SFC Energy Products for Industrial Applications

Reliable and emission-free

All-season off-grid and mobile energy solution

Customized energy solutions

ISO 9001 certified

Fuel Cell Generators
Energy Solutions
Power Supplies
With thousands of fuel cell generators sold, the company has successfully established its fully commercialized and multi-award-winning products on the global market for a number of years. The company also develops, produces and markets with equal success high-performance electronics components such as voltage transformers and switching power supplies on an international basis for the industry sector in particular. Its products are increasingly being supplied as system solutions for power supplies in accordance with customers’ needs.

All of the SFC Energy Group’s products are primarily developed and manufactured in Europe. SFC fuel cell generators and fuel cartridges are “Made in Germany”. They are developed and manufactured at SFC’s headquarters in Brunenthal, near Munich. PBF high-performance electronics are developed and produced at our sites in the Netherlands and Romania. This enables us to ensure that new developments are implemented straight away into innovative products and are available for you and the reasons you need them. Thanks to the SFC Energy Group’s international network of trading partners, along with our locations in Germany, the Netherlands, Romania and the USA, our products are now available worldwide. SFC customers profit from our service: worldwide guarantee. SFC is certified to DIN ISO 9001. SFC Energy AG is listed in the Prime Standard of the German stock exchange (WKN: 756857 ISIN: DE0007568578).
Shaping the future with new ideas

With its pioneering technologies, the SFC Energy Group is always breaking new ground and setting trends as it does so. This success is based on the dedication and passion of each individual member of staff at SFC. With a wealth of ideas and foresightedness, we develop solutions that will still inspire generations to come.

Consumer
In caravans (RVs), in cabins or on a boat, EFOY fuel cell generators charge your batteries fully automatically and are available around the clock, without any user interference – just like a mobile power socket.

Industrial
In the industrial market SFC Energy is focused on three fields of application: off-grid power supply with EFOY Pro fuel cell generators, PBF power electronics, and complete energy solutions geared to the needs of the customer.

Defense & Security
SFC Energy develops, produces and distributes portable, mobile and vehicle-based power generation and power management devices for defense and security organizations.

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**SFC Fuel Cell Generator Technology**

All of SFC’s fuel cell generators are based on DMFC (Direct Methanol Fuel Cell) technology. They use an eco-friendly catalytic process to convert methanol (methyl alcohol) into electricity in a direct and efficient process without intermediate steps. This makes this technology one of the cleanest ways of generating electricity.

**DMFC fuel cell generators are the ideal energy solution for off-grid and mobile applications.**

Connect - switch on - forget

SFC fuel cell generators are smart energy producers that can be used to continuously and fully automatically recharge batteries. To do this, the fuel cell generator is connected directly to the battery that supplies consumers and monitors its charge level. Depending on the demand, the fuel cell generator turns on completely automatically, recharges the battery and then switches to standby - without any need for maintenance or intervention on the part of the user.

**More power than solar**

The EFOY Pro fuel cell generator supplies electricity at any time of the year or day, making it completely independent of the weather. The EFOY Pro supplies 3 to 10 times as much energy as a solar power system with the same output throughout the year. This is because, to produce as much energy as an EFOY Pro 800, you would need a solar power system with an output of up to 1600 Wp, depending on the country and time of year.
Longer autonomy than batteries

Batteries have a very limited autonomy. Whether it be in vehicles, on building sites or in a switching cabinet, when an application is only powered by batteries, frequent battery changes, and therefore the costs required to keep the application running, are extremely high. With an EFOY Pro fuel cell generator, downtimes and maintenance intervals are reduced, deep-discharging of batteries is avoided and the battery’s autonomy is increased many times over.

More eco-friendly than conventional generators

Regular generators are noisy, dirty and frequently need to be filled up with fuel and have their oil changed regularly. EFOY Pro fuel cell generators, on the other hand, are quiet, producing only small quantities of pure CO₂, and guarantee a long autonomy - without any need for maintenance. EFOY Pro fuel cell generators can be operated without hesitation in vehicles, in nature conservation areas and generally in closed spaces - could you say the same thing about a regular generator?

