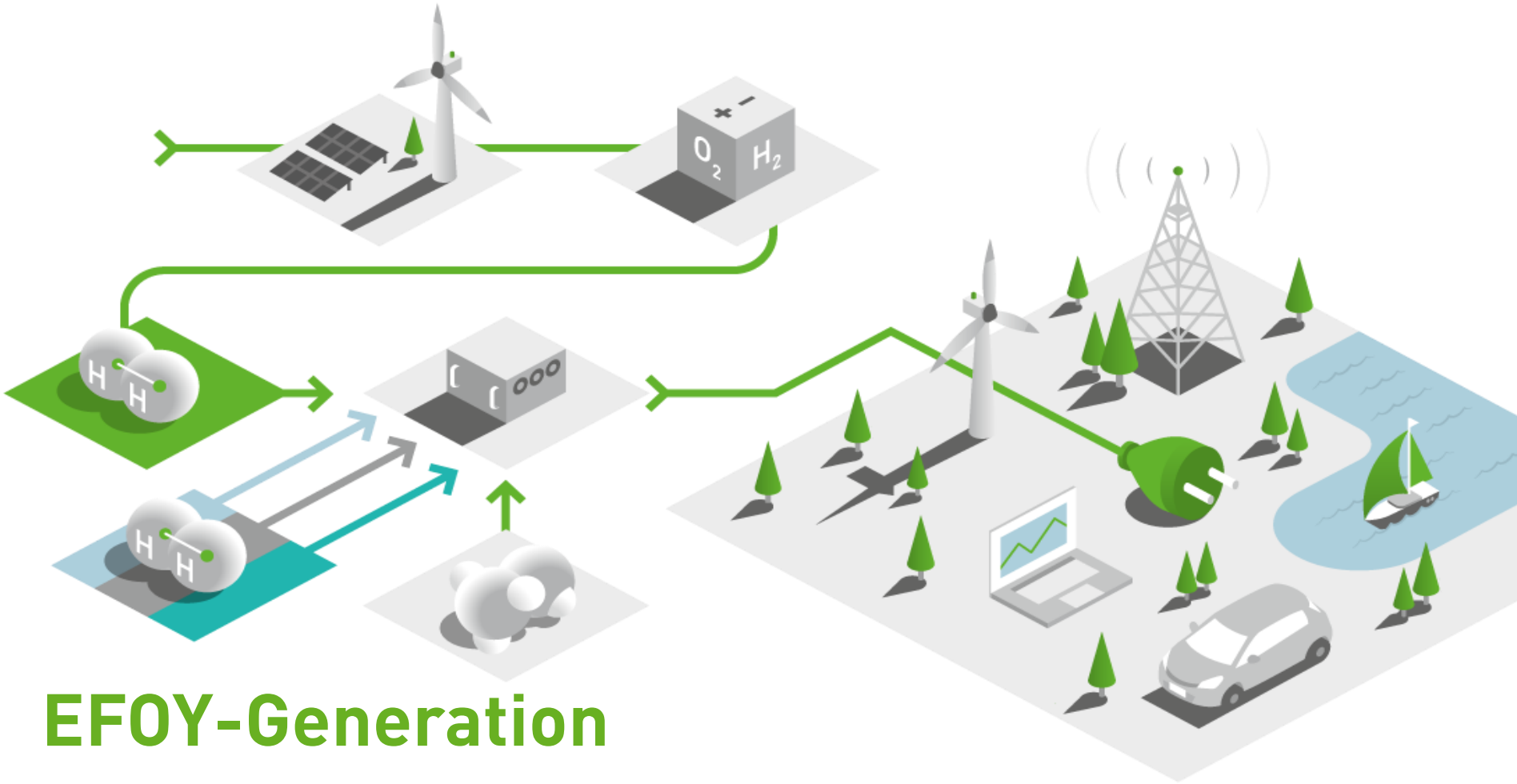

EFOY-Generation

Partnertag SFCxMEV

03.06.2025

SFC ENERGY

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Agenda

01 Product Overview

02 Operation and Communication

03 Installation & Best Practice

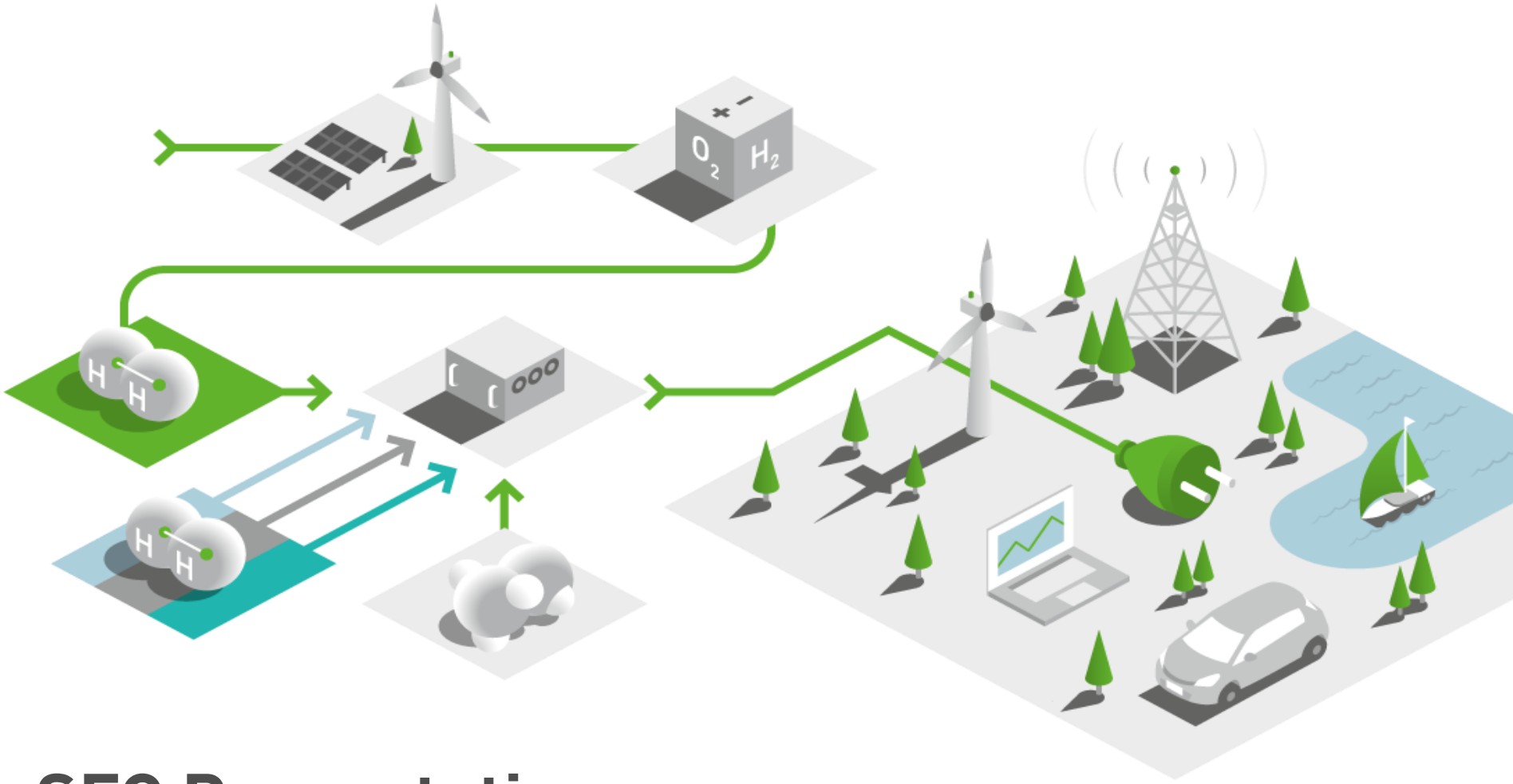
04 EFOY Cloud

05 EFOY Cluster functionality & Multisense

06 Energy Solutions

07 Batteries & EFOY charging parameters

08 Warnings & Errors



SFC Presentation

Product Overview

SFC ENERGY

How does the EFOY Pro work ?

Energy on demand – automatic charging

More on the EFOY fuel cell technology:
https://www.efoy-pro.com/en/efoy/technology/

EFOY Fuel Cells
Product Overview

	EFOY 80	EFOY 150	EFOY Pro 900	EFOY Pro 1800	EFOY Pro 2800
Max. Output Power	40 W	75 W	42 W	82 W	125 W
Output Power after 3.000 hours	24 W	45 W	34 W	68 W	105 W
Output Power after 6.000 hours	--	--	28 W	56 W	87 W
Guaranteed lifetime	3000 h	3000 h	6000 h	6000 h	6000 h
Cumulated power output over guaranteed lifetime	~ 96 kWh	~ 180 kWh	~ 210 kWh	~ 414 kWh	~ 636 kWh

EFOY Fuel Manager
Product Overview

FM2

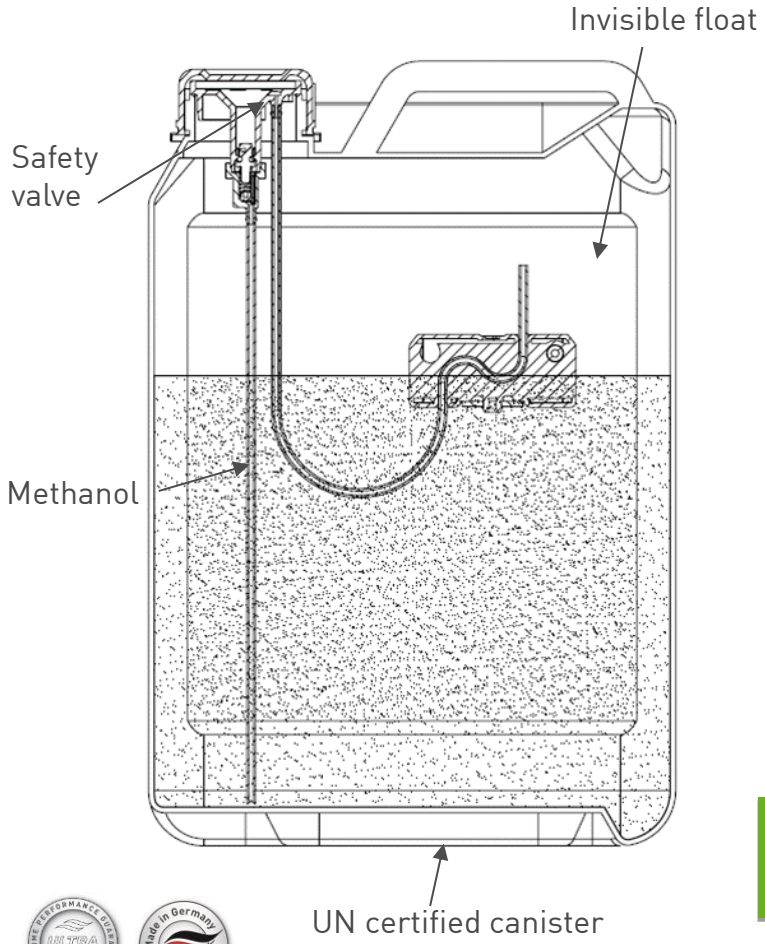
FM4

FM8

Article	EFOY Fuel Manager FM2	EFOY Fuel Manager FM4	EFOY Fuel Manager FM8
Connectable fuel cartridges	2	4	8
Dimensions (L x W x H)	150 x 73 x 170 mm	150 x 127 x 170 mm	150 x 235 x 170 mm
Weight	0,97 kg	1,73 kg	3,24 kg
Length of fuel connectors	1,25 m	1,25 m	1,25 m

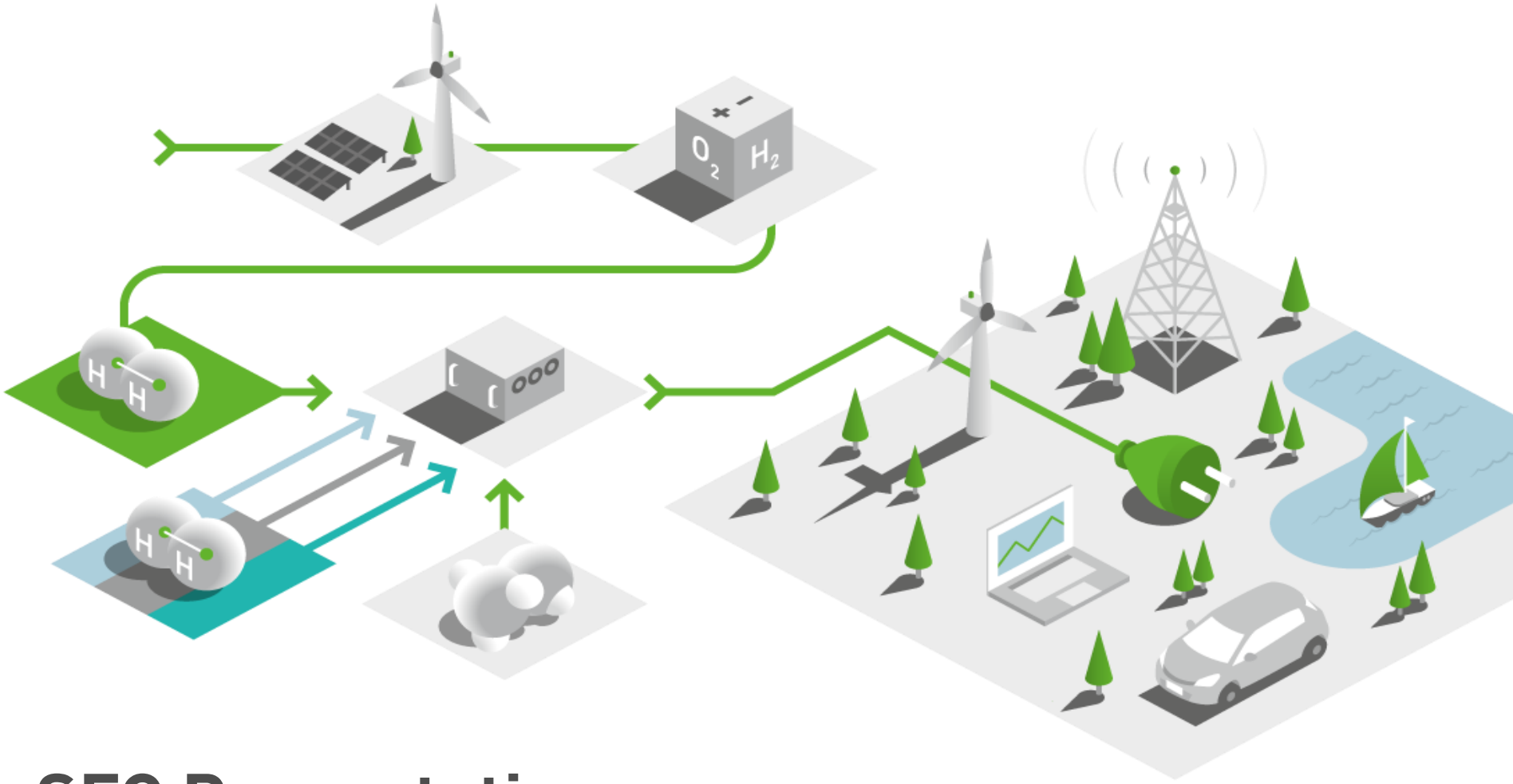
EFOY Pro fuel cells and fuel cartridges

Product Safety



- SFC developed and patented safety valve
- Guaranteed ultra pure methanol quality !
- Certified for road, sea and air freight

5 Liter	10 Liter	28 Liter	60 Liter
5.5 kWh	11 kWh	31 kWh	66 kWh



SFC Presentation

Operation & Communication

SFC ENERGY

Operating options

- Operating panel: via data cable
- EFOY App: via Bluetooth adapter
- Button: on the device
- EFOY-Cloud, remote monitoring via Modem/Router
- Modbus
- Serial communication (SIO)

EFOY Cloud

Modbus

Terminal / SIO

EFOY Mode

"Automatic" mode

- EFOY fuel cell switches on and off automatically depending on battery voltage
- The battery is automatically recharged

"Sleep" mode

- Battery is not automatically recharged
- The EFOY will protect the battery against deep discharge if necessary
- The EFOY will perform frost protection if necessary

The "Automatic" mode is always recommended for optimal charging behavior.

Example EFOY States

State	Description
Off	The fuel cell is in Sleep mode and will not start charge. Only deep discharge protection and anti-freeze is active
Transportation protection	The fuel cell is in transport mode and will not start charging.
Battery protection	The fuel cell has started charging despite Sleep mode, to protect battery from further discharge and deep discharge.
Error	The fuel cell cannot charge the battery. Follow the information displayed on the different interfaces.

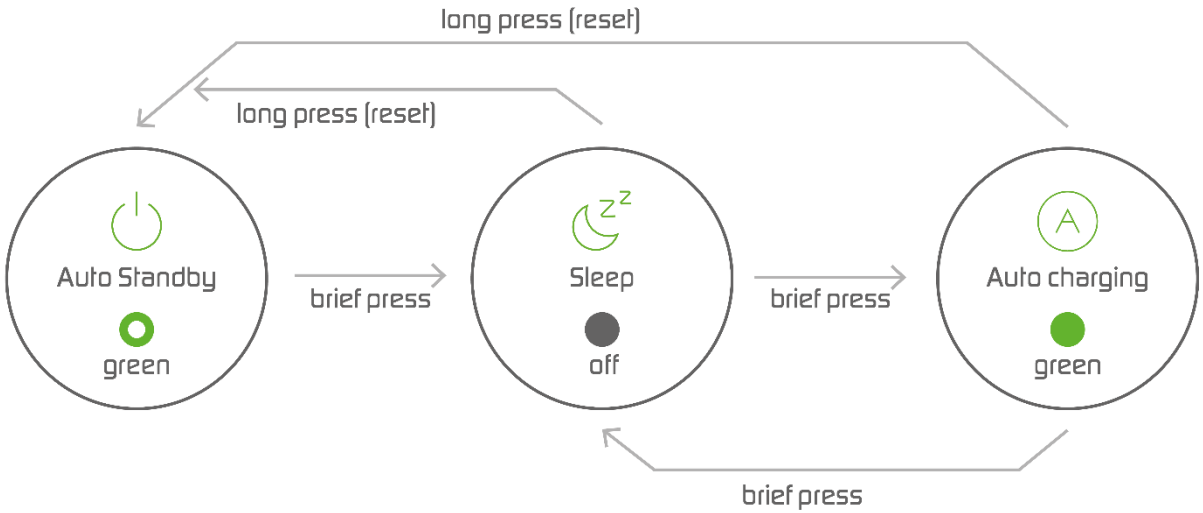
All states are described in the glossary in the user manual

Command on the EFOY
Status LED (Part 1)

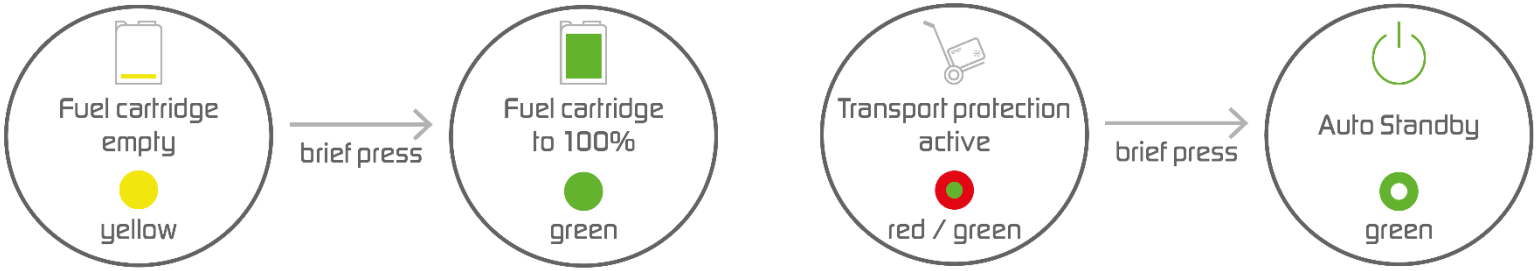
LED		EFOY status	EFOY mode
	Off	Off	Sleep
	Permanent	Deep discharge protection	Sleep
	Flashing slowly (every 5 seconds)	Standby	Auto
	Permanent	Charging and start-up phase	Auto
	Flashing quickly (every 2 seconds)	Shutdown procedure	Auto/Sleep
	Permanent	Antifreeze	Auto/Sleep
	Permanent	Fuel cartridge empty	Auto/Sleep
	Permanent	Error	Auto/Sleep
	Flashing quickly (every second)	Warning	Auto/Sleep
	Permanent	Back-up antifreeze	Auto/Sleep

Button on the EFOY

Use the button for changing the Mode



Use the button for fuel cartridge change & to deactivate the transport protection



EFOY State: Frost protection

- Active when EFOY temperature is below +3 °C
- Frost protection requires:
  - Good and functional battery
  - Methanol

SFC climate chamber test at -40 °C

Average methanol consumption in frost protection: 0.2 l / day (24 h)

