SOFC/SOEC STACK TESTING

- Up to 50 kW power range
- For simulation of all requirements for stationary CHP and mobile APU applications
- Extended safety features including LEL hydrogen detector and cabin ventilation
- Fully automated for safe, reliable and unattended operation
- Various top hat furnace designs
- Automatic compression load
- Excellent reliability by included hardware PLC
- Maximum safety according to latest directives
The Evaluator S5-HT is tailored to the needs of complex high temperature stack testing and evaluation. The test station contains all necessary features for reversible SOFC and SOEC testing including gas humidification, flow and temperature control, top hat furnace, safety gas purge and electronic load management. Combined with HORIBA FuelCon’s sophisticated TestWork software, this system provides full adaptability. Using either hydrogen, methane or reformate fuels, the S5-HT is ideally designed for stack and system developers performing initial application studies, duty cycle tests for stationary and APU applications as well as for performance evaluation.

Equipped with various types of electrically heated top hat furnaces and push rod systems to apply controlled compression forces, this test station is ideal for benchmarking stack designs, optimizing production processes and running endurance tests on SOFCs and SOECs.

The integration of several devices from our TrueData line of diagnostic products such as our impedance analyzer allows operators to perform detailed studies of material behavior under real application conditions up to operating temperatures of 1,100 °C.

Please feel free to download the latest information available at www.horiba-fuelcon.com. If you have any questions, please do not hesitate to contact us. We will be happy to support you and discuss your testing requirements!

HORIBA FuelCon reserves the right to make changes at any time without notice.

HORIBA FuelCon | Steinfeldstr. 1 | 39179 Barleben | Germany T +49 39203 514 400 | F +49 39203 514 409 | info@horiba-fuelcon.com | www.horiba-fuelcon.com

### GENERAL FACTS

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard fuel flow range</td>
<td>1 to 100 [Nl/min]</td>
</tr>
<tr>
<td>Standard air flow range</td>
<td>5 to 500 [Nl/min]</td>
</tr>
<tr>
<td>Footprint L x W x H, [meter]</td>
<td>2.1 - 2.4 x 1.2 x 2.2 - 3.2 (83&quot; - 95&quot; x 47&quot; x 87&quot; - 126&quot;)</td>
</tr>
<tr>
<td>Maximum gas temperature</td>
<td>1,000 °C (1,832 °F)</td>
</tr>
<tr>
<td>Gas humidity range</td>
<td>Saturator: Dry (by-pass) to TDP = 95 °C corresponding to 0...85 % steam in humidified gas stream; Steam generator: 0.01 to 600 g/min steam for 0...100 % steam</td>
</tr>
<tr>
<td>Top hat furnace [meter]</td>
<td>Inside dimensions (LxWxH): 400 x 400 x 600 up to 1,200 x 1,200 x 900 (16&quot; x 16&quot; x 24&quot; up to 48&quot; x 48&quot; x 36&quot;)</td>
</tr>
<tr>
<td>Electronic load</td>
<td>Up to 600 V / 1,000 A / 50 kW</td>
</tr>
<tr>
<td>Active test item temperature</td>
<td>Up to 1,100 °C (2,012 °F) by top hat furnace</td>
</tr>
<tr>
<td>Active test item setting</td>
<td></td>
</tr>
<tr>
<td>Safety gas purge</td>
<td>Programmable, separate and independent nitrogen / safety gas purge function for anode and cathode</td>
</tr>
<tr>
<td>Safety features</td>
<td>4-level alarming system, emergency stop, hydrogen LEL detector, optional CO detector, cabin ventilation Furnace atmosphere sampling</td>
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<tr>
<td>Data logging</td>
<td>SQL data base</td>
</tr>
</tbody>
</table>

### OPTIONS

Reformer and desulfurizer for NG, CH₄ and biogas operation
Reformate and biogas simulation
Cell voltage monitoring (CVM)
TrueData-EIS (impedance analysis)
Reversible load operation (electrolysis and fuel cell mode) / grid feedback
Compression load control
Automated leakage test
UPS

### SAFETY

CE conformity marking according to
- EMV directive 2014/30/EC
- Low voltage directive 2014/35/EC
- ATEX directive 2014/34/EC
- General product safety directive 2001/95/EC
- Machinery directive 2006/42/EC
- Pressure equipment directive 2014/68/EC

Risk assessment
- DIN EN ISO 13849
- DIN EN ISO 12100

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