GENERAL FUNCTION

ElringKlinger develops and manufactures fuel cell modules (FCM) based on ElringKlinger PEM fuel cell stack technology. A fuel cell module integrates stack, hydrogen and air supply, cooling, power electronics, and a control unit (FCCU – Fuel Cell Control Unit) into a self controlled, protected standardized package. ElringKlinger’s NM5 metallic bipolar plate stack technology in a double-stack configuration forms the basis for the FCM with 75-100 kW power output. The FCM provides a regulated power output at 700-750 VDC for easy and simplified vehicle integration and road admission.

TECHNOLOGY

ElringKlinger’s PEM fuel cell technology is based on patented designs for metallic bipolar plates with a higher power density for reduced size and weight. Low-temperature fuel cell stacks from ElringKlinger have excellent power and durability characteristics and can be used for a very wide variety of vehicle categories. Due to our core competencies in the fields of metal and plastic processing, joining and coating technology, and toolmaking, automated series production processes have already become standard at ElringKlinger. In stack development and production the setup is as follows:

- Automated, high-precision and interlinked production of metallic bipolar plates
- Series-compatible development and manufacture of end modules and media modules made of plastic
- Flexible and automated stacking operations as well as assembly of the stacks
- Profound knowledge in production processes as the basis for a mass production of fuel cell modules

PARAMETERS

FUEL CELL MODULE

<table>
<thead>
<tr>
<th>TYPE</th>
<th>EK FCM-NM5 Double Stack</th>
</tr>
</thead>
<tbody>
<tr>
<td>POWER, NOMINAL</td>
<td>75-100 kW</td>
</tr>
<tr>
<td>VOLTAGE, NOMINAL</td>
<td>700-750 VDC</td>
</tr>
<tr>
<td>TEMPERATURE, AMBIENT</td>
<td>-25°C to +40°C</td>
</tr>
<tr>
<td>H2 QUALITY</td>
<td>ISO 14687-2, SAE J2719</td>
</tr>
<tr>
<td>COMMUNICATION</td>
<td>CAN</td>
</tr>
<tr>
<td>DIMENSION (L/B/H)</td>
<td>1,000/700/600 mm</td>
</tr>
<tr>
<td>WEIGHT</td>
<td>~ 250 kg</td>
</tr>
<tr>
<td>CERTIFICATION</td>
<td>hydrogen on-road vehicles (ECE-R 134, others pending)</td>
</tr>
</tbody>
</table>
PEM FUEL CELL STACK
- Hydrogen-air operation
- Liquid-cooled
- Pressurized operation up to 2.5 bar

BENEFITS
- High power density due to lightweight, compact stack design
- Patented designs for metallic bipolar plates
- High dynamic response in power provisioning
- Robust component and stack design suitable for mass production and less than 10% of power degradation after 10,000 operating hours
- Proven cold-start performance
- System simplification by integration of functions at the media module of the stack (sensor system, actuator system, etc.)

ELRINGKLINGER – YOUR PARTNER FOR E-MOBILITY SOLUTIONS WITH FUEL CELL MODULES

Component and Stack Development (Design, Engineering, and Simulation) –
Sampling/Prototyping – Testing – Series Production

YOUR CONTACT

Dr. Mohsine Zahid
Phone +49 7123 724-9080
E-mail mohsine.zahid@elringklinger.com