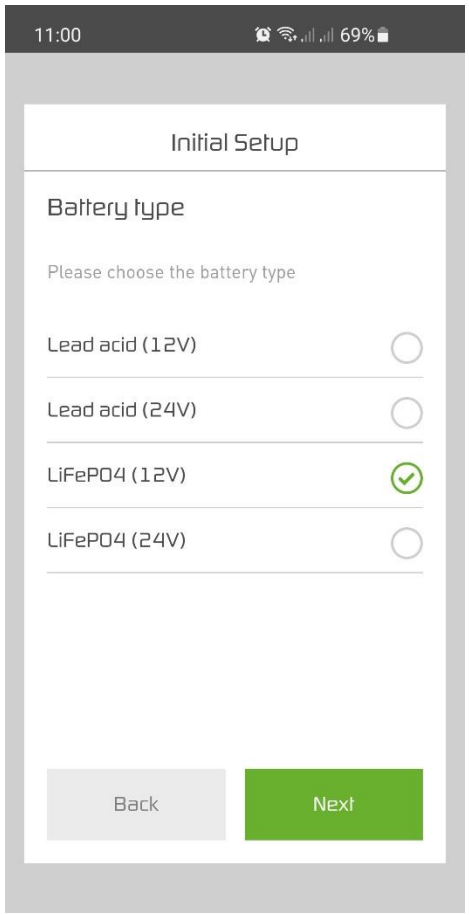
EFOY App
Initial configuration

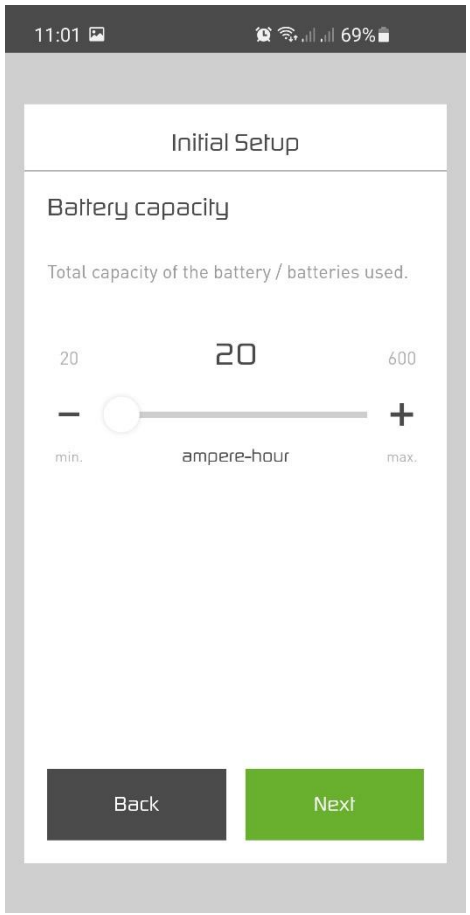
Configuration of the parameters:

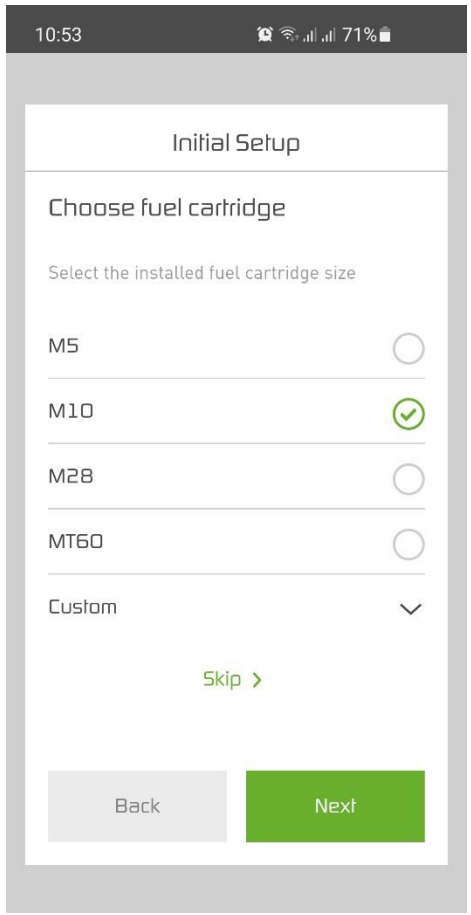
- Battery type, except for EFOY Battery
  - Required information
- Battery capacity, except for EFOY Battery
  - Optional information; required for future functionality
- Fuel Manager or fuel cartridge (type and level)
  - Optional information; required for an exact display of the fill level

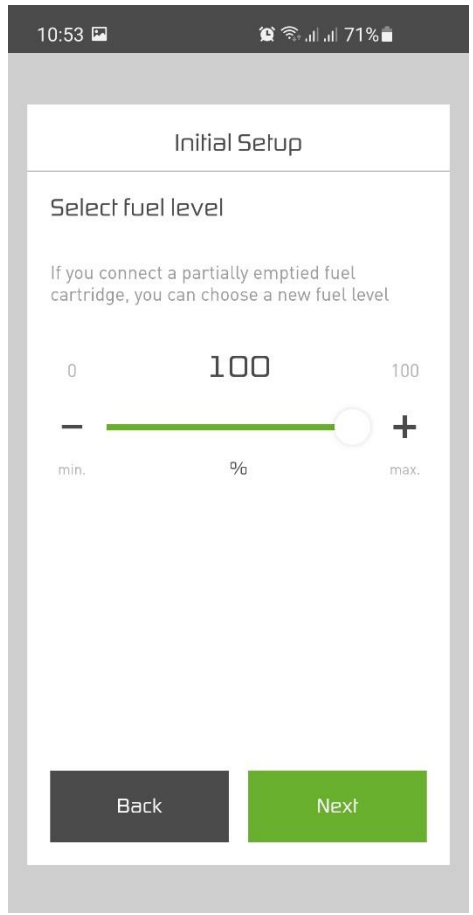
The initial configuration must take place before putting the EFOY into operation

EFOY App
Initial configuration









EFOY App
Transport protection

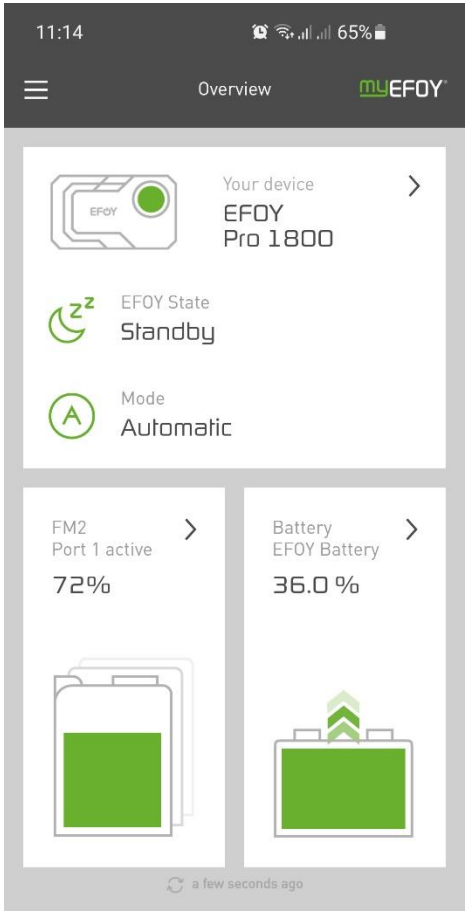
- When new, the EFOY is protected by transport protection
- Fuel cell does not contain liquids and cannot freeze during transport*
- The initial configuration can also be carried out with the transport protection activated

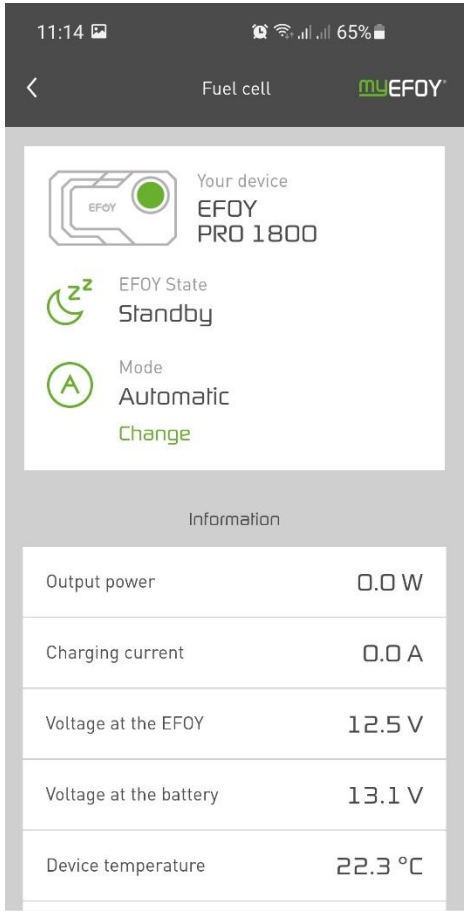
Deactivate transport protection to put the EFOY into operation.

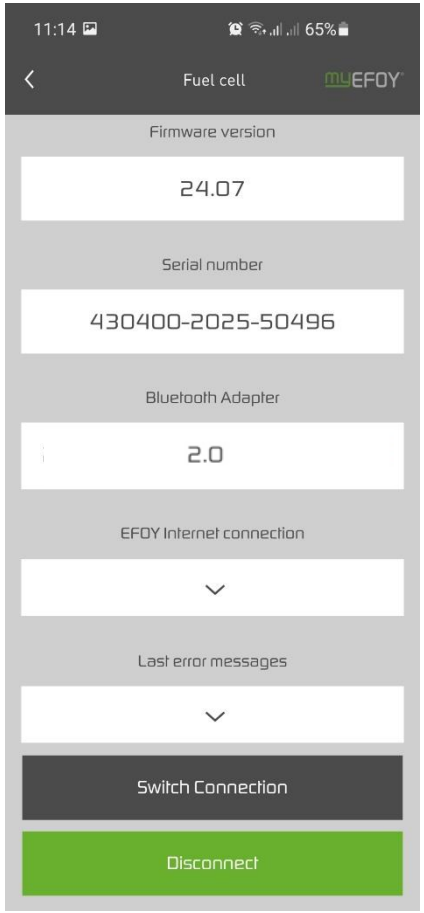
Activate transport protection to transport or store the EFOY.

*for long time storage activate transport protection and don‘t store below +1 °C

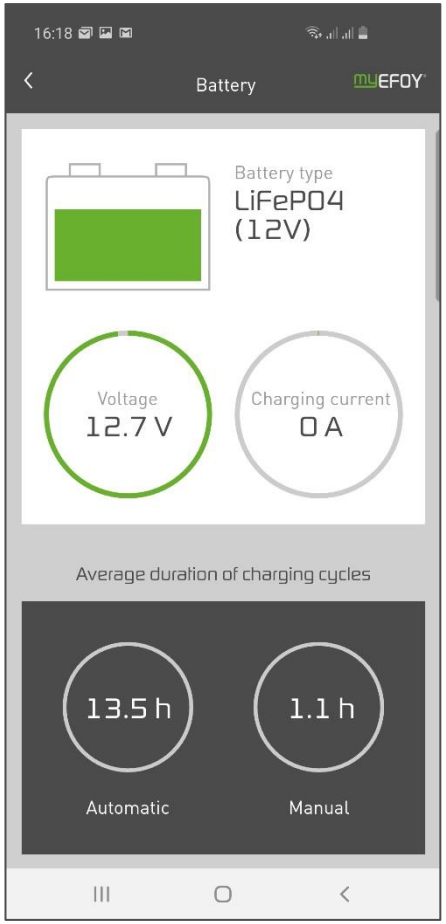
EFOY App
General operation

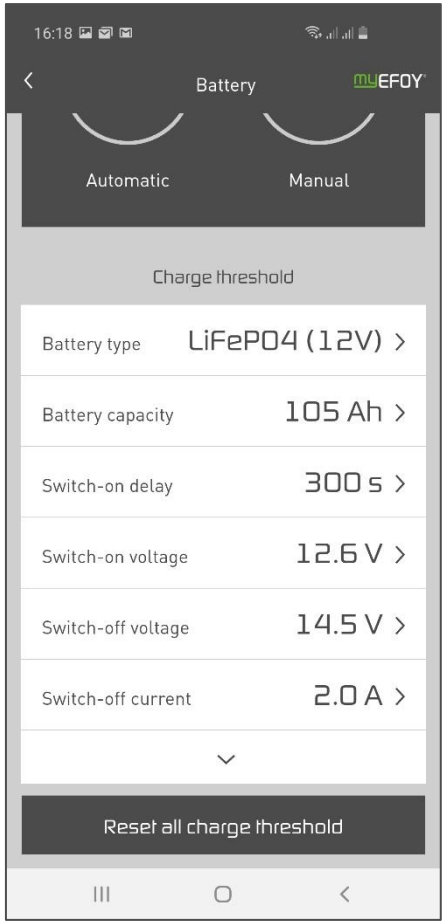


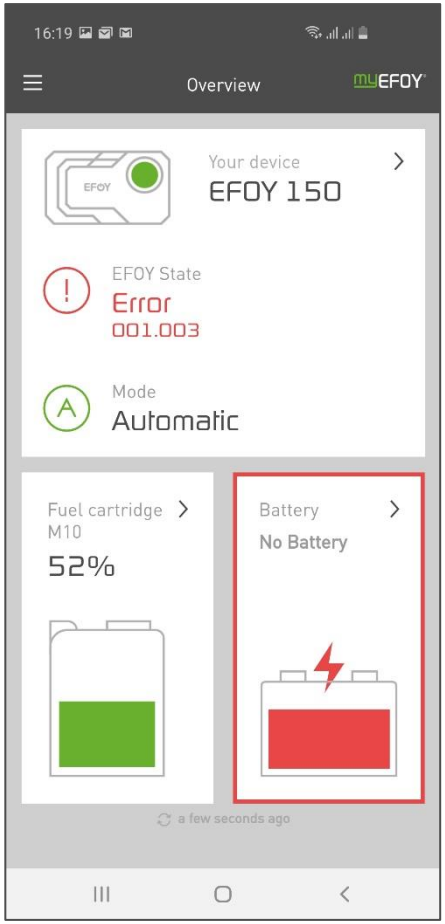


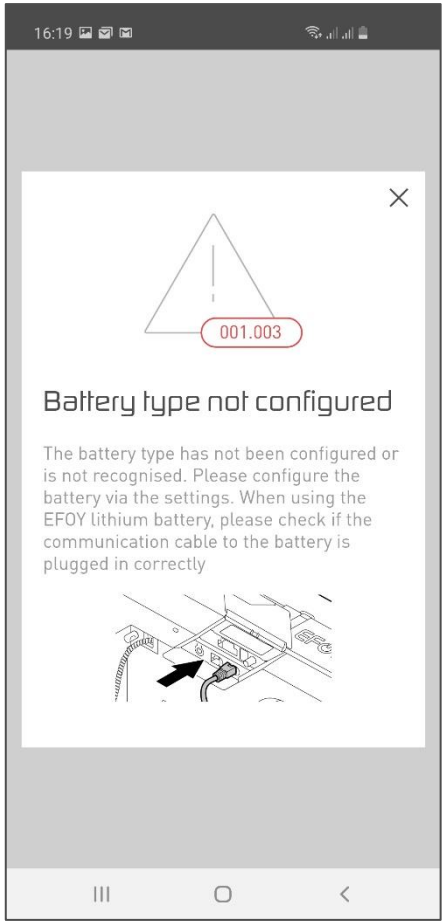


EFOY App
General operation









Operating Panel OP3

- Cable-connected operation of the fuel cell
- Same functionality as the EFOY App
  - Display EFOY data
  - Operate EFOY
  - Configure battery
  - Configure fuel cartridges

Modbus TCP

Unsecure port access

- Modbus TCP is available on the Ethernet port ONLY with prior activation.
- CAUTION: this mode opens an unsecure port into the network and thus requires local network with firewall, otherwise there are heavy risks of insecurity on the EFOY fuel cell.
- The activation and configuration is possible via the Operating Panel and via the serial interface RS-232
- Details on system requirement is available upon request

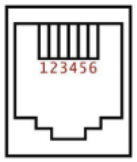
information and operation via Modbus

Discrete Inputs (read)	Input Register (Read)	Coil (write)	Holding Register (write)
• Get quick Information on EFOY state (Error, warning, Fuel Cartridge level	• Get all EFOY information	• Control EFOY (ON / OFF / Reset) • Control Fuel Manager	• Configure EFOY and battery parameters

SIO-Commands
For compatibility ONLY

- Via Terminal-Interface on a computer
- Hardware required: USB Adapter, Interface-Adapter and Data cable RJ45/RJ12 (1 meter)

SFC Bus RJ12



Pin	Description
1	RxD
2	TxD
3	GND, Ground
4	Battery +
5	CAN High
6	CAN Low

EFOY fuel cell

Connecting components – communication

Modbus

EFOY Cloud

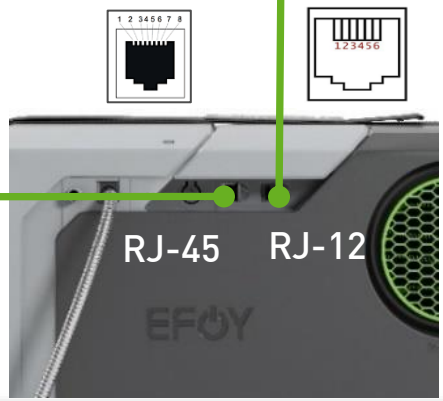
Ethernet

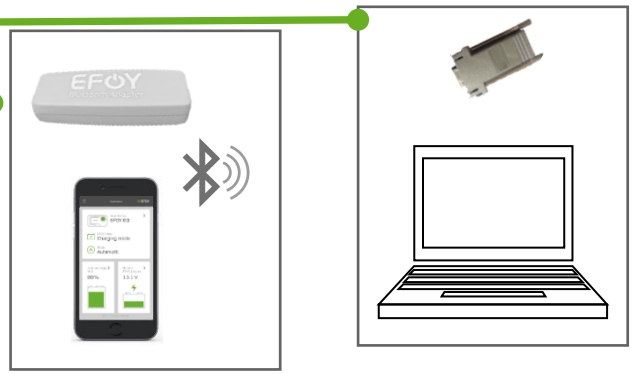
RS-232

Pin	Description
1	RxD
2	TxD
3	GND,
4	Battery +
5	CAN High
6	CAN Low

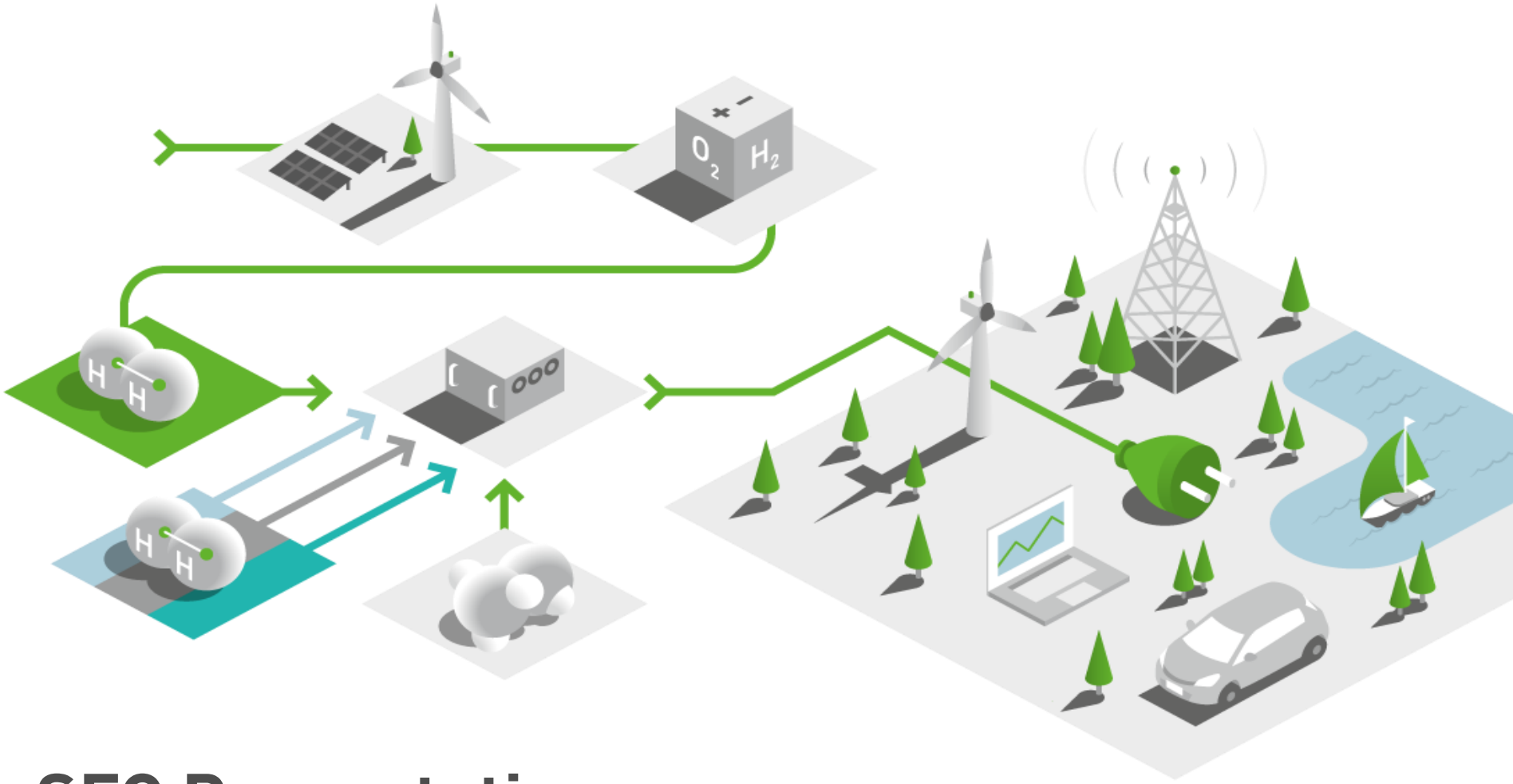
SFC-Bus

Pin	Description
1	RxD
2	TxD
3	GND,
4	Battery +
5	CAN High
6	CANLow





SFC ENERGY



SFC Presentation

Installation & Best Practice

SFC ENERGY

Flexible installation

Connection of EFOY Pro, Fuel Manager and Cartridge

- In boxes / cabinets with more than 2x M28
  - Use a fan for off heat
  - Separate the electronic devices from the fuel cartrdiges

More installation flexibility due to extended fuel connectors.

