Fuel Cell unit

Portable handle

Fuel Cards

Full charge:
- 600mAh into cellphone
- 30h of LED light
MSC stacks
800°C
10H₂+10N₂ / 20 Air (SLPM)

OCV (VPS) = 10.10 V
OCV (LPPS) = 9.98 V
8YSZ adaptation layer (~18 µm) + GDC electrolyte (~1.5 µm)

LSCF cathode (~45 µm)

Ni/8YSZ anode (~45 µm)

DBL (~2 µm)

ITM substrate (~1 mm)
Diezel reformate gas:
50% N₂, 15% H₂, 14% CO, 11% H₂O, 10% CO₂

Cell voltage [V]

Current density [A/cm²]

630 mW/cm²
200 mW/cm²

750 °C

- Type D (LSCF)
- Type D (LSCF) → Improved anode structure → MSC07B
- Type C (LSC)
- Type C (MSC06B) Standard
- Type C (LSC+GF)
- Type C (LSCF+GF) → High contact resistances

Temperature: T = 850 °C
Fuel Gas (FG): H₂, 3% H₂O (1 nlpm)
Oxidant Gas (OG): Air (1 nlpm)
4-point ASR-measurement method at Plansee SE

- CroFer 22 APU 500 h
- CroFer 22 APU 200 h
- ITM 500 h
- ITM 200 h
- ITM + PVD LSM 200 h

ASR [mOhm cm²]

Temperature [°C]
Breakaway oxidation of thin film interconnects

Mass Gain [mg/cm²]

Time [h]
Area specific contact resistance (ASR) in air at 800 °C

- ASR values for all Crofer types are similar; Range: 20 and 50 mΩcm²
(a) 1 μm-thick buffer layer

(b) 4 μm-thick buffer layer

(c) 6 μm-thick buffer layer