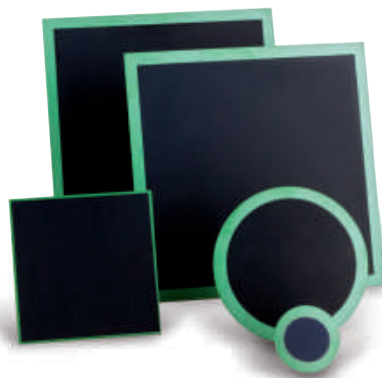


We enable clear sky

Fuel cell technology
elcogen

SOFC TECHNOLOGY NEXT GENERATION

elcoCell



650°C

Market's lowest
operating temperature

74%

World record primary energy
conversion efficiency

500€/kw

Target cost at 1GW
Low cost raw materials,
cost efficient system design

elcoStack



World's most efficient fuel cells and stacks

Since 2001, Elcogen has developed the next generation of fuel cells, delivering the market's most efficient solid oxide cell technology suitable for electrolysis and fuel cell operation, while also addressing key issues around cost, scale and lifetimes.

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 60 customers globally.

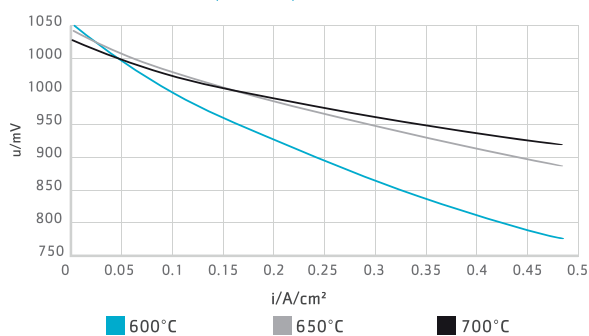
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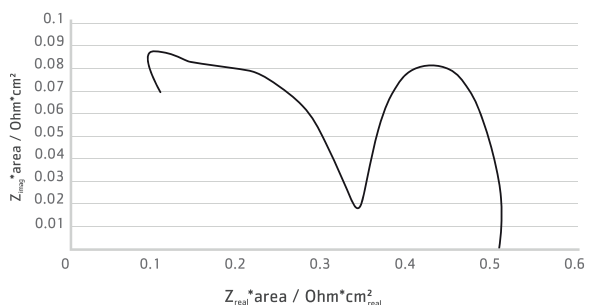
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 823620

SOFC single cells

Elcogen Single Cell UI curve comparison
 Anode feed: H₂ 902 mlpm; cathode feed: Air 2149 mlpm
 Active area: 103.5 cm²; FU=0.2; AU=0.2



EIS at the temperature of 650 °C
 FU=0.4; AU=0.2



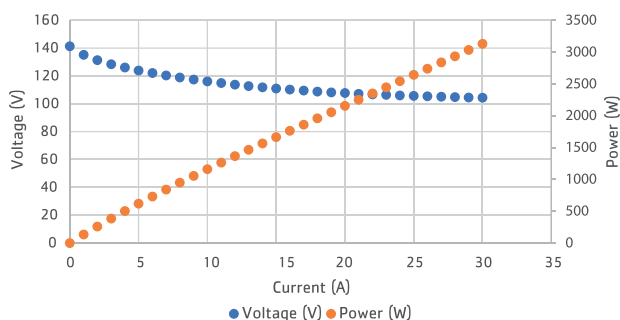
| Technical data | ASC-300C | ASC-400B |
|---------------------------------|------------|------------|
| Anode support composition | NiO/YSZ | NiO/YSZ |
| Anode functional composition | NiO/YSZ | NiO/YSZ |
| Electrolyte composition | YSZ | YSZ |
| Electrolyte thickness | 3 / 6 μm | 3 / 6 μm |
| Half-cell thickness | 300 μm | 400 μm |
| Half-cell tolerance | ±30 μm | ±40 μm |
| Barrier composition | GDC | GDC |
| Cathode composition | LSC | LSC |
| Cathode thickness | 12±5 μm | 12±5 μm |
| Total thickness | 315 μm | 415 μm |
| Thickness tolerance | ±35 μm | ±45 μm |
| Suggested operating temp | 600–750 °C | 600–750 °C |
| Standard size (cell) | 12x12 cm | 12x12 cm |
| Standard size (cathode on cell) | 11x11 cm | 11x11 cm |
| Different sizes available | + | + |
| Different shapes available | + | + |
| Half-cells available | + | + |

✉ estonia@elcogen.com

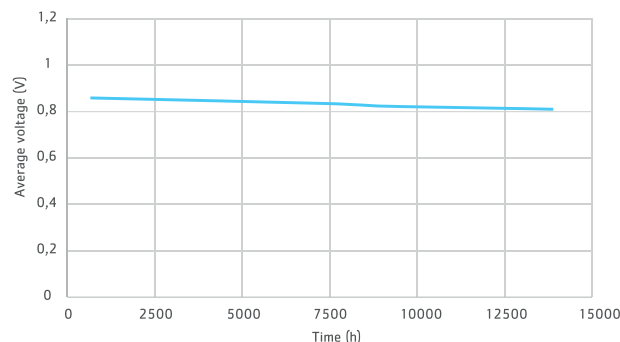
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SOFC stacks

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 | 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 |
| Maximum 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 |

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