Installation: Temperatures

Operating temperature

EFOY - 20 °C to +40 °C
EFOY Pro -20 °C to + 50 °C

Start temperature

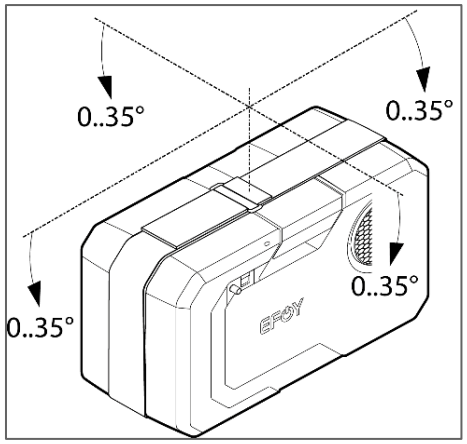
EFOY +3 °C to +40 °C
EFOY Pro +3 °C to + 50 °C

Storage temperature

+1 °C to +50 °C

*for long time storage activate transport protection and don‘t store below +1 °C

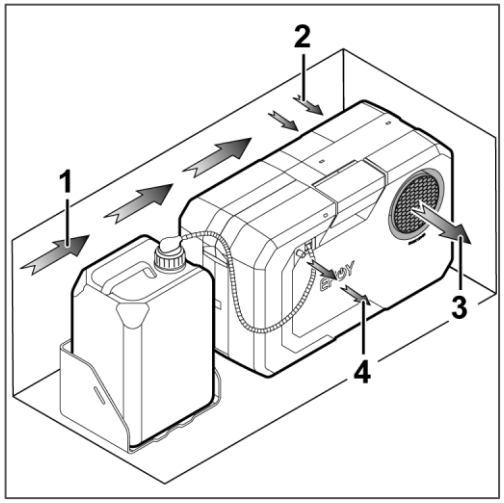
Installation: Inclination



Inclination

- Inclination along the direct axis: max. 35°
- Inclination along the quadrate axis: max. 35°

Installation: Inlet & outlet



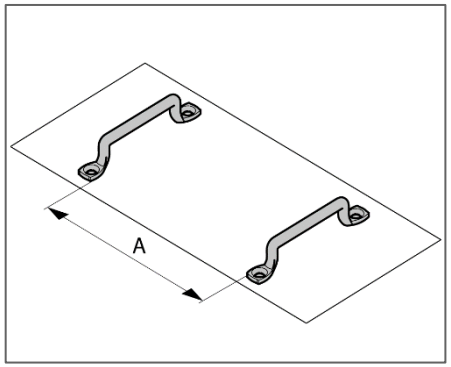
Overview of airways

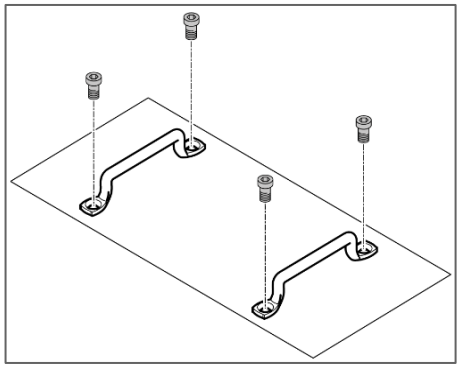
- 1 Incoming air
- 2 Air cooling via heat exchanger
- 3 Exhaust heat removal
- 4 Wastewater / exhaust gases

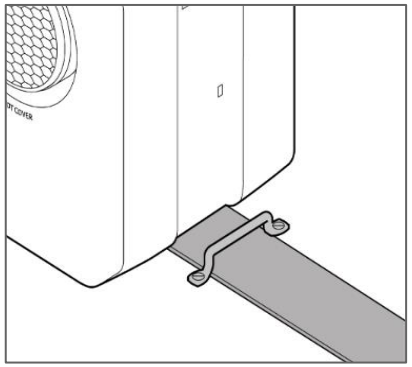
Inlet & outlet dimensions

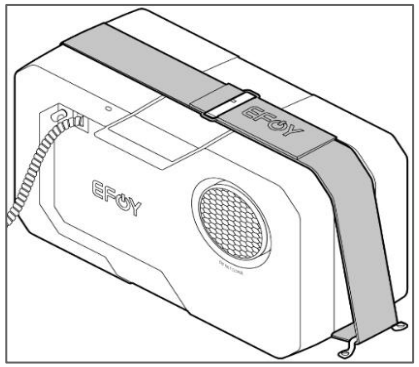
Incoming air inlet	Ø at least 10 cm
Exhaust heat outlet	Ø at least 10 cm
Exhaust gas hose outlet	Ø 1cm

Installation: Mounting of the EFOY

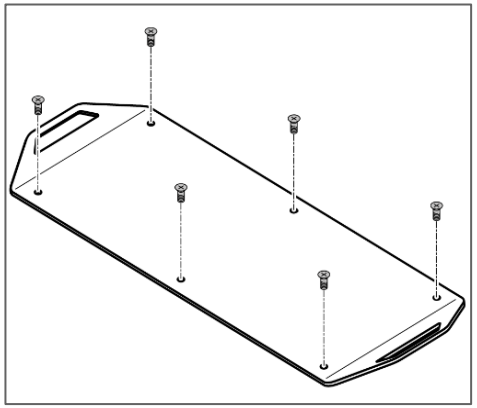




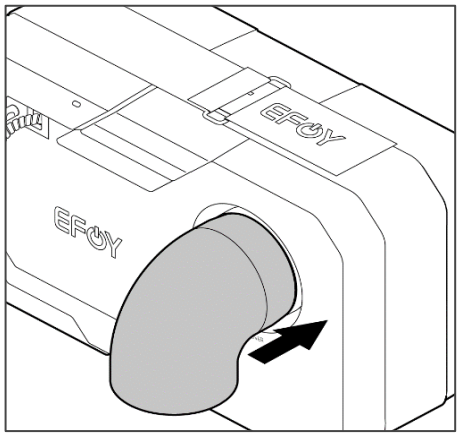


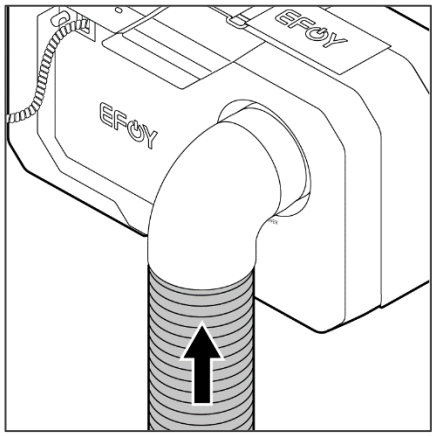


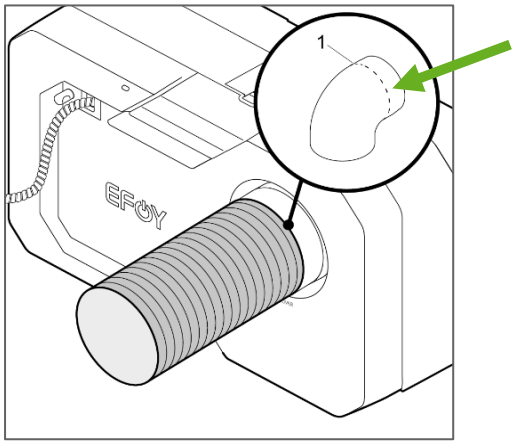
- Measure the position of the brackets (A = minimum length of the EFOY)
- Fasten the brackets with screws
- Insert EFOY and thread the strap into the brackets
- Close belt
- Optionally available: mounting plate



Installation: Assembly Off Heat Duct



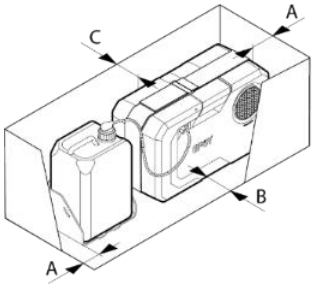


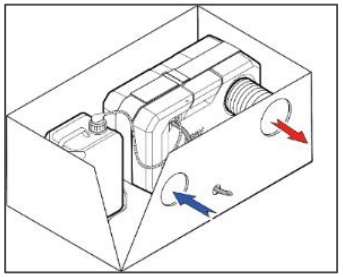


- Off heat duct vertically downwards:
  - Attach the off heat bow to the EFOY
  - Attach the tube and guide it vertically downwards
  - Cut the pipe to the appropriate length and seal it to the outer wall
- Off heat duct on the side:
  - Cut off the off heat bow and attach it to the EFOY
  - Put on the tube, lead it to the outside and seal it to the outside wall

Best Practice:
Supply air and off-heat

- Air inlet and outlet are separate from each other
  - The position changes depending on the energy solution and its requirements
- Adequate Inlet & Outlet dimensions
- Off-heat tube installed



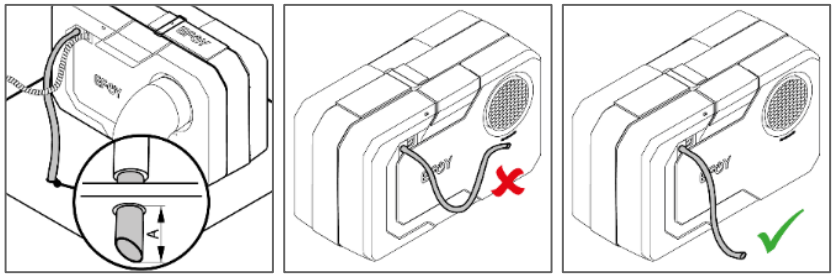


Best Practice:
Supply air and off-heat

- Gill plate to protect against rain
- Additional: Insect protection (mesh) recommended
- Air filter for installation locations with high dust levels or salty air recommended

Best Practice:
Installation for the exhaust hose

- Various options for the outlet:
  - Exhaust hose via the exhaust off-heat tube
  - Exhaust hose via the side outlet
  - Exhaust hose between the double-walled enclosure of the cabinet
- Adequate exhaust hose outlet (diameter + cut off at an angle)
- Exhaust hose outlet as short as possible
- Insect protection recommended



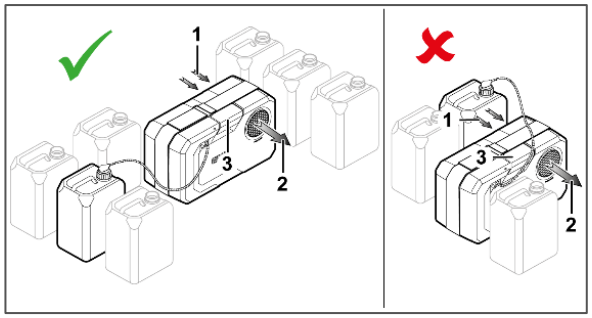
Best Practice:
Arrangement of fuel cartridges

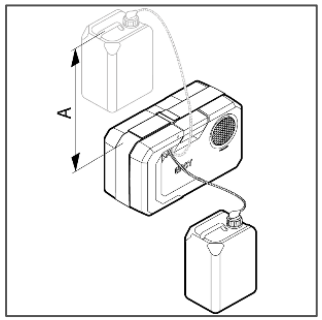
- Install fuel cartridges upright and secured
  - Secured by foam / mechanical structure
  - Secured by belt
  - Secured by fuel cartridge holder (M10)

- Only M28 can be installed horizontally, but with valve facing upwards!
- Attach & secure the fuel cartridge hoses to protect them from dirt while changing the Fuel Cartridges

Best Practice:
Arrangement of fuel cartridges

- If the enclosure exceeds › 2x M28, fuel cartridges should be separated from the electronics
- Passive ventilation slots at the bottom of the enclosure to allow any methanol vapors to escape
- DIN rail for the fuel sensor
- No blockage of the incoming air inlet (1), off-heat outlet (2) and electrical connections (3)





Best Practice:
Subdividing the installation situation

- Try to divide the installation situation into separate areas
- Recommended temperatures for the areas:
  - Battery 5 – 35°C
  - EFOY 8 – 35°C
  - SFC Fuel Cartridge -20 – 35°C
- Do not be mistaken for maximum temperatures.

These are recommended temperatures (not max. temperatures) to help you estimate what temperatures should be aimed for in an enclosure.

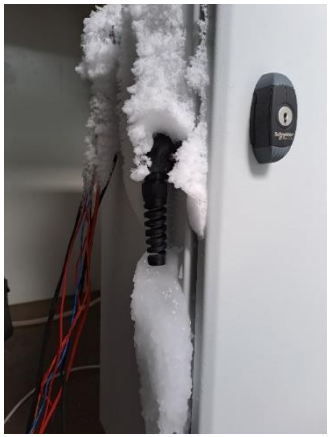
Best Practice:
Challenge high temperature

- Good airflow through the complete energy solution
- Additional fans starts automatically from 35°C in the enclosure
  - Always: at least one additional fan (in off-heat tube)
  - If necessary: more additional fans in the enclosure (depending on enclosure size)
  - Typical fan model: DC; axial; 24VDC; 92x92x25mm; 128m3/h
- More space as the minimal between EFOY and surrounding components to ensure better airflow

- How to choose a fan:
  - Air pressure and volume flow are crucial
  - The pure technical data cannot be directly transferred to the installation situation. Objects in the room have an extreme impact on those values
  - At temperatures above 45°C, a volume flow of 1 m3/min should be ensured

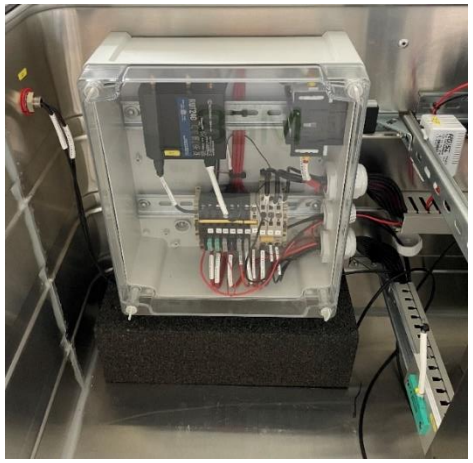
Best Practice:
Challenge very low temperature

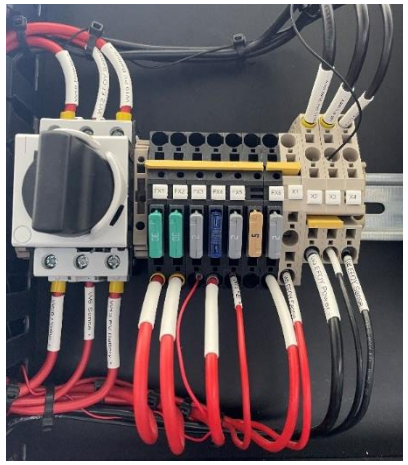
- Always: Use short and insulated exhaust hose
- Prevent that the exhaust hose gets frozen → Use exhaust air to heat the exhaust hose
- Additionally: use heated exhaust hose if necessary
- Sufficient space between exhaust outlet and ground in order to avoid ice growing up to the exhaust
- More space between EFOY and enclosure (air as insulation)
- Insulate the EFOY enclosure (SFC low temperature solutions)

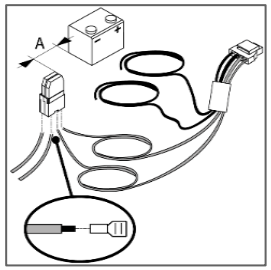


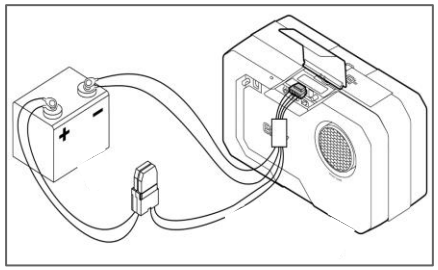
Best Practice:
Wiring, fuses and switches

- Main switch to disconnect the EFOY fuel cell from the battery
- Proper wiring with appropriate fuses
- Document wiring with wiring diagram (helpful in case of technical support by SFC)









Best Practice:
Deep-discharge protection

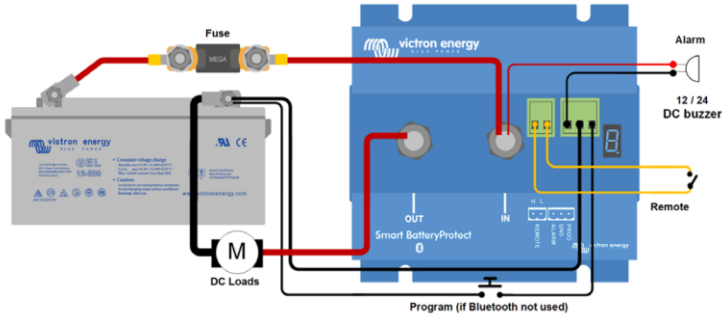
- Use of battery protection to prevent deep-discharge of the batteries
  - Function included into charge controller
  - Separate battery protect component

- IMPORTANT: make sure that the EFOY can start at any time and is not disconnected from the battery
  - In case of frost protection

Smart BatteryProtect BP-65

SmartSolar Lade-Regler
MPPT 150/35

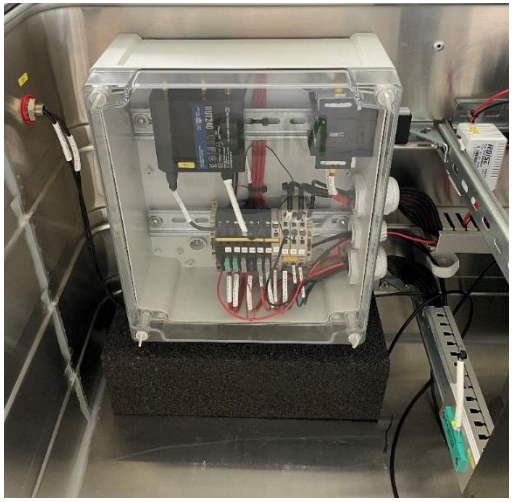
Smart BatteryProtect BP-100



Smart BatteryProtect BP-220

Best Practice:
Internet connection via router (remote monitoring)

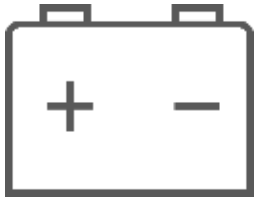
- Any router can be used
- Initial configuration of the router according to the router manufacturer
- Antenna may have to be placed at the outside (avoid shielding by metal housing)
- required data volume depends on the frequency of use of the EFOY Cloud → typically 500 MB / month is sufficient



