



Fuel cells for data centres

Concept



Innovative, compact energy solution
for reliable IT performance

Trend-setting concept for the safeguarding of IT power

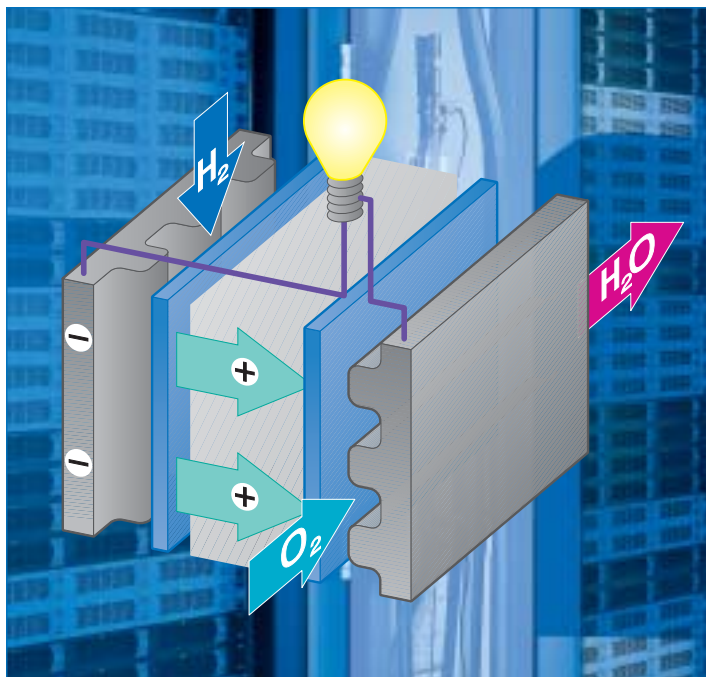
A reliable power supply is a core element of IT security. Fuel cell technology counts as the trend-setting technology for providing IT systems with an emergency power supply.

Rittal develops complete fuel cell solutions for different applications, including data centres. Based on a TS 8 server rack, the concept offers a scalable output from 10 to 200 kW, the output being matched to the actual UPS requirements.

The system is erected outside the data centre, e.g. in an infrastructure room. In this way the temperature in the data centre itself is not additionally increased.

The application advantages:

- The constant temperature of the data centre is not needed as the fuel cell starts directly at any ambient temperature from +5 °C to +55 °C.
- The dimensions of the housing can be matched to the space actually needed and do not depend on the comparably rigid footprint of modern data centres.



Further safeguarding or replacement of batteries and generators

Ideal for critical IT applications requiring high availability, where reliable, uninterruptible operation must be ensured, fuel cell technology will represent a convincing alternative in the future. In general two fields of application are possible:

- As an additional redundancy augmenting batteries and generators, they provide an extra safeguard for extremely important applications or data.
- As an emergency power supply, this technology opens up the opportunity of dispensing with diesel generators and significantly reducing the size of battery-based back-up systems.

System structure

Taking as an example a 60 kW system in a TS 8 server rack (W x H x D = 600 x 2000 x 1000 mm), we show below the components which are combined with Rittal system-integration know-how into a back-up solution providing high availability.

The fuel cells

The heart of the system – compact high-performance power units requiring minimum space: 30 kW PEM fuel cells on 6 U, 60 kW on 12 U.

User-friendly control

Simple operation and monitoring via CMC-TC and an open platform for facility-management protocols: S-bus, Profibus, Modbus, MPI, EIB, LON, Bac-Net, GENIbus.

DC/DC converter and climate control

A plate-type heat exchanger in combination with a re cooler extracts the heat from the server rack.

Rittal fuel cells for data centres – clear advantages

- Significantly higher availability and reliability than diesel generators
- Significantly longer service life and importantly lower maintenance costs than batteries
- Optimised space requirement
- Perfect functioning over a wide range of ambient temperatures
- Easily available fuel
- Quiet, emission-free running
- No special disposal costs

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