcogen stack IV-Characteristics

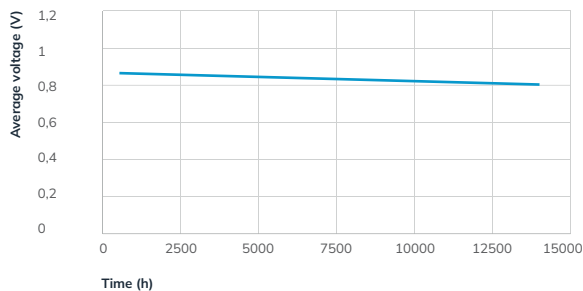
Testing conducted according to IEC 62282-7-2

constant flow rate at 600°C



Longterm stability of Elcogen Stack

Test conditions: Current = 30 A, Fuel = natural gas



Technical data

ASC-300C

ASC-400B

Fuel contact layer	NiO	NiO
Fuel electrode support composition	NiO/YSZ	NiO/YSZ
Fuel electrode functional composition	NiO/YSZ	NiO/YSZ
Electrolyte composition	YSZ	YSZ
Electrolyte thickness	3 or 6 μm	3 or 6 μm
Half-cell thickness	300 μm	400 μm
Half-cell tolerance	$\pm 30 \mu m$	$\pm 40 \mu m$
Barrier composition	GDC	GDC
Oxygen electrode composition	LSC	LSC
Thickness of oxygen electrode	15 μm	15 μm
Total thickness	315 μm	415 μm
Thickness tolerance	$\pm 35 \mu m$	$\pm 45 \mu m$
Suggested operating temp	600–800 °C	600–800 °C
Standard size (cell)	12x12 cm	12x12 cm
Standard size of active area	11x11 cm	11x11 cm
Different sizes available	+	+
Different shapes available	+	+
Half-cells available	+	+
Contact layer of Oxygen electrode available	+	+

Technical data

E1000

E3000

Rated power (DC, beginning of life)	1000 W	3000 W
Number of unit cells	39 pcs	119 pcs
Maximum voltage (OCV, H ₂)	49 V	150 V
Minimum voltage	27 V	81 V
Nominal current	30 A	30 A
Air utilization (nominal current, BoL)	0.25	0.25
Maximum fuel utilization	0.7	0.7
Max. degree of internal reforming	0.65	0.65
Minimum O/C	2.0	2.0
Maximum temperature	720 °C	720 °C
Minimum inlet temperature for air	580 °C	580 °C
Maximum temperature difference	100 °C	100 °C
Maximum working pressure	50 mbar(g)	50 mbar(g)
Maximum pressure difference	10 mbar	10 mbar
Outer dimensions (mm, excl. comp.)	190(W)x315(L)x90(H)	190(W)x230(L)x280(H)
Stack weight (kg)	17	33
Compression	External	External



Affordable green hydrogen

Estonia / elcoCell
Elcogen AS, Valukoja 23
11415 Tallinn, Estonia
+372 634 6750
elcocell@elcogen.com

Finland / elcoStack
Elcogen OY, Niittyvillankuja 4
01510 Vantaa, Finland
+358 10 323 3060
elcostack@elcogen.com

www.elcogen.com