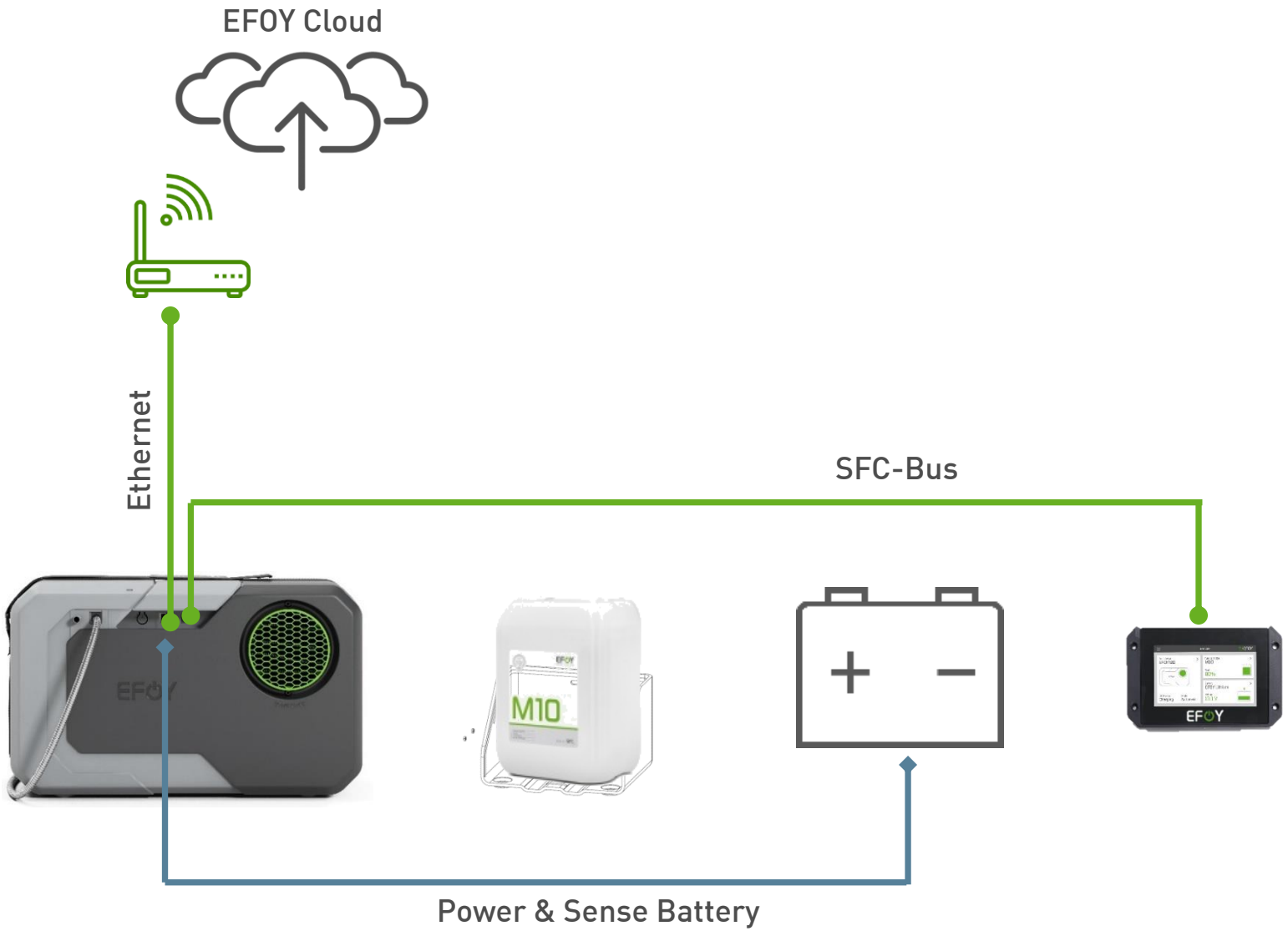
Connecting components

Power

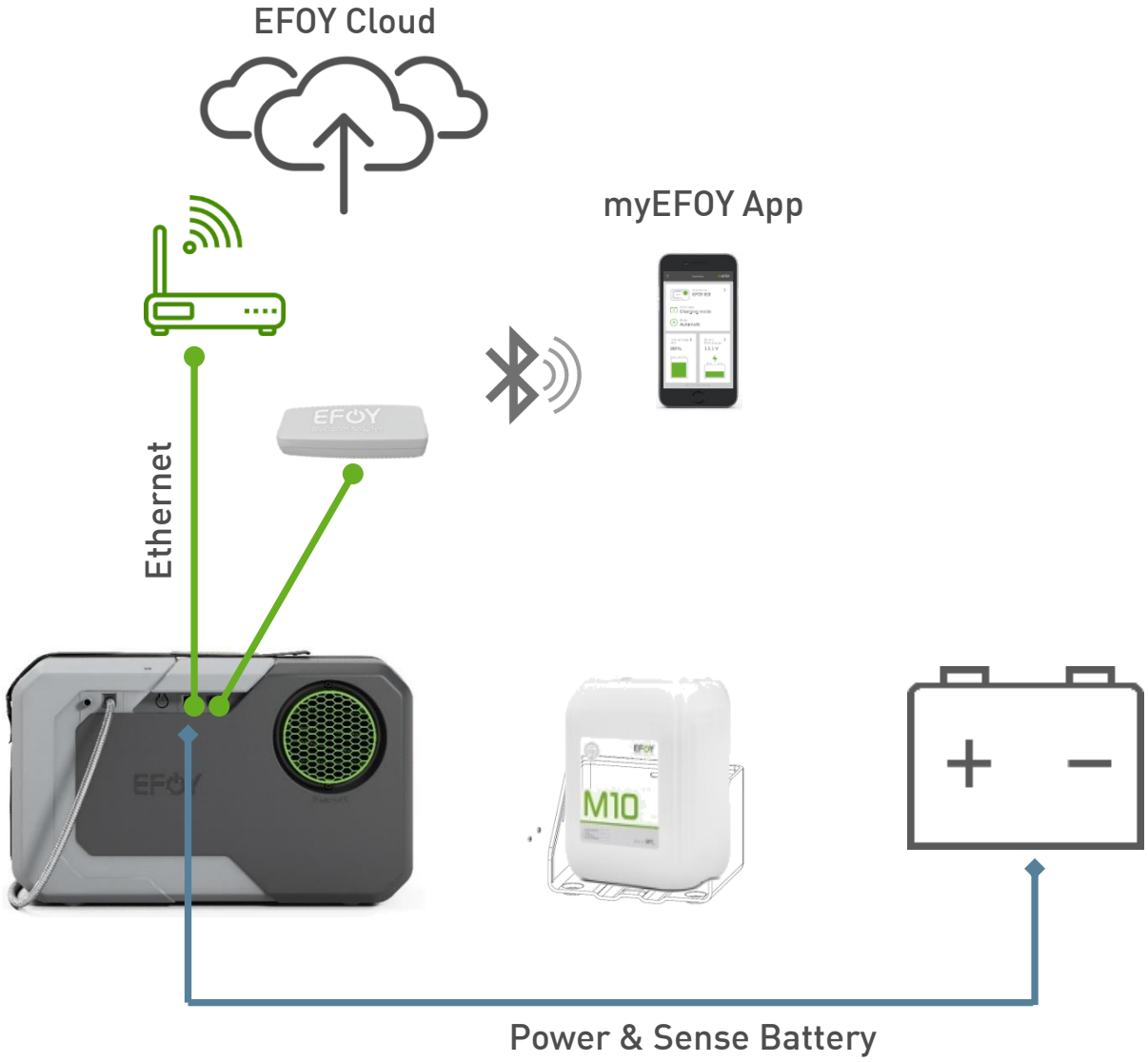
Communication



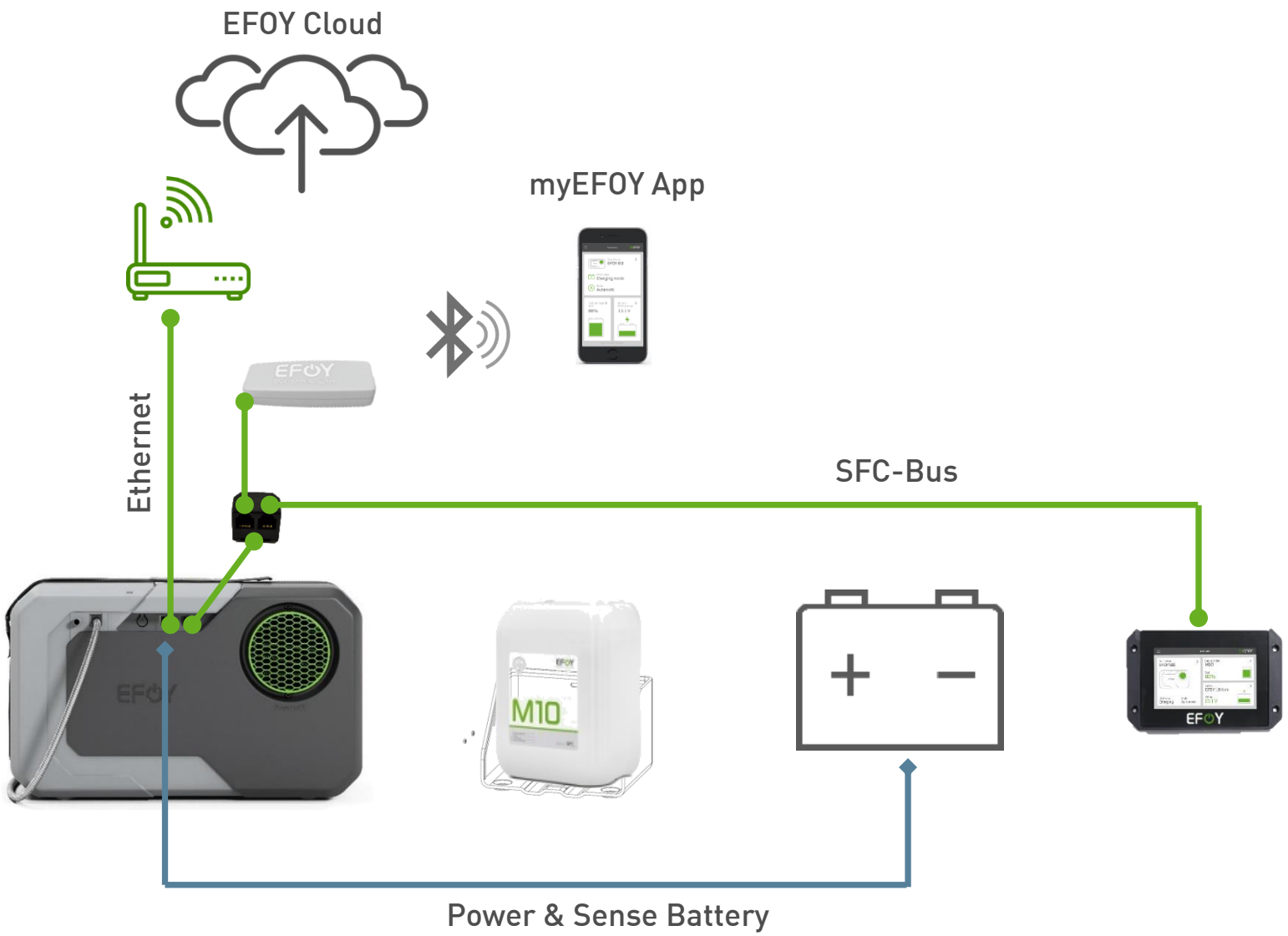
Connecting components

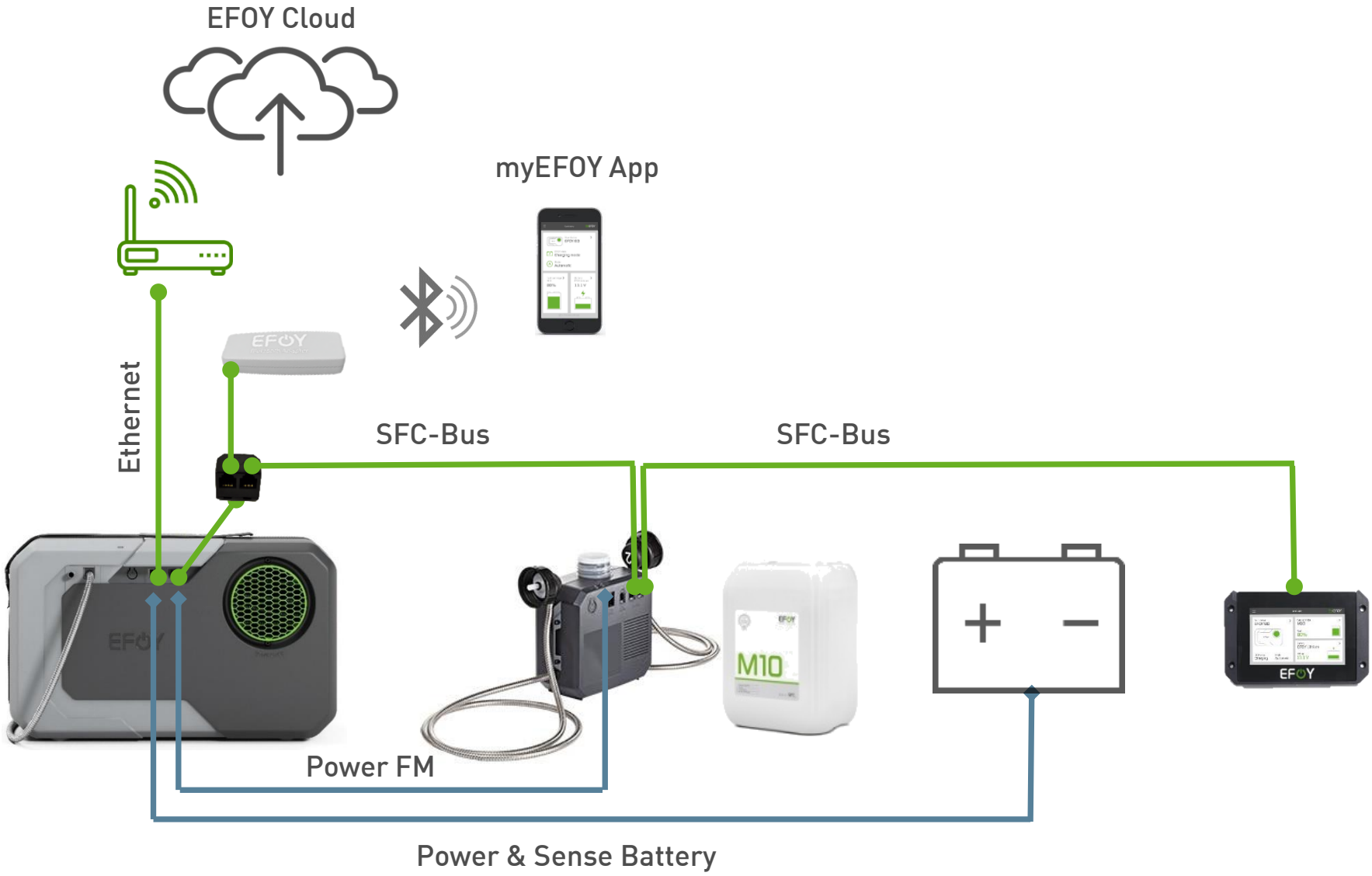


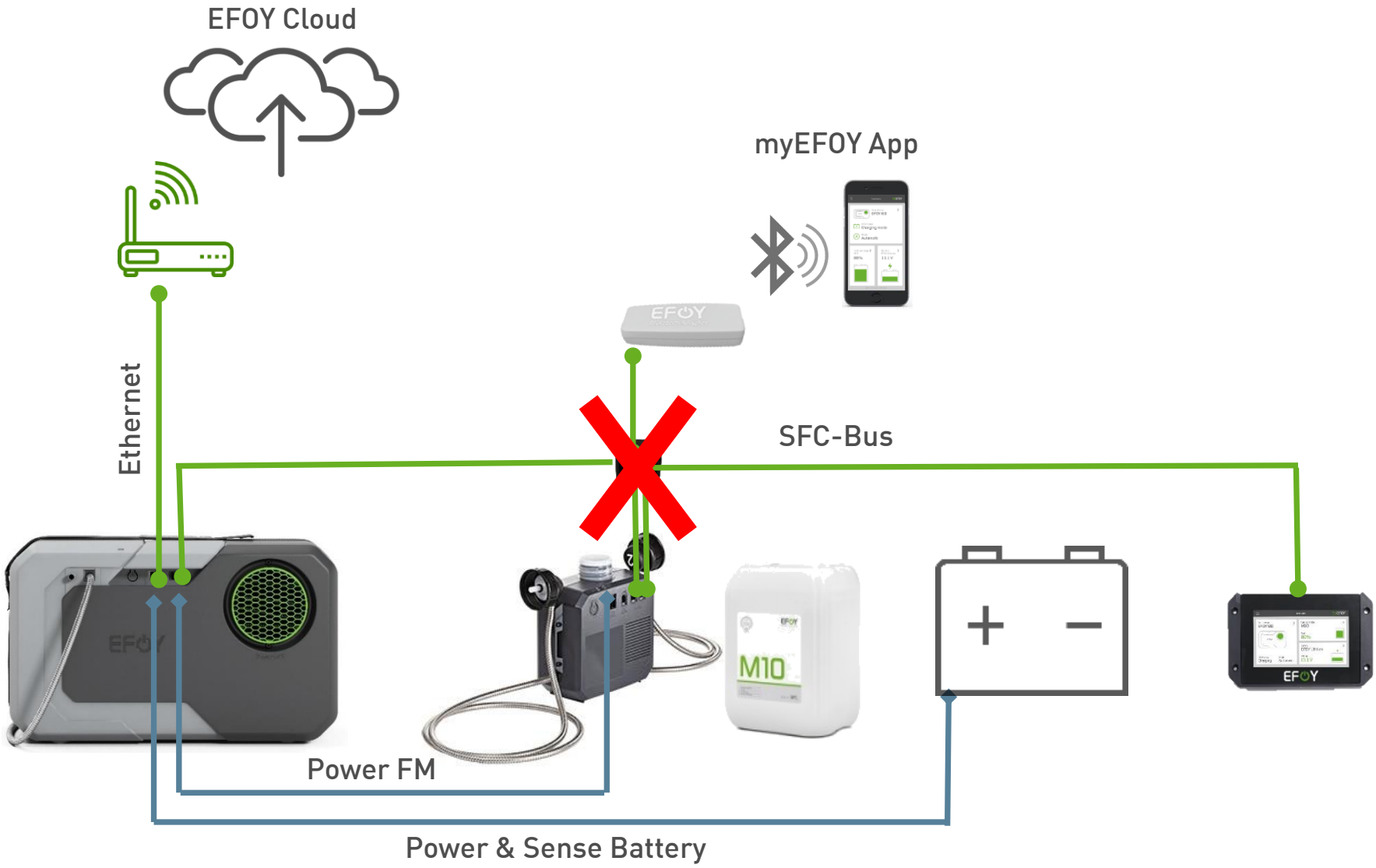
Connecting components

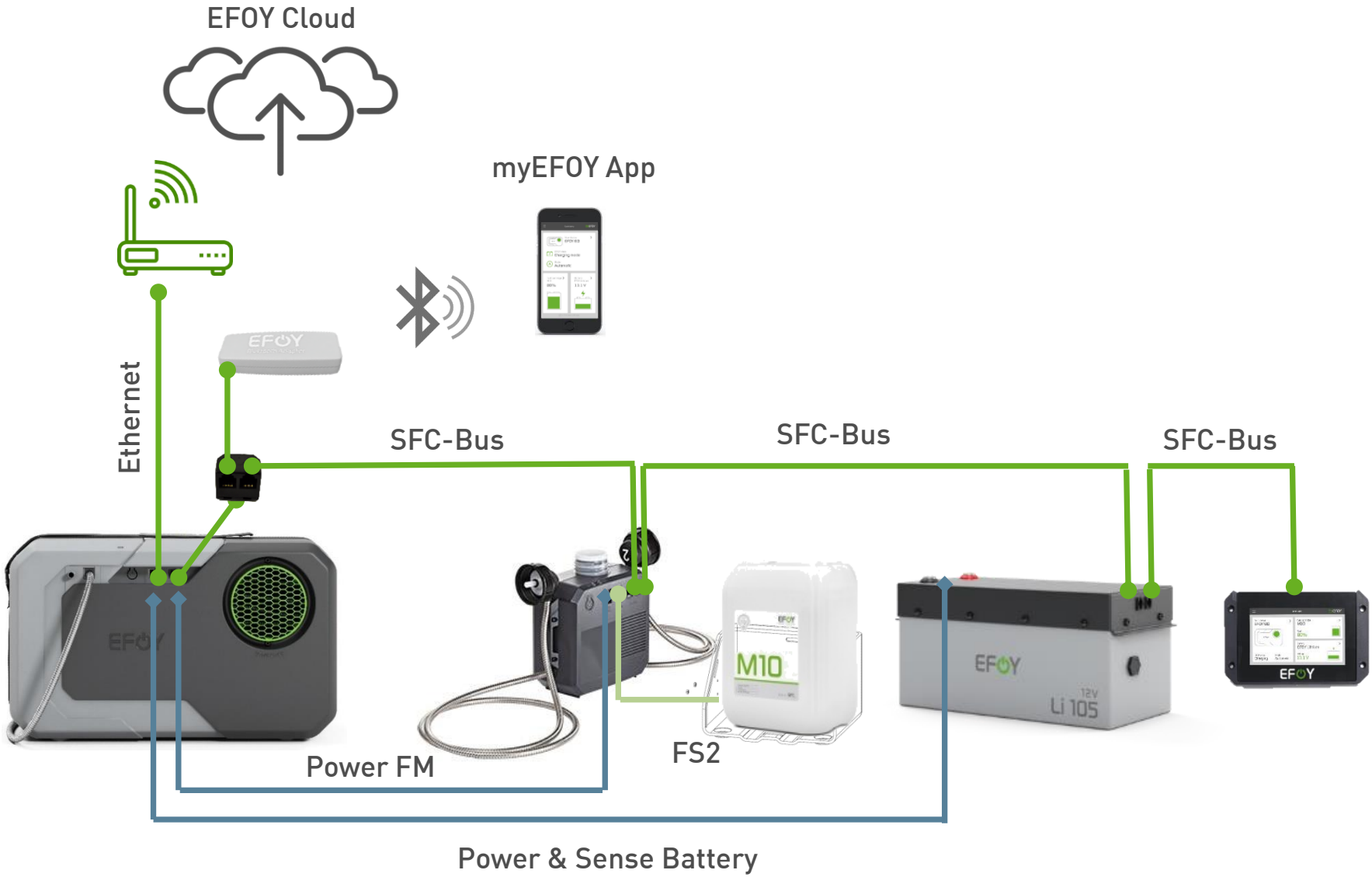


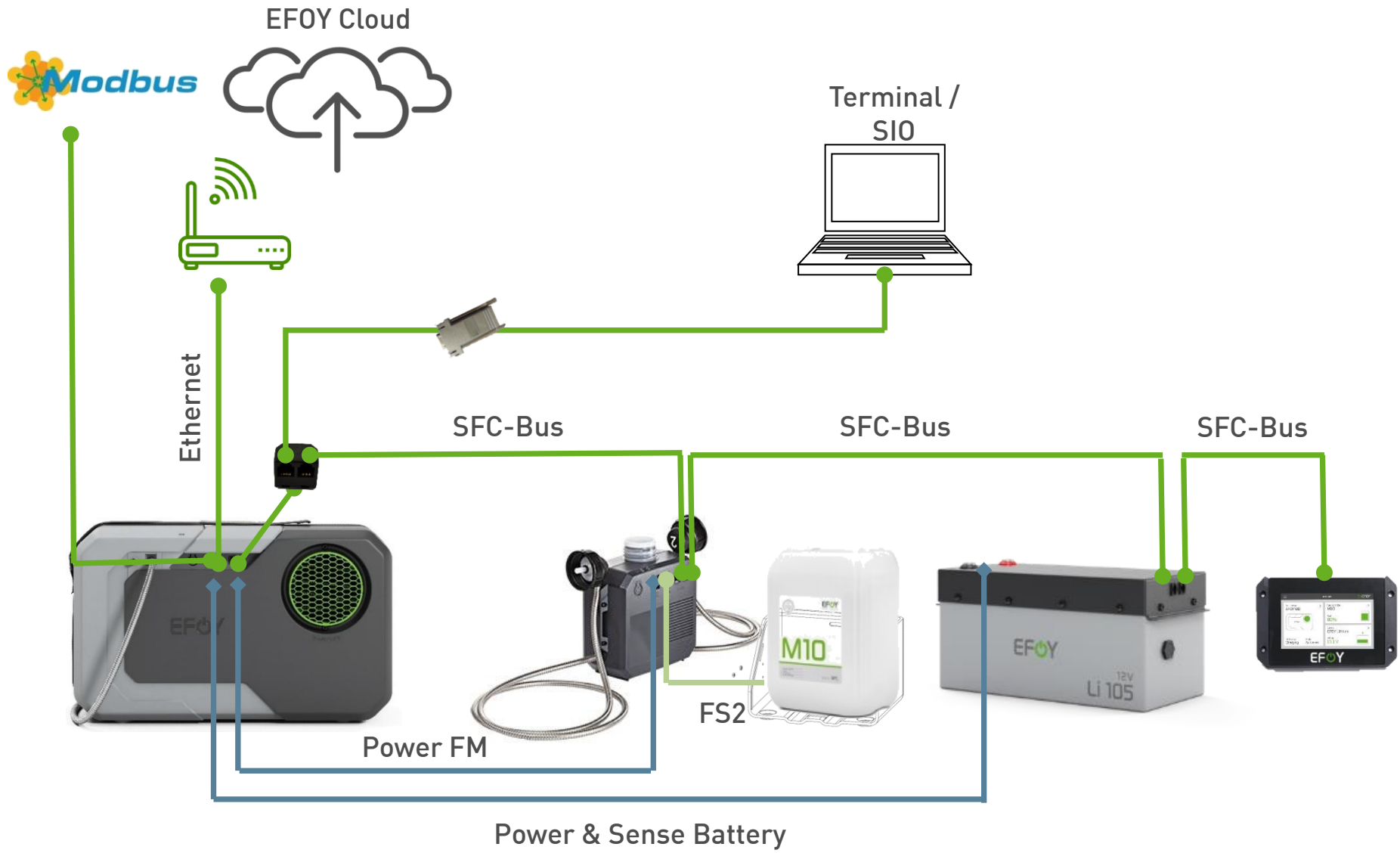
Connecting components

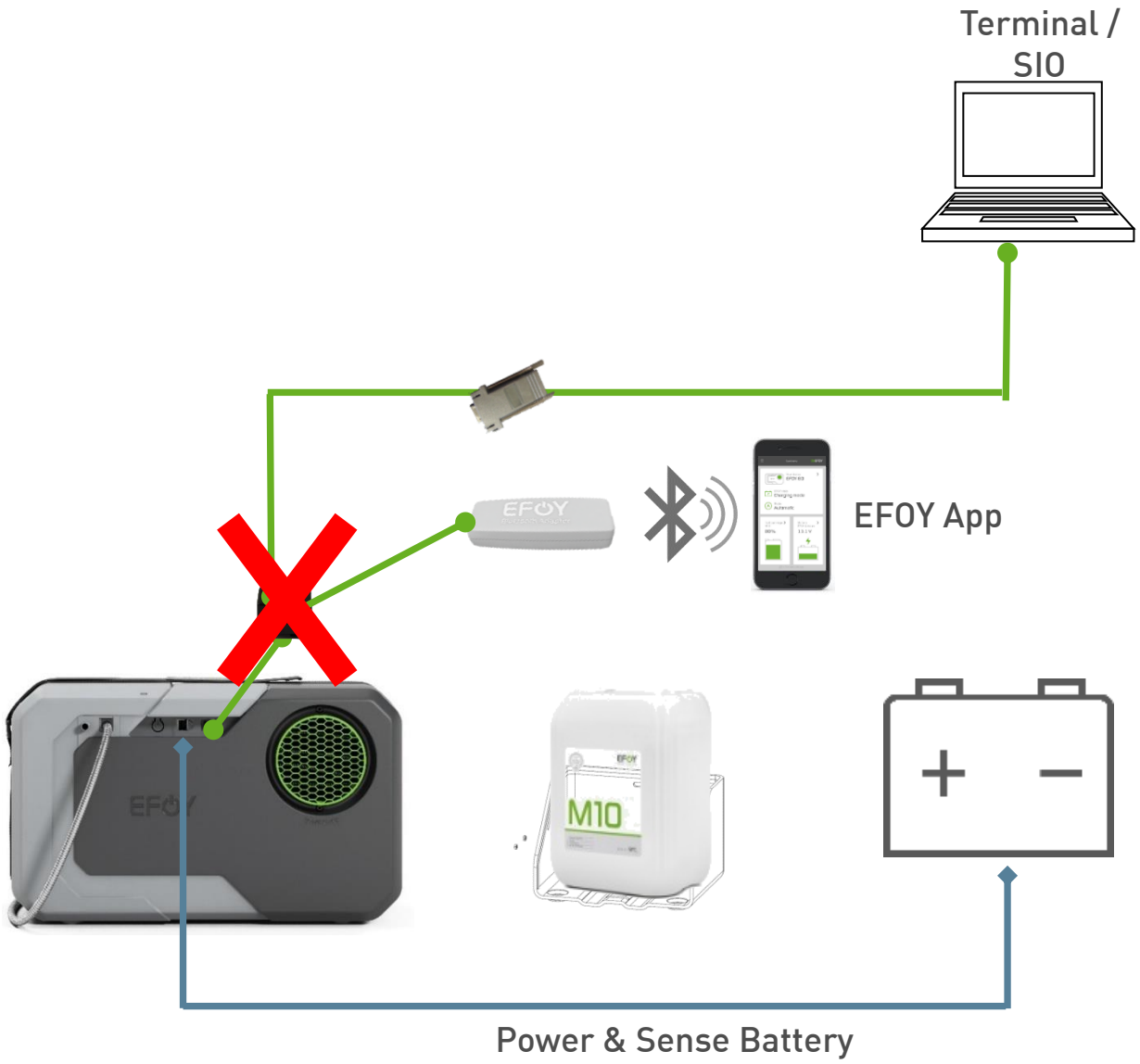


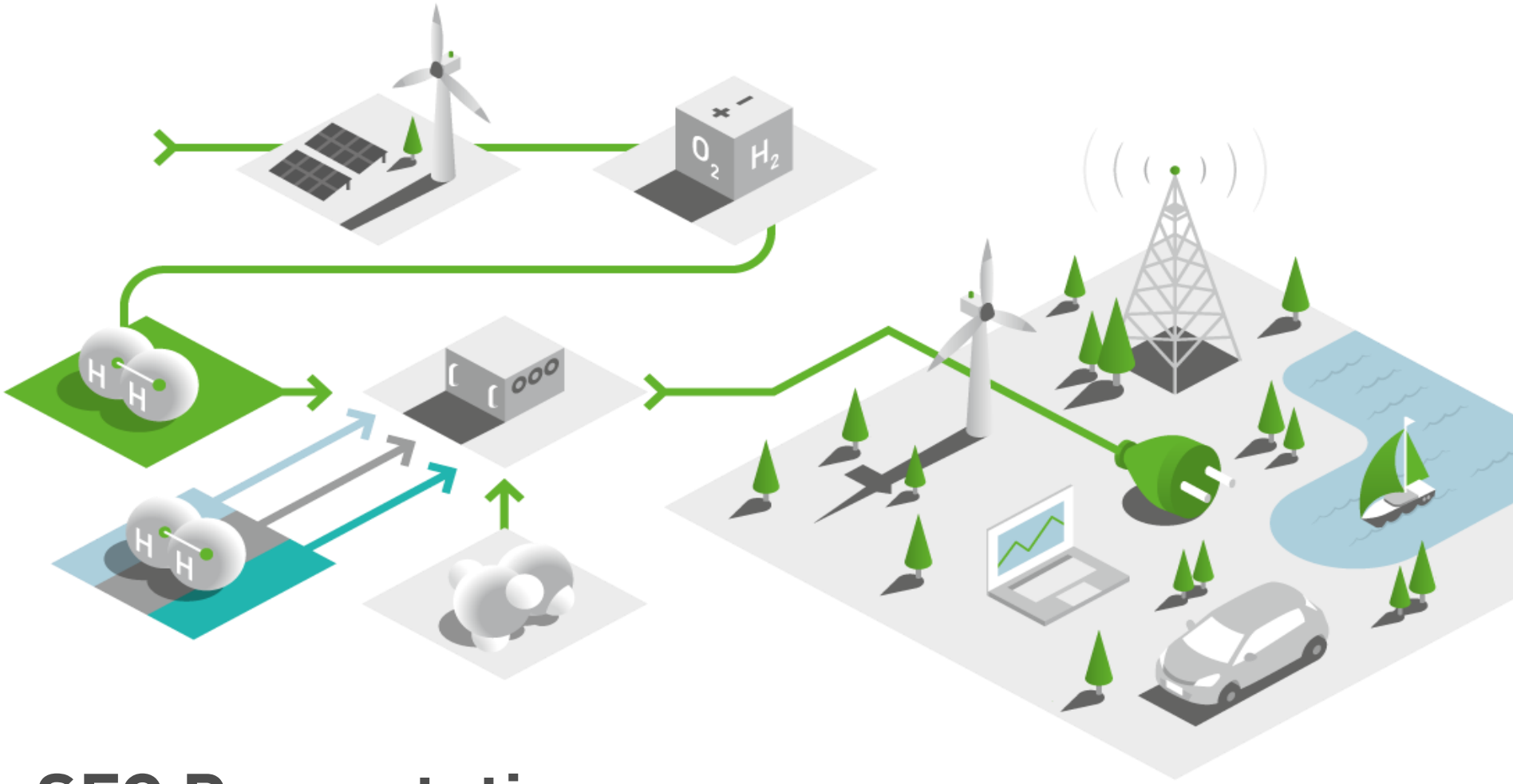

EFOY Cloud
myEFOY App
Ethernet
SFC-Bus
SFC-Bus
M10
+
−
Power FM
Power & Sense Battery


EFOY Cloud
myEFOY App
Ethernet
SFC-Bus
M10
+
−
Power FM
Power & Sense Battery


EFOY Cloud
myEFOY App
Ethernet
SFC-Bus
SFC-Bus
SFC-Bus
M10
Li 105
Power FM
FS2
Power & Sense Battery


EFOY Cloud
Modbus
Terminal /
SIO
Ethernet
SFC-Bus
SFC-Bus
SFC-Bus
M10
FS2
Li 105
Power FM
Power & Sense Battery


Terminal /
SIO
EFOY App
M10
+
−
Power & Sense Battery



SFC Presentation

EFOY Cloud

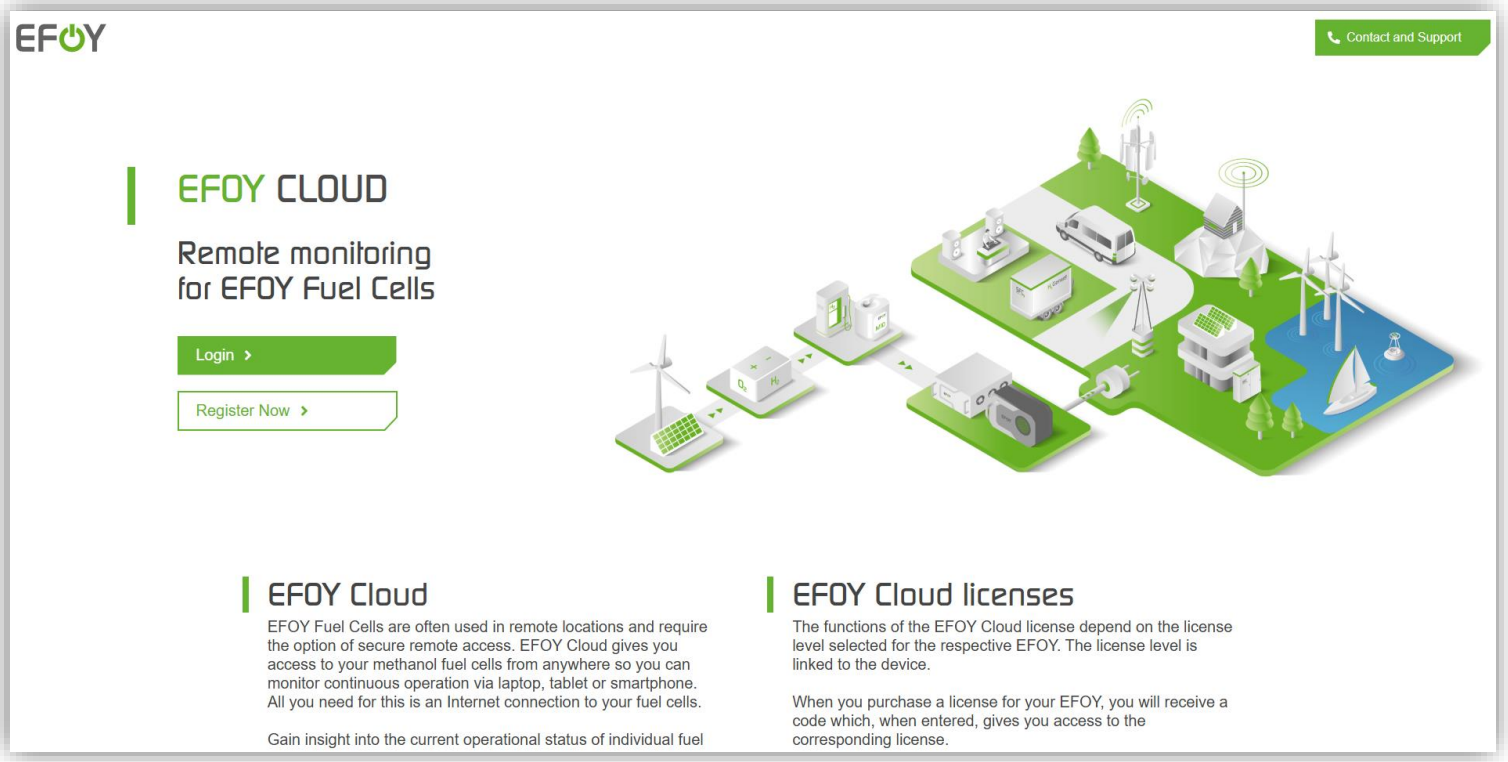
SFC ENERGY

EFOY Cloud

1	Login / Create Account
2	Claim your EFOY
3	Licenses
4	Rights and Roles
5	New features
6	Maintenance and updates

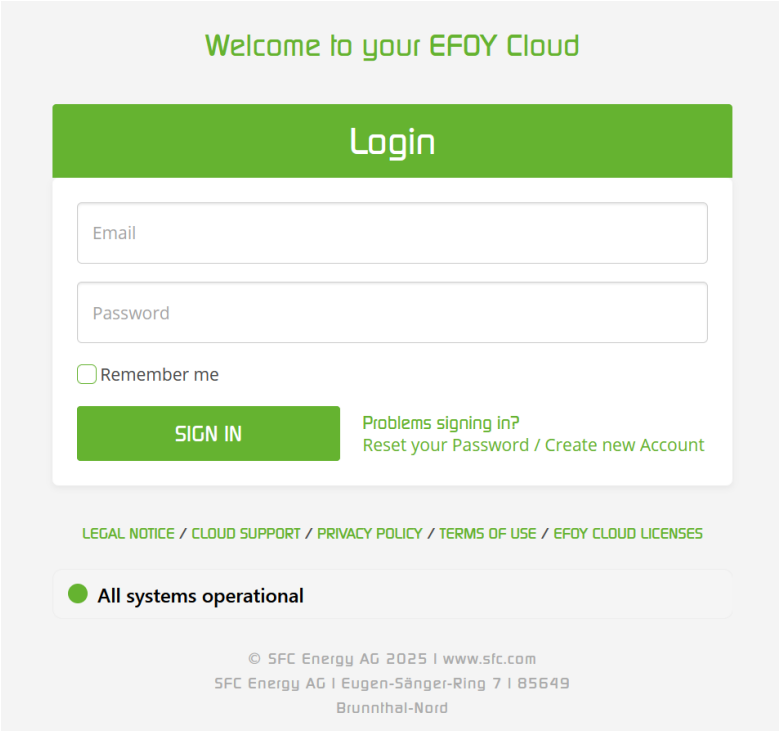
Start EFOY Cloud - Login

- URL: https://www.efoy-cloud.com/
- New landing page at first login (no longer visible after the login):



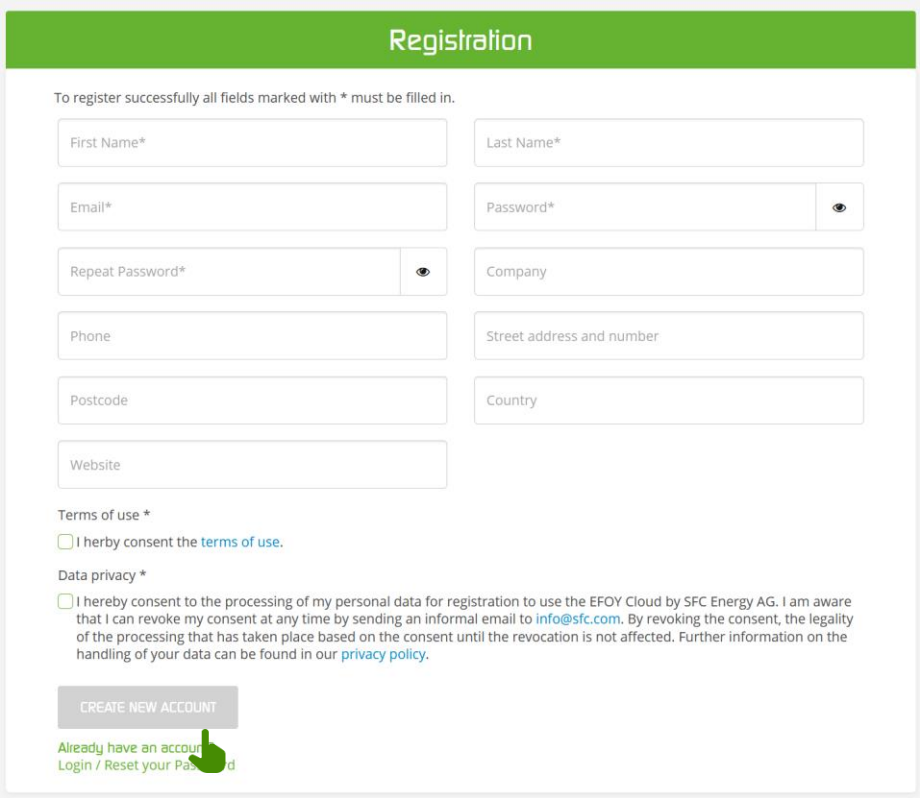
Start EFOY Cloud - Login

