

Rittal – RiCell Flex Fuel cell system



Nominated

RiCell Flex fuel cell system

Efficient, autonomous and robust

Reliable, efficient and environment-friendly emergency power supplies for critical infrastructures – that is the domain of the Rittal fuel cell system. This modular, scalable solution guarantees ultimate flexibility in terms of both output and autonomy time, and copes admirably with the most varied ambient conditions.

Its particular strengths are to be seen in its ecological compatibility and outstanding economic parameters:

- High service friendliness
- Emission-free power supply
- Scalable output (2.5 kW per module)
- Suitable for both indoor and outdoor applications
- High electrical efficiency
- Remote control

With such versatility, the fuel cell system represents a convincing power supply for a broad range of applications.



Telecommunications

Fuel cells are substitutes for battery-powered backup systems. Particularly in mobile telecommunication, the freely scalable backup time has proved a major advantage. The longer the autonomy time, the more lucrative it becomes to use fuel cells. Mobile telecommunication centres and temporary telephone booths for events are just two of the many direct power supply applications.



IT

The classic emergency power supply application. Fuel cell systems provide for additional redundancy in extremely critical high-availability applications, and serve to replace ecologically harmful fossil-fuel generators. As primary power sources, fuel cells are able to handle the short-time deployment of mobile data centres.



Energie

Fuel cell systems are predestined for use in combination with renewable energy solutions, and to support and safeguard power generation infrastructures. Ideally, they can be integrated directly into the DC applications for power station control. Both temporary power supplies and backup functions are significant.



Traffic

Suitable as a mobile primary power supply for emergency use at the scene of an accident, for example for illumination or temporary traffic signs. Emergency power can also be provided at a variety of supply voltages to system control centres, for example for railway networks, along major waterways or at airports.



Mining/tunnel engineering

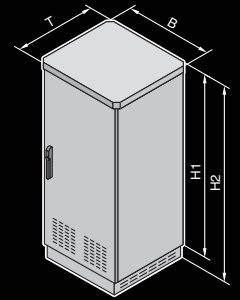
The extreme conditions encountered in tunnels or mines demand robust technical solutions. Rittal has gathered a wealth of know-how in reliable packaging for sophisticated technologies. Fuel cell systems are thus especially suitable as emergency power supplies to maintain the control and monitoring systems or lighting installations of critical infrastructures in the fields of mining and tunnel engineering.



Environment

As a consequence of the integration of renewable energy sources (photovoltaics, wind, etc.), load balancing and the maintenance of system stability have become major challenges in modern power supply networks. Thanks to their immediate availability, fuel cells can serve as passive balancing energy (a particular location supplies itself) or combined into a virtual power station also as active balancing energy.

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Application:

- Emergency power supplies, e. g. for mobile telecommunication base stations
- Indoor and outdoor use
- Temporary power supplies
- UPS applications
- High-availability applications
- Balancing energy supplies

Material:

Enclosure frame:
Stainless steel 1.4301 (AISI 304)
Door, side panels, roof:
Aluminium AlMg3,
powder-coated
in RAL 7035

Supply includes:

Ready-to-connect fuel cell system including climate control.
Hydrogen supply not included.

Available on request:

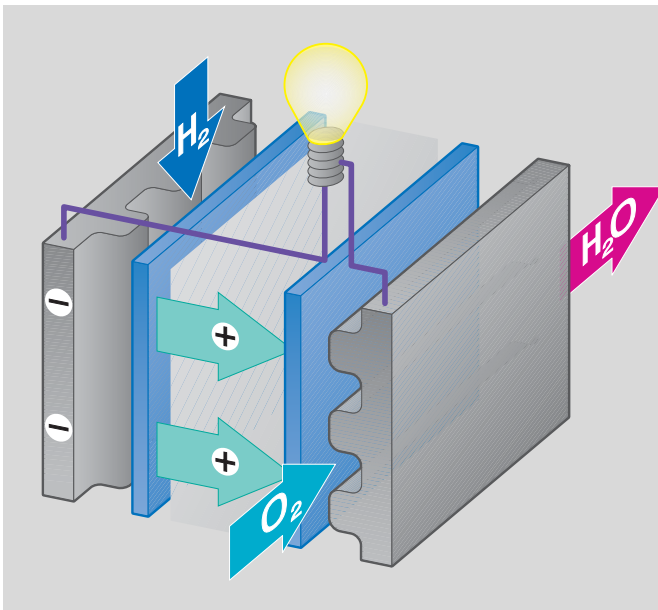
- Higher level of cascading
- Different output voltages
- Housing for gas cylinders
- Primary power supply

Photo shows a configuration example with equipment not included in the scope of supply.

Width (B) mm	850
Height (H1) mm	1200 – 2000 ¹⁾
Depth (T) mm	850
Base/plinth height mm	100
Overall height (H2) mm	1300 – 2100 ¹⁾
Fuel cell module	
Power consumption	2000 watts
Maximum power output	2500 watts ²⁾
Output voltage (adjustable)	-44.0 to -55.5 V DC
Noise generation	< 60 dB(A) at distance of 1 m
Weight	28 kg
Hydrogen supply	
Gas type	Hydrogen, purity 99.9%, class 3.0
Consumption	10 slpm (standard litres per minute) per kW
Typical autonomy time	Freely scalable via bottle batteries; 600 l (1 bundle), 200 bar hydrogen provides for more than 24 h autonomy at 6 kW full load
Input pressure	12.0 to 20.0 bar
Ambient conditions	
Temperature range	-33°C to +45°C
Relative humidity	5% to 95%, non-condensing
Height above mean sea level	-60 m to 2000 m; thereafter 5% power reduction per 1000 m
Monitoring	
Programmable start voltage	Freely selectable within voltage range
Interfaces	Ethernet TCP/IP
Software	Web-based user interface with display for status, event log and control
Alarm outputs	4 floating contacts: "H2 low"; "Non-critical error"; "Serious error"; "FC in operation"

¹⁾ Dependent on number of modules.

²⁾ Begin of life (BOL).



How it works Fuel cell

Fuel cells convert the chemical energy arising from the reaction between hydrogen (H_2) and oxygen (O_2) directly into electrical energy, water and heat.

- A fuel cell essentially consists of two electrodes separated from each other by an electrolyte.
- At one electrode, the hydrogen is separated into positively charged protons and negatively charged electrons.

- At the other electrode, oxygen molecules (O_2) are dissociated (separated) and are able to absorb electrons at the electrode.
- The H_2 ions pass through the electrolyte to the positive electrode where they react with the O_2 ions to form water.
- The two electrodes are connected to one another via an external load so that an electric current flows. The flow of current is supplied directly by converting a significant portion of the chemical energy from hydrogen and oxygen into electrical energy.

RiCell Flex fuel cell system. Your direct line to us.

Application:

Indoor Outdoor

Output range: _____ kW Output voltage: _____ V DC AC

From:

Name

Address

First name

Company/customer no.

Telephone

Department/function

E-mail

We would be pleased to meet you in person to offer our advice.

04/10 · E680

