Ballard Xcellsis™ HY-80 Fuel Cell Engine

Engine Weight: 220 kg
Engine Volume: 220 L
Max. system net power 70 kW
Idle to 90% power < 1 sec
Max. efficiency 48%
Single serpentine flow field (1mm thick SS316) with 0.8 mm wide channel and lands.
Time Evolution at Constant Voltage 0.4V (after OCV)

- **t = 1 min**
- **t = 20 min**
- **t = 40 min**

**Graph:**
- Red line: 50°C DPT/60°C Inlet/50°C cell, 0.6 slpm Air/0.29slpm H2
- Green line: 50°C DPT/60°C Inlet/50°C cell, 1.1 slpm Air/0.5 slpm H2
- Blue line: 70°C DPT/80°C Inlet/70°C cell, 1.1 slpm Air/0.29 slpm H2

**Notes:**
- Too wet
- Optimal
- Too dry
Water management: Simultaneous Optical and Neutron Imaging

- Neutron imaging is a powerful tool for water dynamics and management.
- Neutron imaging gives depth-integrated water content.
- Optical imaging gives surface water content with high temporal resolution.
- Combined approach can give new insights.