- Login with your already created account:



Start EFOY Cloud – Create Account

- Create a new Account if you do not already have one:



Start EFOY Cloud – Create Account

- Owner:
  - the account (e-mail) with which an EFOY is claimed is the owner
  - only the owner can claim EFOYs, enter license keys and delete the device from the EFOY Cloud
  - For legal reasons (owner's rights), the owner's e-mail address cannot be changed
  - The device must be deleted from the EFOY Cloud and claimed with a new account (owner) to replace the e-mail address
  - If an owner deletes his user account, all his devices are unclaimed

EFOY Setup schedule

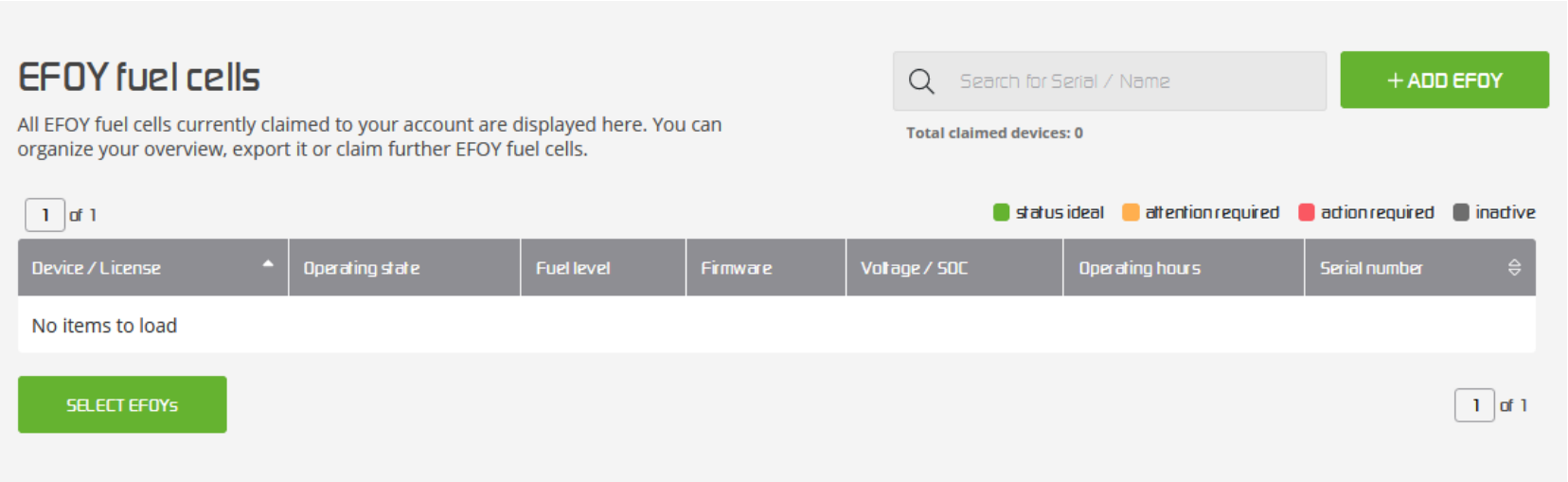
Setup tasks can only be performed by account Owner

- Step 1: create an Account
  - Can only be done online
  - Only by the owner
- Step 2: claim EFOY to the Cloud
  - Live, in person access to the device is required
  - Only by the owner
- Step 3: apply license key from label or in the Cloud
  - Live, in person access to the device is required (label)
  - Remote in the EFOY Cloud (no label – new feature)
  - Only by the owner
- Step 4: Role assignment / Group management
  - Can only be done online via the EFOY Cloud
  - Performed either by the owner or other users with „full support“ role

The license key was located on the label underneath the belt -
Has now been replaced by the new feature!