TIP Supplement your standalone solar power system with an EFOY Pro fuel cell generator

The perfect solution for ensuring 100% availability with minimum fuel consumption is the use of an EFOY Pro fuel cell generator as a hybrid energy supply or as a back-up for a solar power system. When the solar system is unable to deliver enough power, the fuel cell generator automatically switches on and compensates the shortfall in energy. Complex designs for large solar power systems can therefore be avoided and the reliability of the system significantly increased.

Further Information

Please scan this bar code with your smartphone, e.g. with this code reader: www.i-nigma.com
EFOY Pro fuel cell generators are SFC Energy’s industrial product line and have been adapted specifically to the needs of professional users. Fuel cell generators from SFC for industrial applications are now available in a second generation. The experience and requirements of our customers have been factored into this second generation and the technology behind EFOY Pro has been developed and improved as a result.

### Technical data

<table>
<thead>
<tr>
<th>EFOY Pro</th>
<th>800</th>
<th>800 Duo</th>
<th>2400</th>
<th>2400 Duo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. nominal power*</td>
<td>45 W</td>
<td></td>
<td>110 W</td>
<td></td>
</tr>
<tr>
<td>Min. nominal power*</td>
<td>25 W</td>
<td></td>
<td>80 W</td>
<td></td>
</tr>
<tr>
<td>Nominal Voltage</td>
<td>12 V / 24 V</td>
<td></td>
<td>12 V / 24 V</td>
<td></td>
</tr>
<tr>
<td>Min. charging current at 12 V / 24 V</td>
<td>2.1 A / 1.05 A</td>
<td>6.7 A / 3.3 A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>17.6 lbs (8.0 kg)</td>
<td>18.3 lbs (8.3 kg)</td>
<td>19.8 lbs (9.0 kg)</td>
<td>20.5 lbs (9.3 kg)</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-4°F to +122°F (-20 °C bis +50 °C)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal consumption</td>
<td>0.24 gallons/kWh (0.9 l/kWh)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions L x W x H</td>
<td>17 x 8 x 11 in (433 x 188 x 278 mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Nominal power decreases with the operation hours. Specification valid within warranty period.

### Performance classes

EFOY Pro fuel cell generators are available in two performance classes - with a maximum output of 45 and 110 W. This is not, however, the maximum amount of power which an application can deliver. With a cluster controller, up to 5 EFOY Pro fuel cell generators can be connected to each other in parallel to deliver a maximum output of up to 550 W.

### The benefits at a glance

- 100% reliability and operational safety
- Lightweight and compact
- Long periods of autonomy, maintenance-free
- Quiet and emission-free
- Remote monitoring

For detailed technical data, please visit www.efoy-pro.com
**EFOY Pro 800 and EFOY Pro 2400**

EFOY Pro fuel cell generators, with their compact design, store a lot of energy in a small package. Due to length of the fuel cartridge connection hose EFOY Pro fuel cell generators are extremely flexible in terms of their installation requirements. The fuel cartridges can be intuitively replaced quickly and easily, even by untrained personnel. The EFOY Pro 800 produces a maximum output of 45 W. It is suitable for applications with low energy requirements, the operation of various types of sensor, for example. The EFOY Pro 2400 delivers a maximum output of 110 W. It is most suitable for applications such as on-board power supplies in vehicles, video surveillance systems, speed monitoring and wind measuring equipment.

**EFOY Pro 800 Duo and 2400 Duo**

In order to achieve even longer lasting autonomy without the need for the user to replace fuel cartridges, a device with two fuel cartridge connectors has been developed for both performance classes of the EFOY Pro fuel cell generator. This means that two and, with two optional DuoCartSwitches, up to 4 fuel cartridges can be connected to a single fuel cell generator. The result is a very long lasting autonomous power supply for off-grid systems such as measuring stations located in the mountains, wind measuring equipment for the planning process of wind farms or cameras for monitoring pipelines.

**Control panel**

The control panel for controlling the EFOY Pro fuel cell generator has an user-friendly surface. On it, you will find all the key information clearly arranged.

