

Test Protocols for Long Term Tests at DLR

Cell specifications:

The total active area is 16 cm² for single-cell, and 82 cm² for stack. The amounts of cells are 1 cell or 5 layer short stack, maximum 30 cells/stack.

Mounting:

Gases available for the set-up are:

- Fuel: H₂, N₂
- Oxidant: compressed Air

The oxidant is preheated to 750°C to prevent severe cooling at the cell inlet. The humidification of fuel is 3% H₂O. Prior to heating, the oxidant flow is set to 2 slpm air per cell, and the fuel flow is set to 1 slpm (H₂ + N₂) per cell.

Heating:

The standard operation temperature is 750°C, being the maximum and minimum temperatures, 650 and 850°C, respectively.

Test protocol:

- Gas and temperature variation at the beginning.
- Constant load @ 300 mA/cm² (maximum 1.5 mA/cm²).
- Perform polarization curve every 1000 h.
- Stop either at desired operating time or if one cell is below 0.5 V.
- Polarization curve at the end.