EFOY Account

- Overview of your EFOY fuell cells
  - No EFOYs claimed yet in this example below:

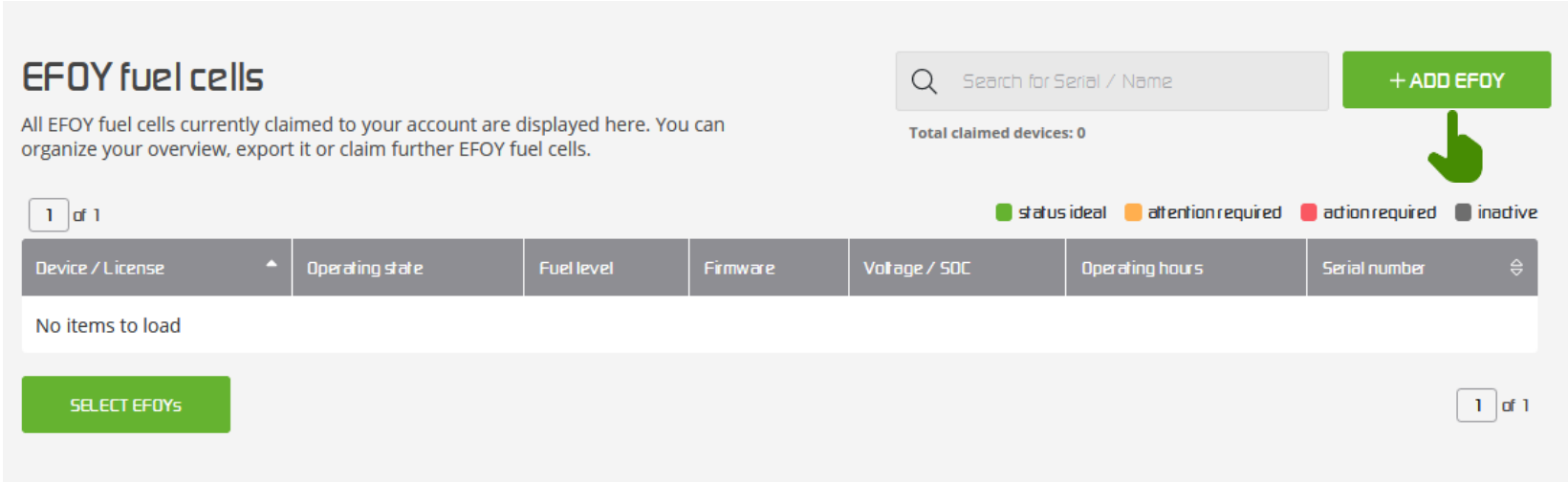


EFOY Cloud

1	Login / Create Account
2	Claim your EFOY
3	Licenses
4	Rights and Roles
5	New features
6	Maintenance and updates

Claim your EFOY

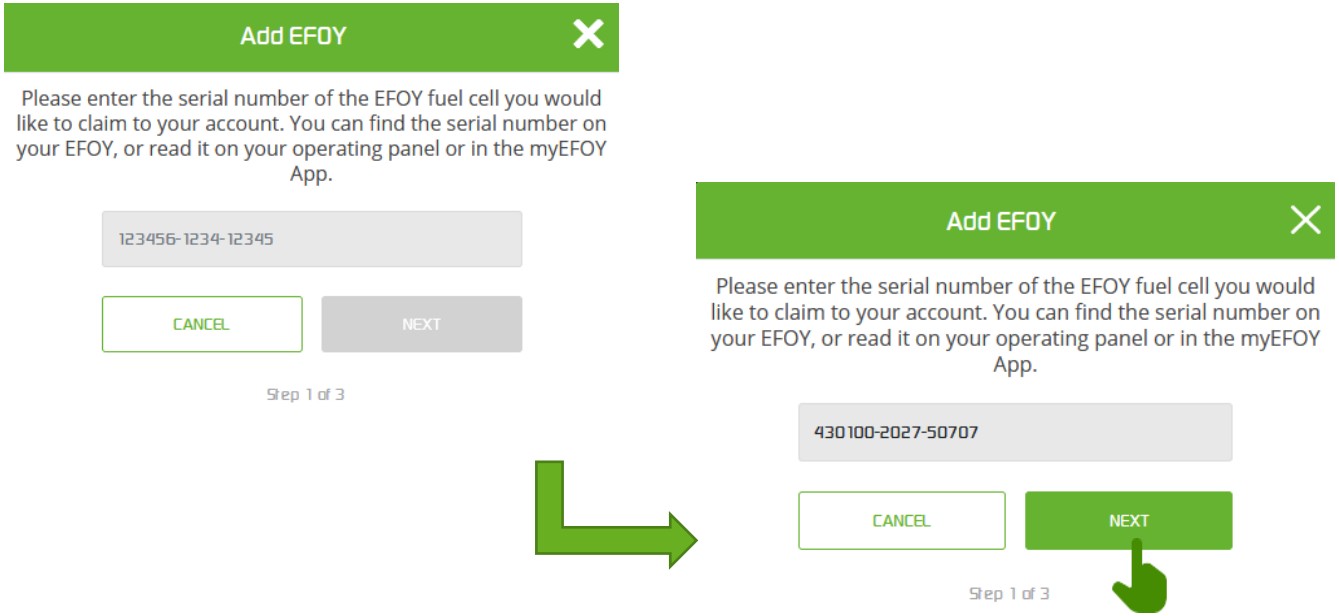
- Claim an EFOY by clicking the „ADD EFOY“ button



Claim your EFOY

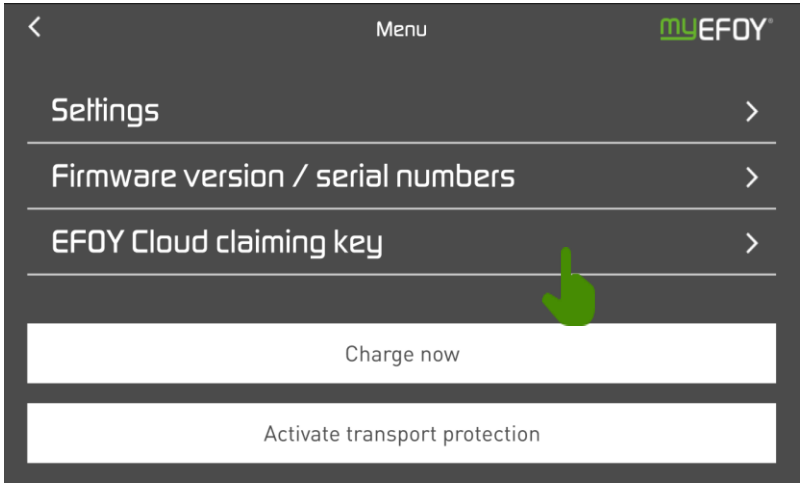
- Enter the serial number of your EFOY

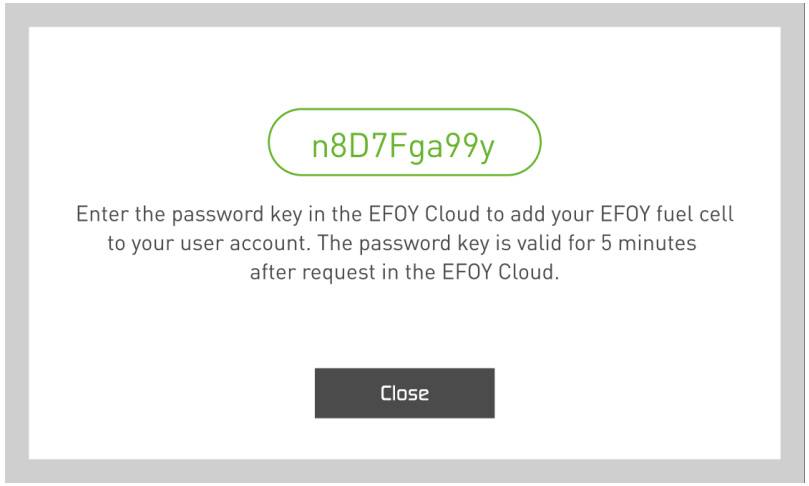
  (You can find these in the lid of the device itself or via the operating panel or the EFOY app, Internet connection at the EFOY is required)



Claim your EFOY

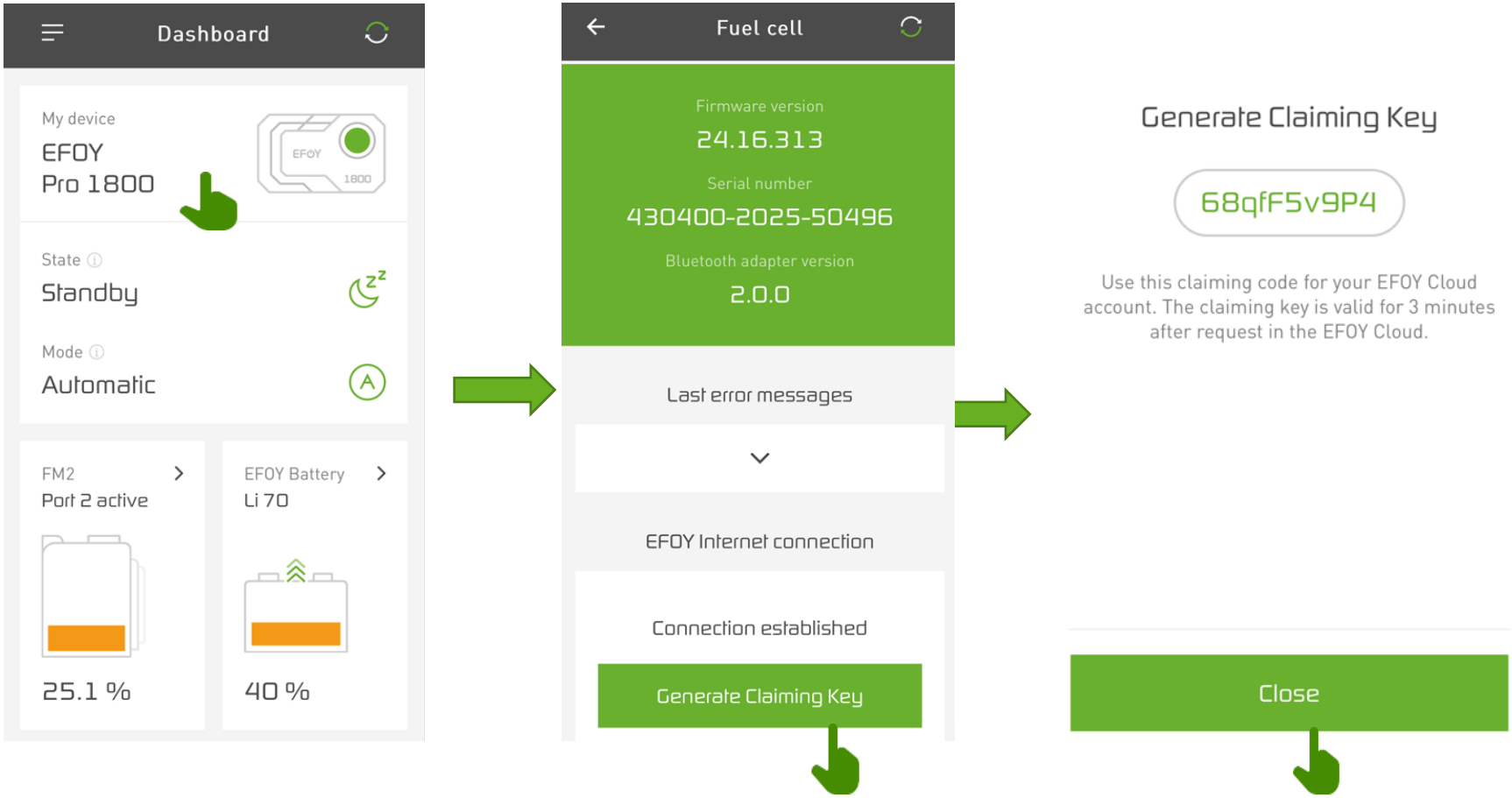
Claiming Key on the Operating Panel





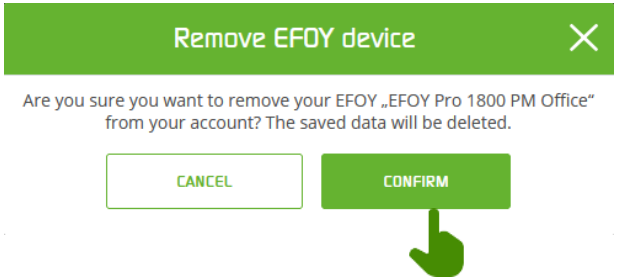
Claim your EFOY

Claiming Key on the EFOY App



Delete your EFOY

- Select the EFOY you want to remove from the EFOY Cloud and go to the detailed page of the device
- Click the “MORE" button in the upper right corner – then select “REMOVE DEVICE”
- Confirm the pop-up window by clicking on the “CONFIRM” button



EFOY Cloud

1	Login / Create Account
2	Claim your EFOY
3	Licenses
4	Rights and Roles
5	New features
6	Maintenance and updates

EFOY Cloud – Licenses

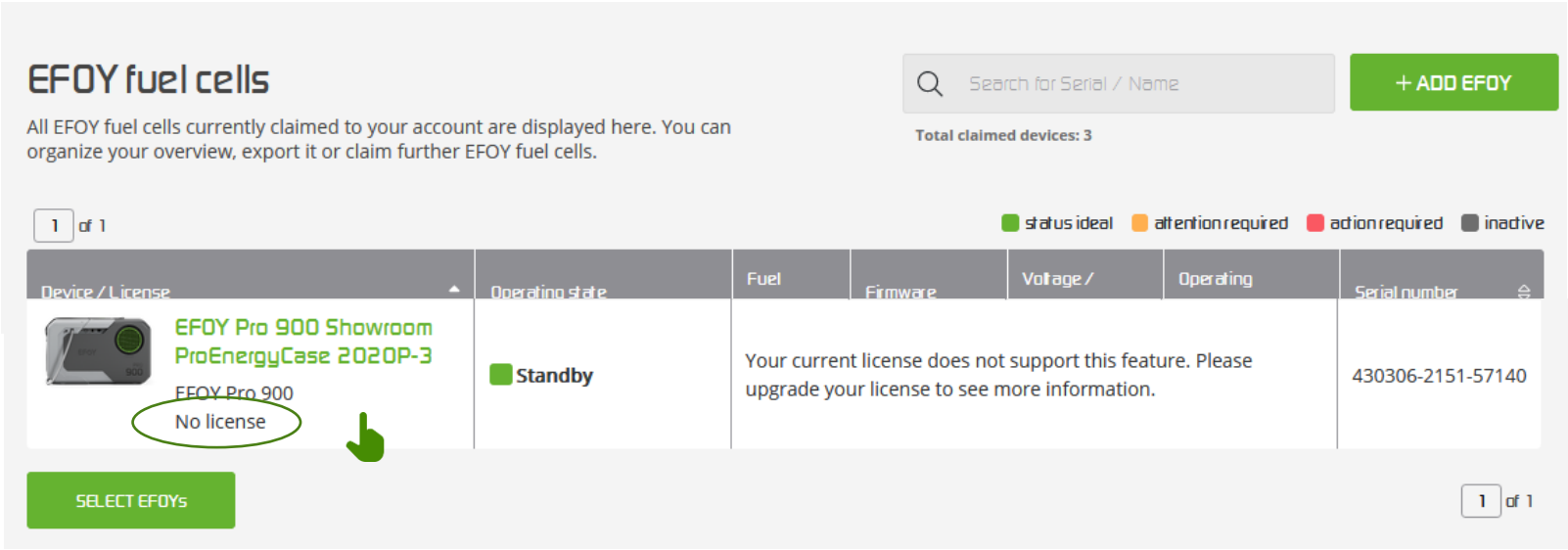
- Demo license keys are included with every new EFOY
  - EFOY 80 / 150: free of cost first 6 months (Platinum)
  - EFOY Pro 900 / 1800 / 2800: free of cost first 12 months (Platinum)

- License validity period starts with entering the license key in the EFOY Cloud or by activation via the new feature (later more)
- A running license can´t be paused or stopped to be re-activated
- Purchased licenses are not assigned to any specific EFOY, and can be distributed freely
- Once a license is activated with an EFOY it remains assigned and can´t be unpaired

- 12-month license keys can be bought at any time via your EFOY service partner / distributor:
  - 158 920 007 - Basic License
  - 158 920 008 - Platinum License

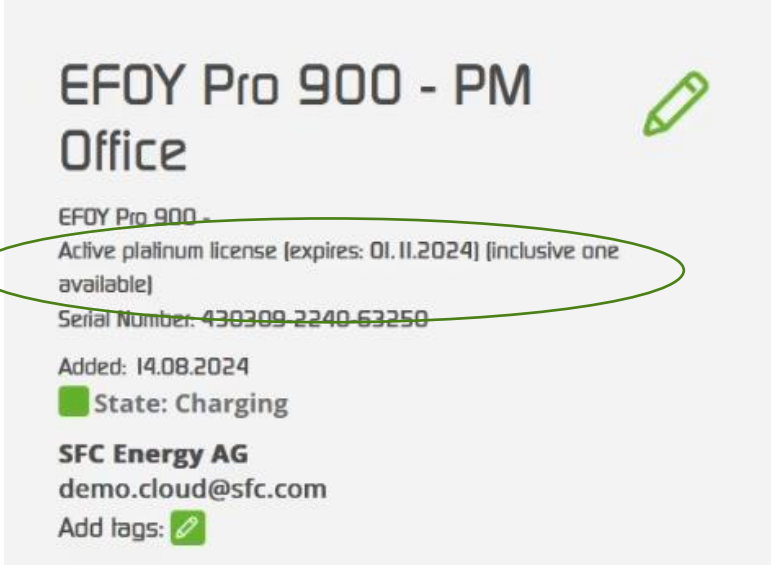
Add a license to your EFOY

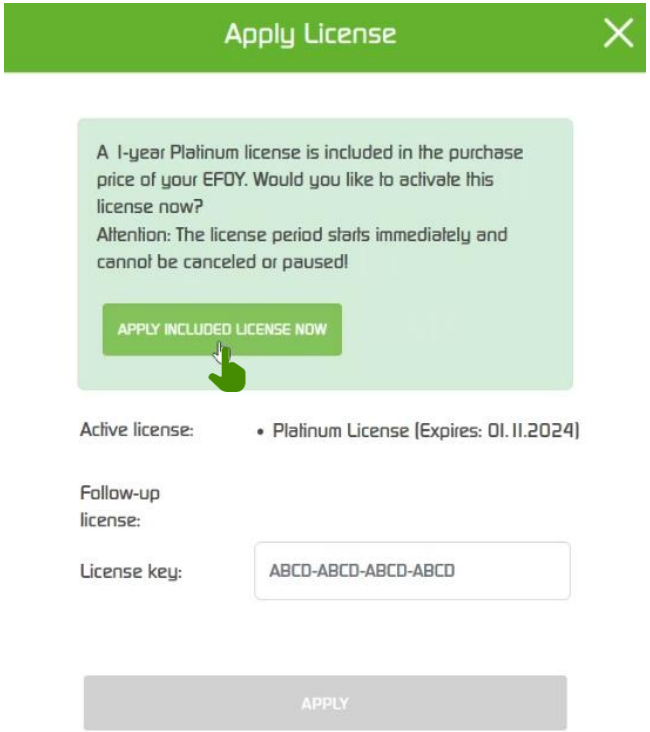
- As soon as your EFOY is integrated in the cloud, it will show up in the EFOY fuel cells overview
- Here, you can also see directly which license is assigned to the device – here “No license”
- Go to the product detail page by clicking on your EFOY to add a license to the device



Add a license to your EFOY (without license key label)

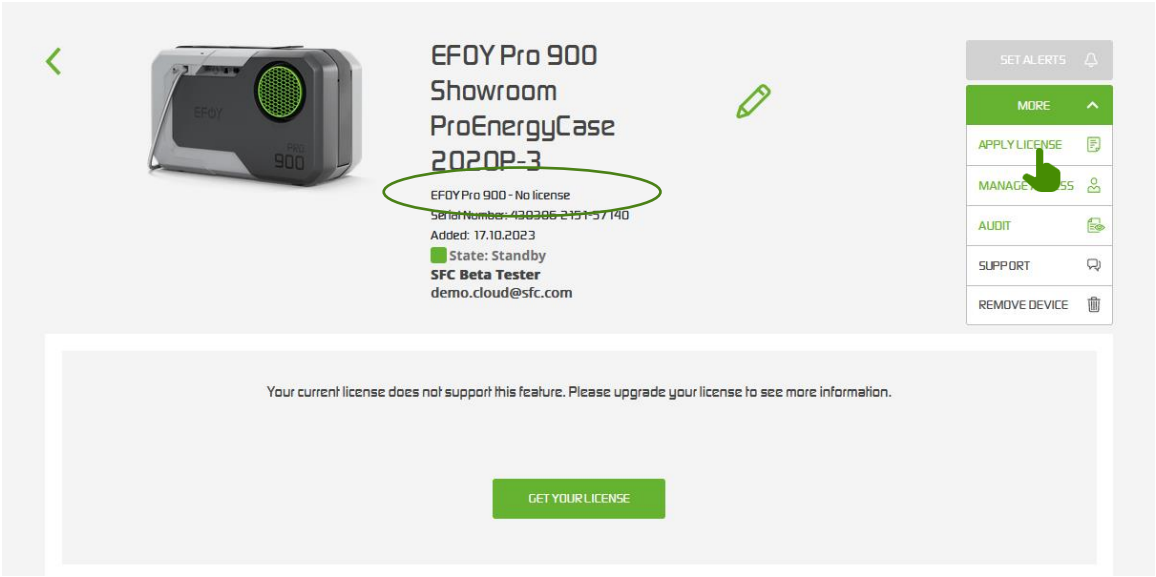
- Every new device automatically comes with an EFOY Cloud license (Platinum 6 or 12 months) and previously you had to read the key from the label under the belt and enter it online.
  Now, when claiming in the EFOY Cloud, you are asked whether you want to activate the license immediately or later.