An example of an application with cont. 25 W:

<table>
<thead>
<tr>
<th>EFOY Pro</th>
<th>800</th>
<th>800 Duo</th>
<th>800 Duo mit 2 DuoCartSwitch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connected fuel cartridge(s)</td>
<td>1x M 28</td>
<td>2x M28</td>
<td>4x M28</td>
</tr>
<tr>
<td>Autonomy (in days)</td>
<td>51 days</td>
<td>103 days</td>
<td>207 days</td>
</tr>
</tbody>
</table>
EFOY Fuel Cartridges

EFOY Pro fuel cell generators are direct methanol fuel cells that are operated with methanol. Methanol is filled into specially-developed EFOY fuel cartridges. EFOY fuel cartridges are available in sizes of 5, 10 and 28 liter. High-purity and clean methanol is required for the reliable operation of EFOY Pro fuel cell generators. SFC’s ISO 9001 certified quality management system controls the methanol fuel cartridge production to ensure highest safety and performance standards. Only the use of original EFOY fuel cartridges can ensure the maximum service life of EFOY fuel cell generators.

<table>
<thead>
<tr>
<th>Fuel cartridges</th>
<th>M5</th>
<th>M10</th>
<th>M28</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume</td>
<td>1.32 gallons (5 l)</td>
<td>2.64 gallons (10 l)</td>
<td>7.4 gallons (28 l)</td>
</tr>
<tr>
<td>Weight</td>
<td>9.5 lbs (4.3 kg)</td>
<td>18.5 lbs (8.4 kg)</td>
<td>48.5 lbs (22 kg)</td>
</tr>
<tr>
<td>Nominal Capacity</td>
<td>5.5 kWh</td>
<td>11.1 kWh</td>
<td>31.1 kWh</td>
</tr>
<tr>
<td>Size L x W x H</td>
<td>7.5 x 5.7 x 11.1 in (190 x 145 x 283 mm)</td>
<td>9.1 x 7.6 x 12.5 in (230 x 193 x 318 mm)</td>
<td>16.5 x 11.0 x 14.2 in (420 x 280 x 360 mm)</td>
</tr>
<tr>
<td>Autonomy @ 20 W cont.</td>
<td>11.5 days</td>
<td>23 days</td>
<td>65 days</td>
</tr>
</tbody>
</table>
Optional Extras

Remote application monitoring
SFC offers an impressive selection of accessories for the remote monitoring of your system. A communication interface can be set up which will allow the EFOY Pro fuel cell generator to be monitored and controlled remotely. This means that the fuel cell generator can be read, monitored and controlled from a distance.

It is also possible to connect a fuel cartridge sensor. With a sensor connected to the fuel cartridge, you will be automatically alerted by text message or e-mail when the cartridge’s fill level falls below a certain value. This will give you sufficient time to take a new fuel cartridge to the system and avoid downtimes.

Longer autonomy
A DuoCartSwitch allows the number of fuel cartridges connected to a single EFOY Pro to be doubled. This means that, in ideal scenarios, up to 4 fuel cartridges can be connected to a single fuel cell generator, extending the autonomy of the application many times over. The EFOY Pro recognizes when a fuel cartridge is empty and automatically switches to the next one.

More performance
EFOY Pro fuel cell generators are available in two power ratings - with a maximum output of 45 and 110 W. This is not, however, the maximum amount of power they can deliver. With a cluster controller, up to 5 EFOY Pro fuel cell generators can be connected in parallel to deliver a maximum output of up to 550 W.

Further information about extras on
www.efoy-pro.com

TIP
Take advantage of further developments
We are continuously working on improving our fuel cell generators. Take advantage of the most recent developments and keep your fuel cell generator up to date with our free firmware update.

Advantages of EFOY Fuel Cartridges

Extremely high energy density
10 l (2.64 gallons) of methanol has a capacity of 11.1 kWh of energy and weighs just 8.4 kg (18.5 lbs). Approximately 280 kg (617.3 lbs) of lead gel batteries would be required to provide the same amount of energy.

Safety tested
EFOY fuel cartridges have been designed to comply with the strictest safety requirements and bear the TÜV GS seal of quality by way of confirmation, along with the UN approval for transport by sea, road or air. Their design ensures that users never come into contact with their content.

Global fuel cartridge logistics
SFC has established a worldwide logistics network for the sale of EFOY fuel cartridges. As a result, SFC fuel cartridges are available at over 2,000 sales points worldwide. EFOY fuel cartridges can also be transported on pallets by land, sea and air.