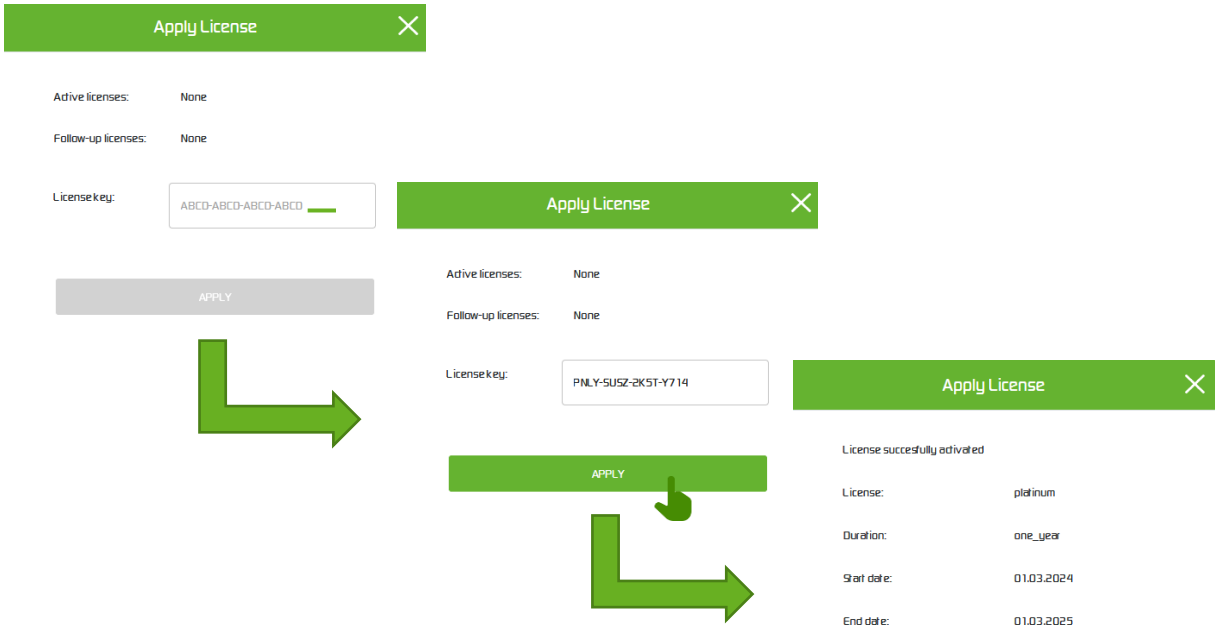
Add a license to your EFOY (with a license key label under the belt)

- You can now add a license by clicking on the “MORE" button in the upper right corner
- A drop-down menu will then open and you can select "APPLY LICENSE”
- If you would like to continue using the advantages of the EFOY Cloud after the expiration of your inclusive license, you can order and apply a follow-up license as well



Add a license to your EFOY (with a license key label under the belt)

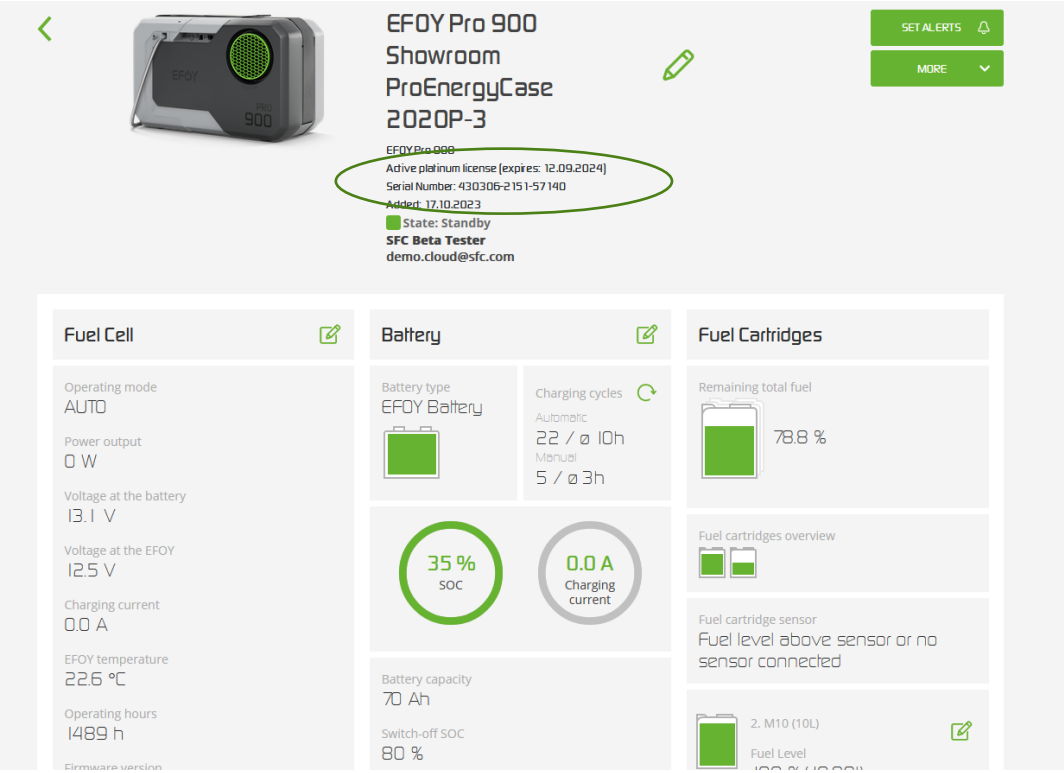
- A separate window will open where you can enter your license key
- After successfully entering the key, you will see an overview with the type of license, its duration and the exact start and end date



- You can enter up to two licenses successively
- The follow-up license starts the moment the active license ends

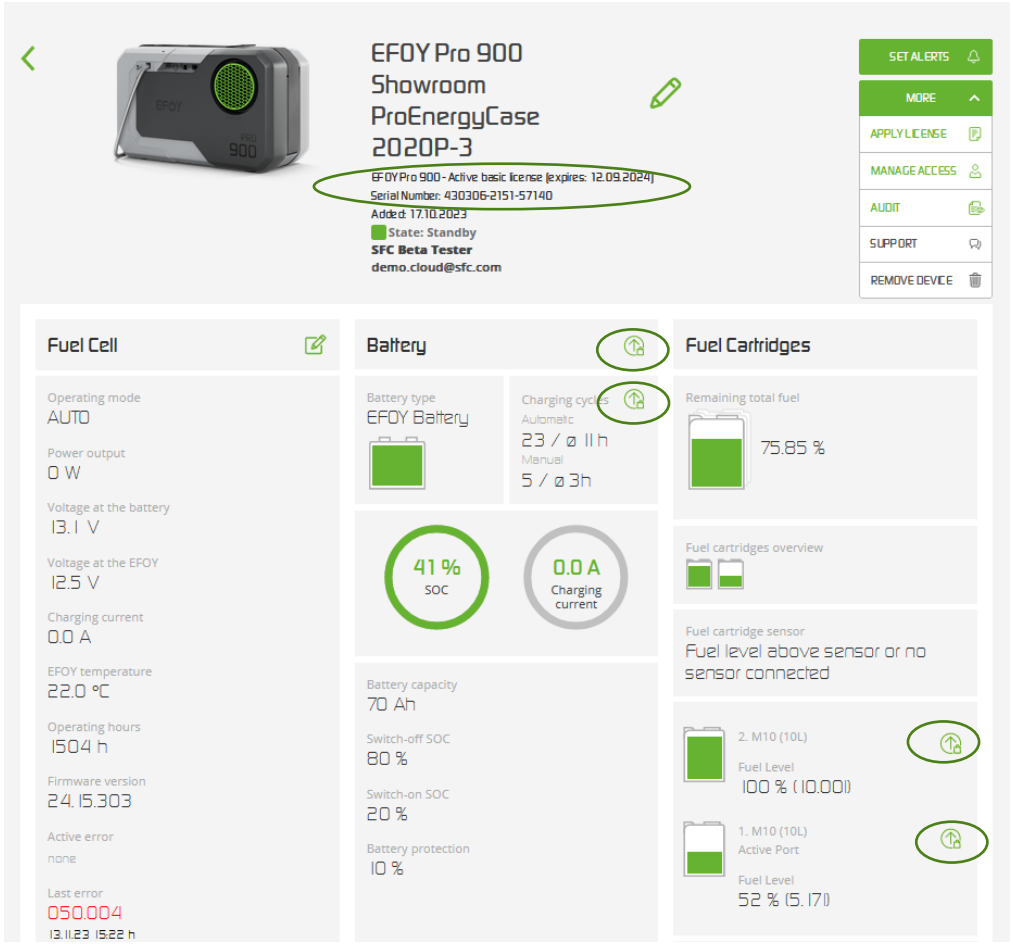
EFOY licenses

- Now "no license" has become "Platinum license“ and the expiration date
- You will immediately see how the view changes with a Platinum license and all the information displayed



EFOY licenses

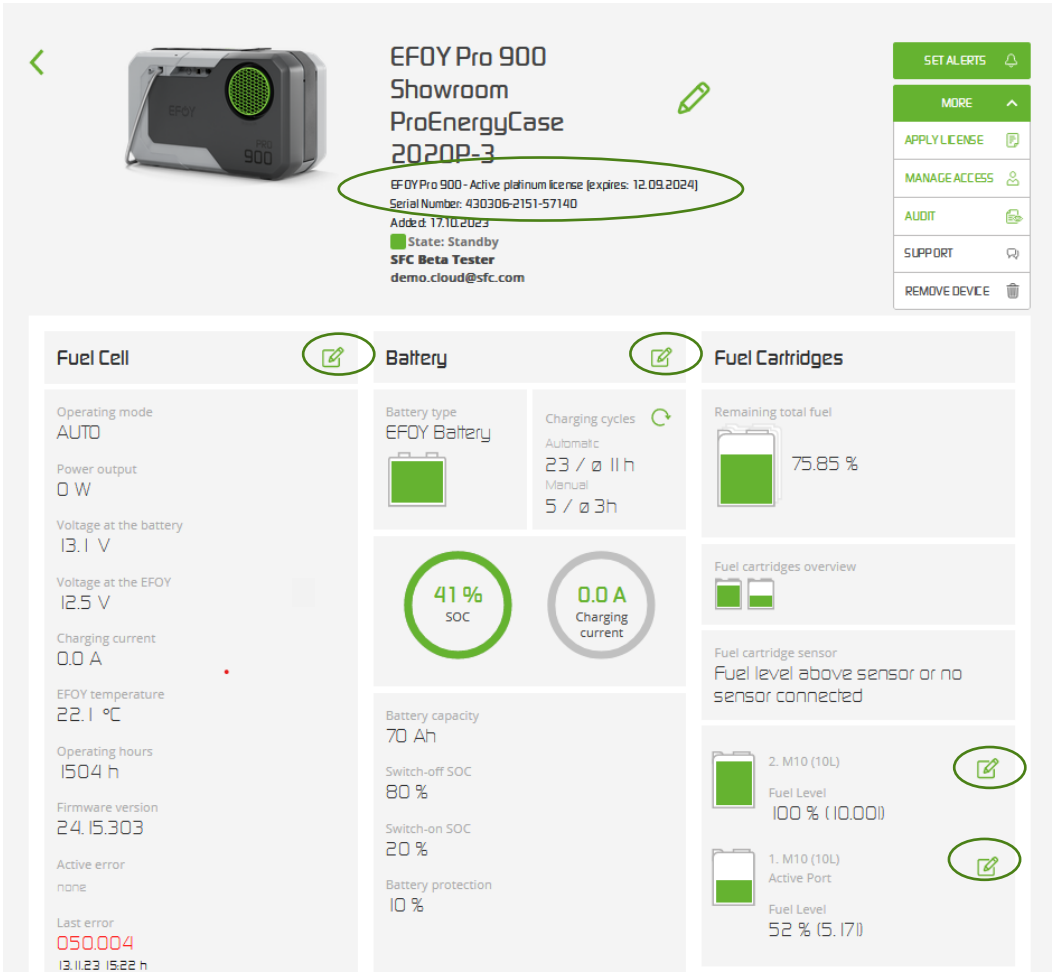
Basic license



- On this EFOY detail page you can see all the functions that are available with the basic license as an owner
- Under the Battery tab, you see the arrow icons indicating that your license does not have sufficient authorization for these settings

EFOY licenses

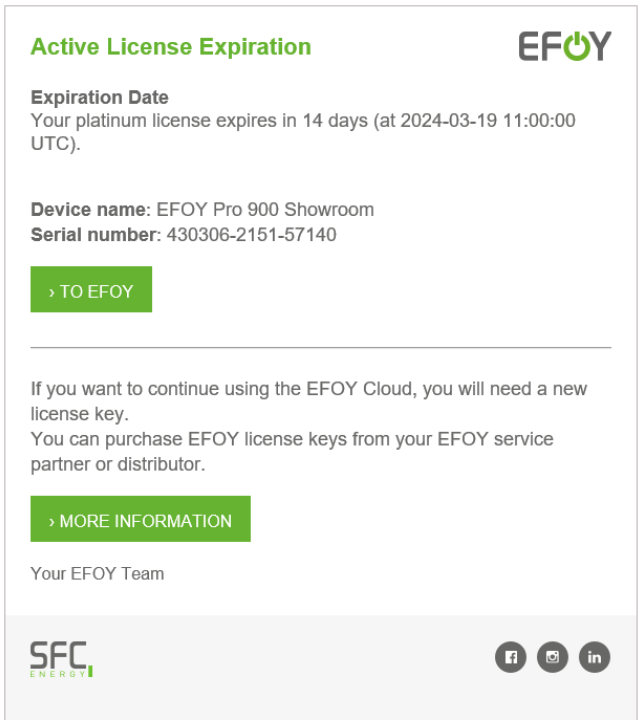
Platinum license



- On this EFOY detail page you can see all the functions that are available with the platinum license as an owner
- Now you have the pen icon under the battery tab and can make changes to the settings, which is not possible with the Basic license

EFOY licenses

- License expiration notice to the owner (cannot be unsubscribed):
  - 28 days, 14 days, 7 days and 24 h before expiration



Active License Expiration

EFOY

Expiration Date
Your platinum license expires in 14 days (at 2024-03-19 11:00:00 UTC).

Device name: EFOY Pro 900 Showroom
Serial number: 430306-2151-57140

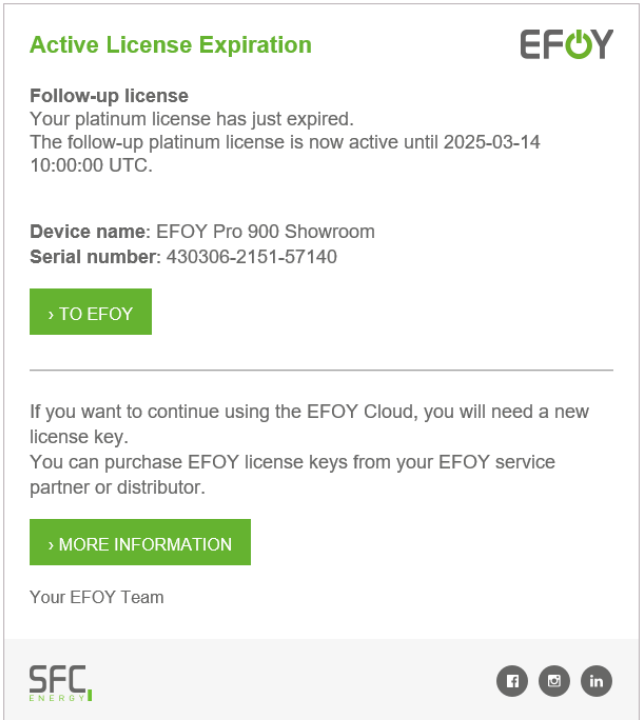
› TO EFOY

If you want to continue using the EFOY Cloud, you will need a new license key.
You can purchase EFOY license keys from your EFOY service partner or distributor.

› MORE INFORMATION

Your EFOY Team

SFC ENERGY



Active License Expiration

EFOY

Follow-up license
Your platinum license has just expired.
The follow-up platinum license is now active until 2025-03-14 10:00:00 UTC.

Device name: EFOY Pro 900 Showroom
Serial number: 430306-2151-57140

› TO EFOY

If you want to continue using the EFOY Cloud, you will need a new license key.
You can purchase EFOY license keys from your EFOY service partner or distributor.

› MORE INFORMATION

Your EFOY Team

SFC ENERGY

EFOY Cloud

1	Login / Create Account
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5	New features
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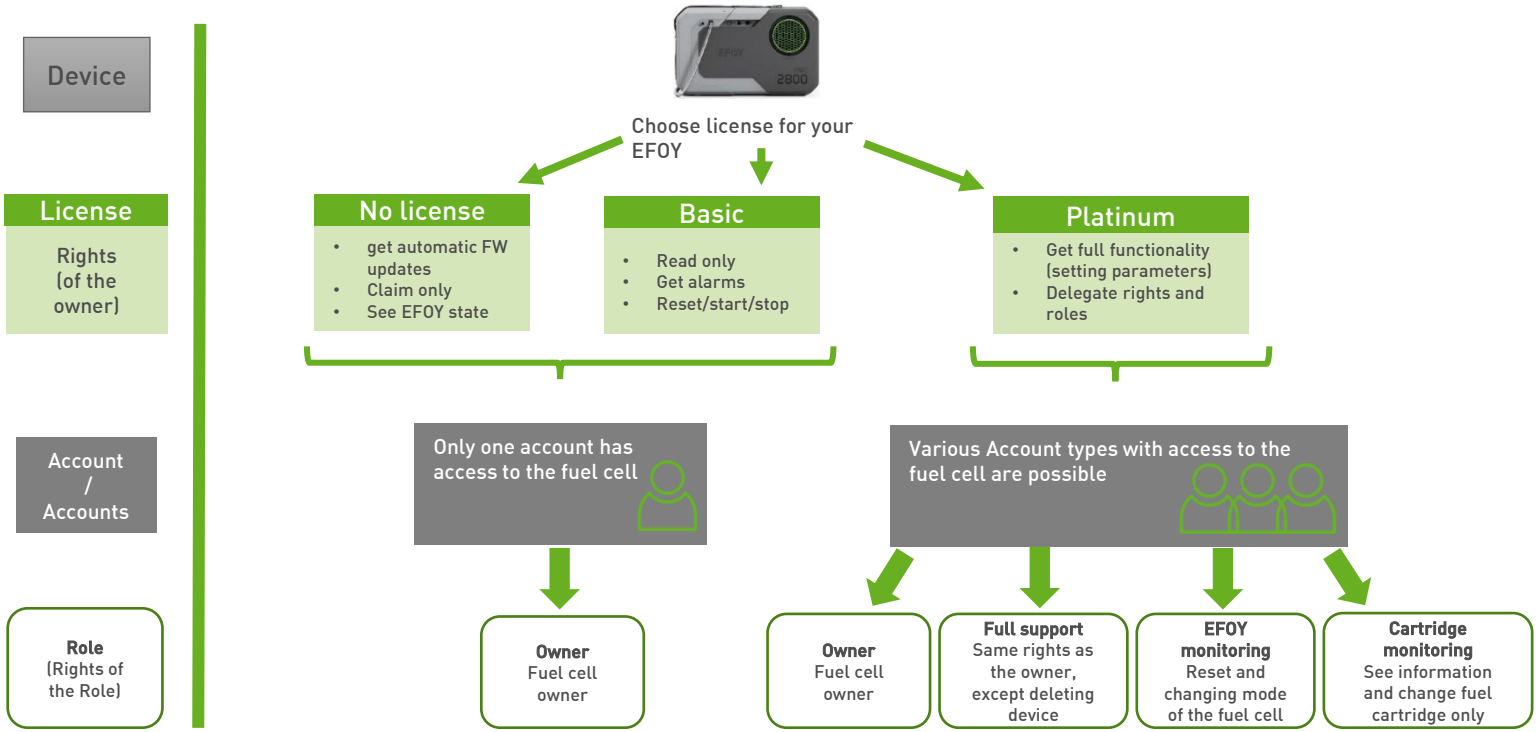
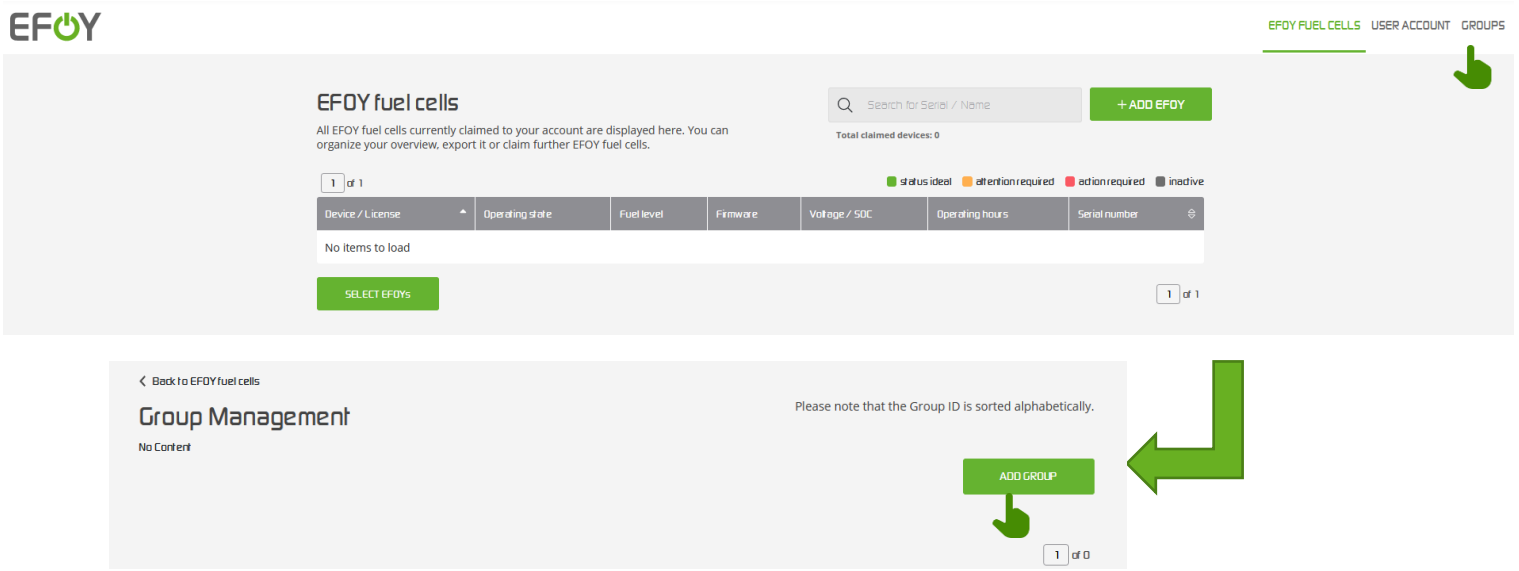
EFOY Cloud

Rights and Roles - Overview



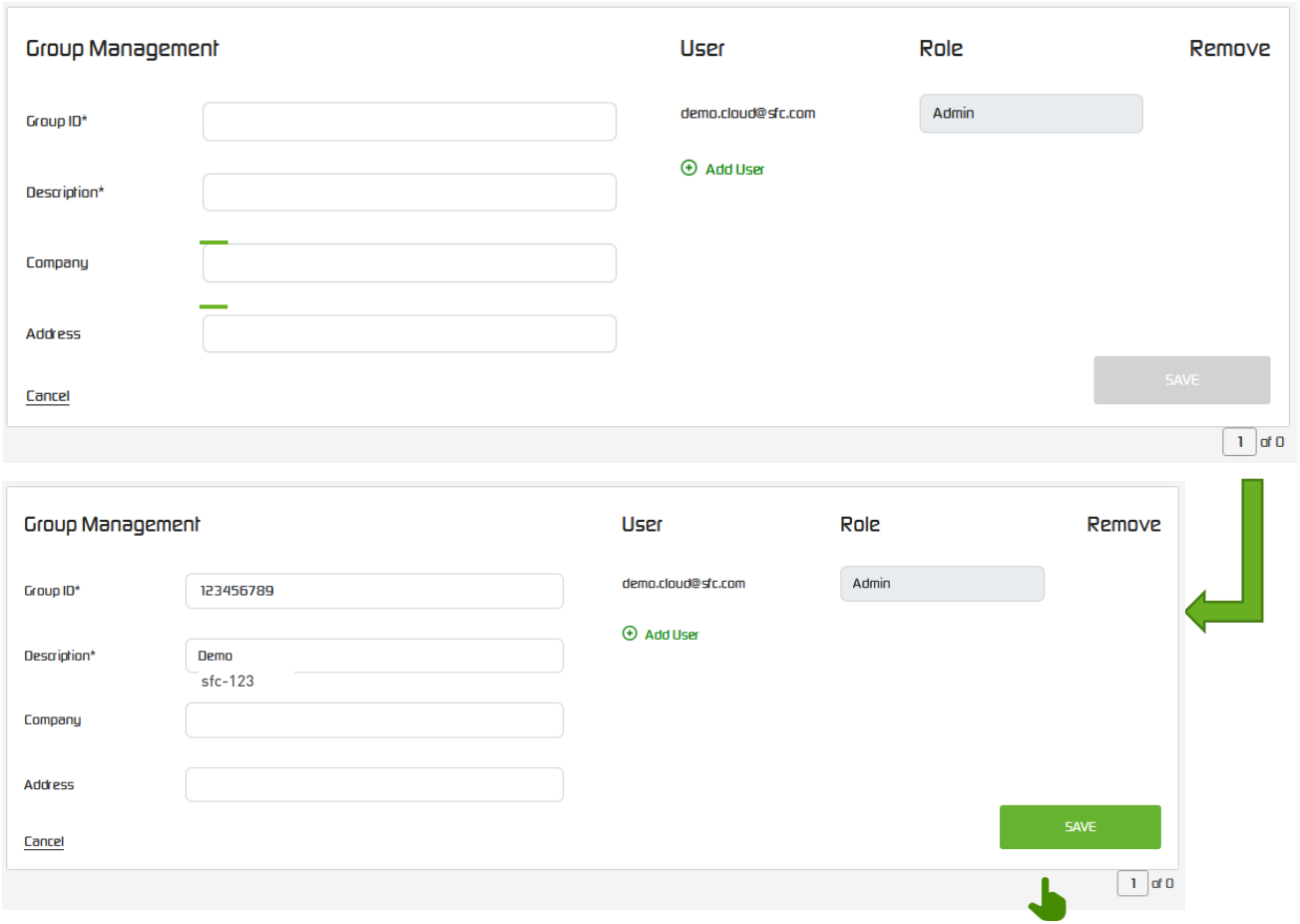
Add groups and users

- If you have already registered devices in the cloud, you will see your EFOYs in this overview
- To use rights & roles you need to add a group by clicking on „GROUPS“ on the upper right corner
- Then a new window opens – called „Group Management“



- There you can add a new group by clicking on the „ADD GROUP“ button

Add groups and users



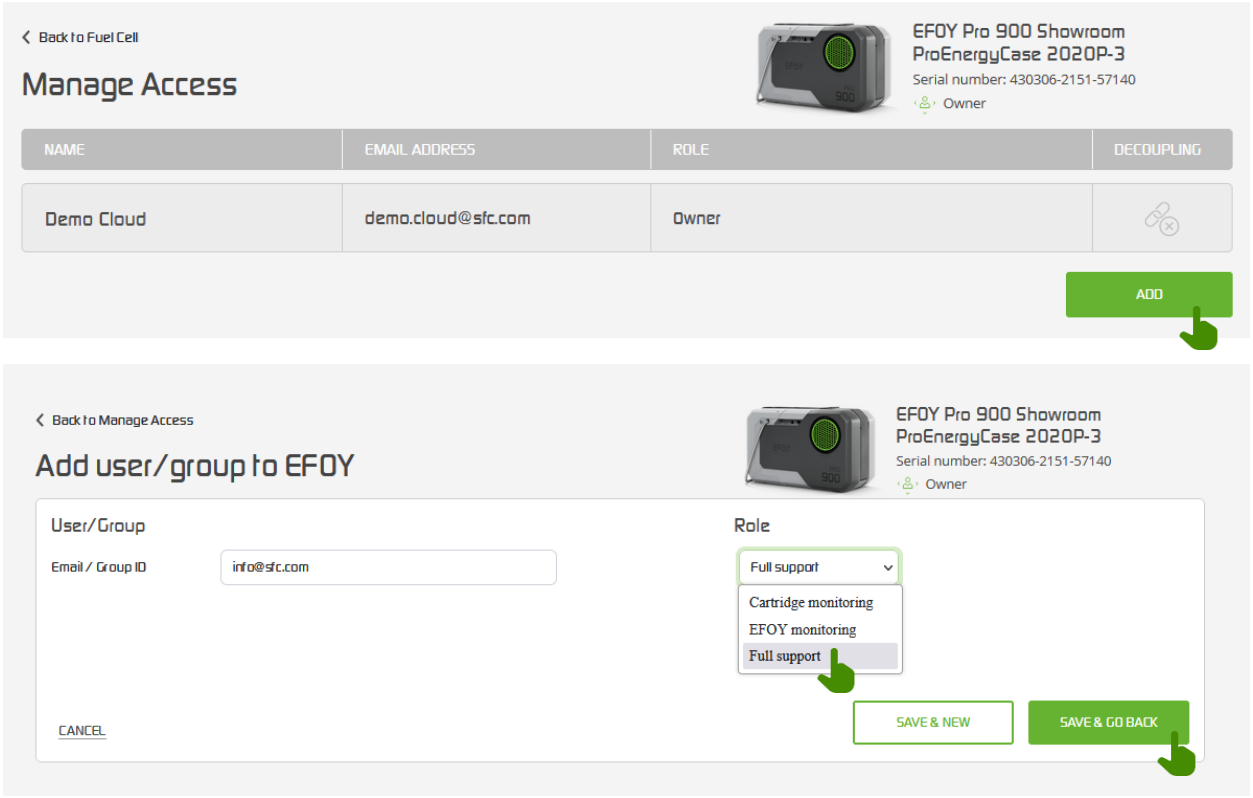
- Now you have to assign a Group ID – which is required and unique like an email address (once worldwide)
- Use lower case letters, numbers and minus signs like our example
- Groups are necessary to give the same rights to several employees in a company
- You also have to add a description and voluntary other company information to your group
- Group ID is the info that you share with our customers

EFOY Rights and Roles

- Now you can assign a role to the user you have previously assigned to your group or individual users by clicking the “MORE" button in the upper right corner again – then select “MANAGE ACCESS”

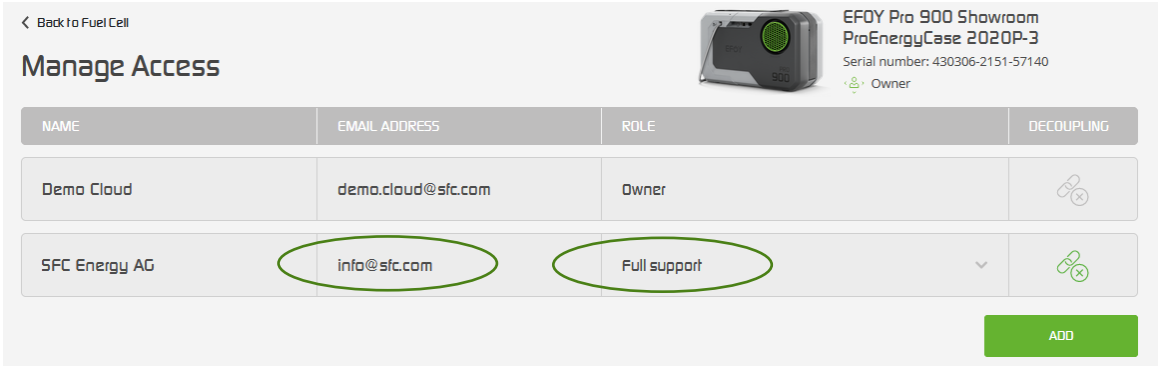
EFOY Rights and Roles

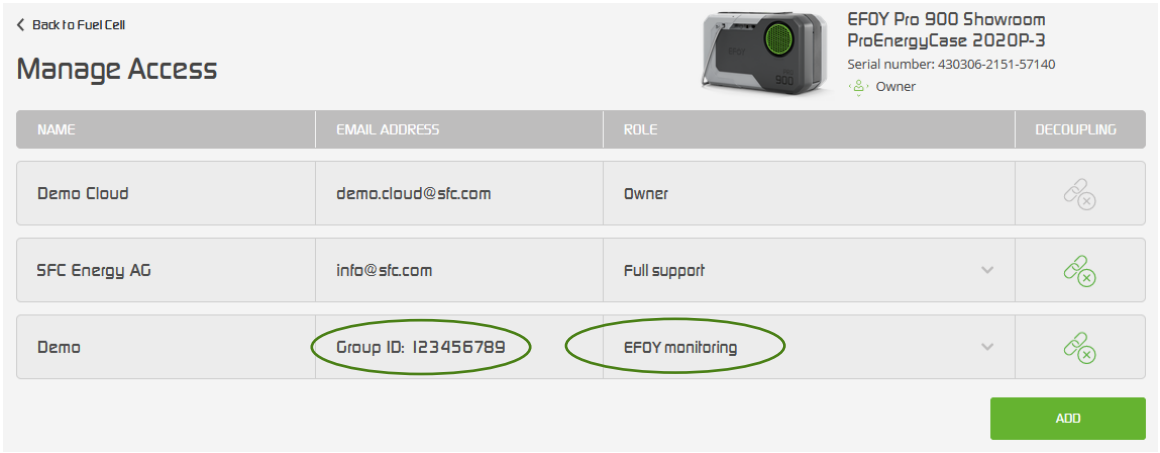
Assign a role



- By clicking on the "ADD" button, you can connect a user or an entire group ID to the EFOY
- Please note that all users must have an EFOY Cloud account in order to add them and distribute them a role
- The “SAVE & NEW” button is meant for when you want to add multiple users at once and don't always want to go back to the overview

EFOY Rights and Roles

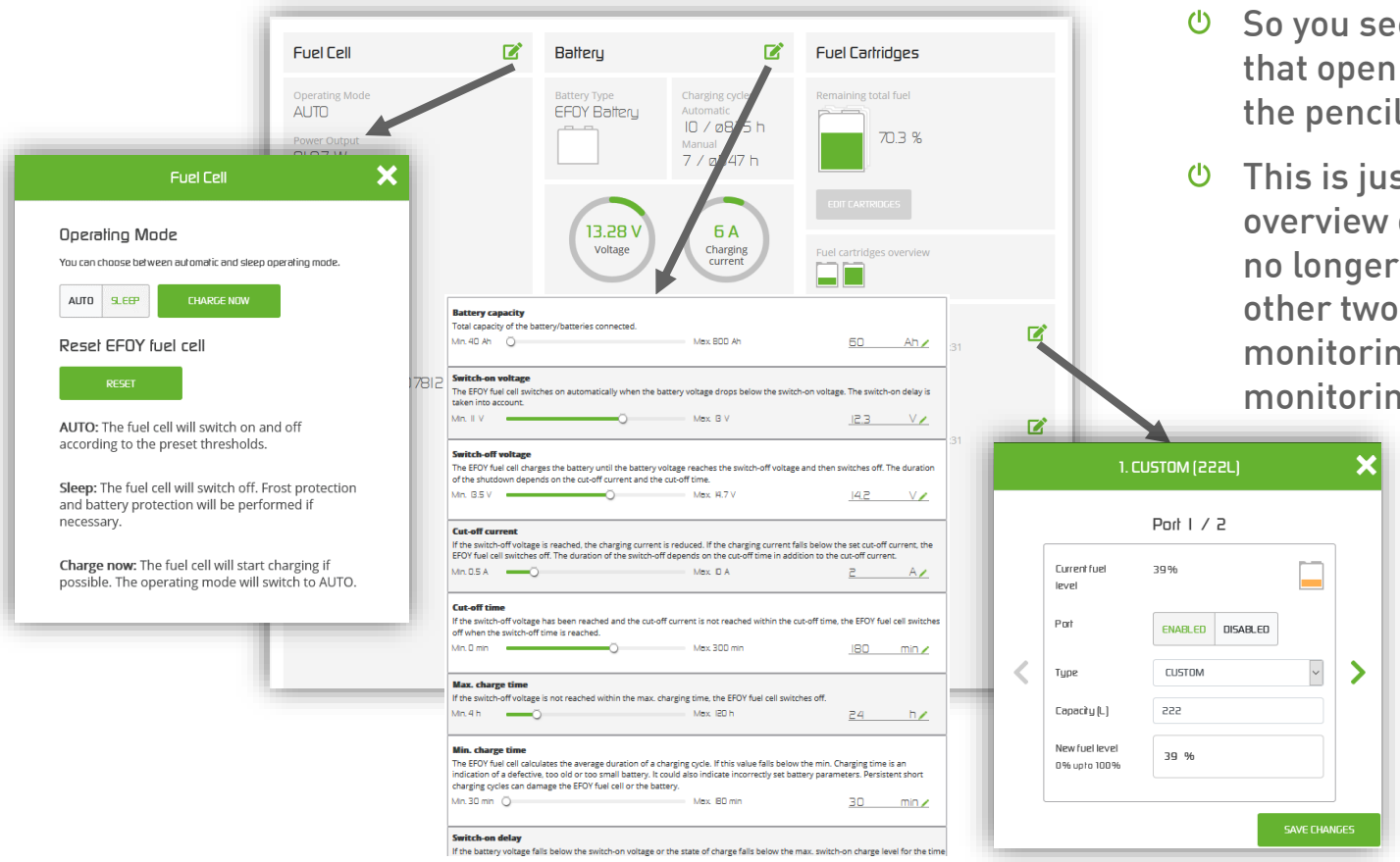




- Here in the overview you see all Users and groups with their corresponding assigned role
- Please note that if a user has multiple roles (individual & group), the role with more permissions always overrides the lower role
- In this case the whole group with all its Users has access to the “EFOY monitoring”
- But info@sfc.com as an individual user has even “full support”

EFOY Rights and Roles

- These 3 detail pages "Fuel Cell ", "Battery" and "Fuel Cartridges" are all visible and editable in the “full support“ role.
- So you see here all subpages that open when you click on the pencil icon in each case
- This is just to give you an overview of which options are no longer editable with the other two roles “EFOY monitoring” and “Cartridge monitoring”

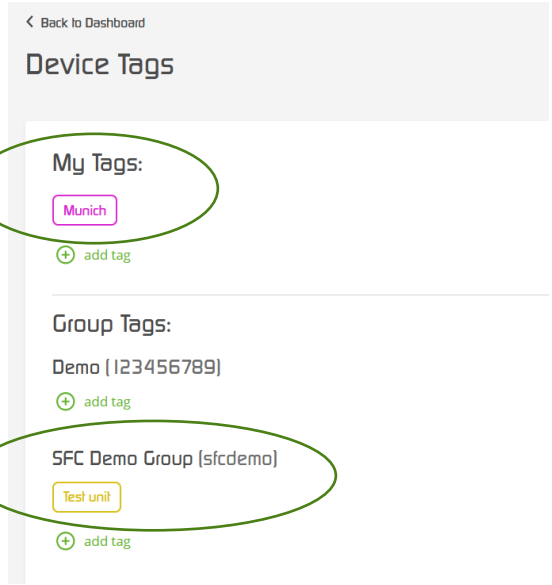


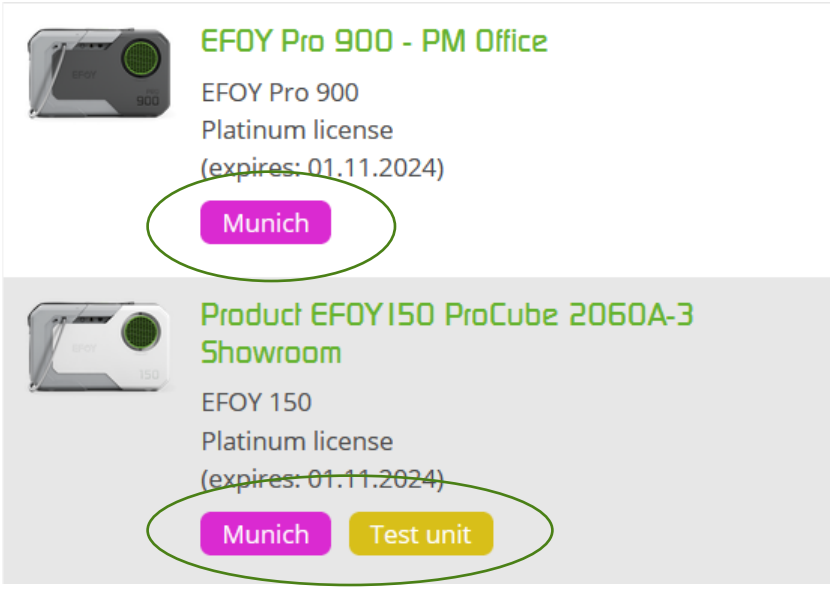
EFOY Cloud

1	Login / Create Account
2	Claim your EFOY
3	Licenses
4	Rights and Roles
5	New features
6	Maintenance and updates

New features - Tags

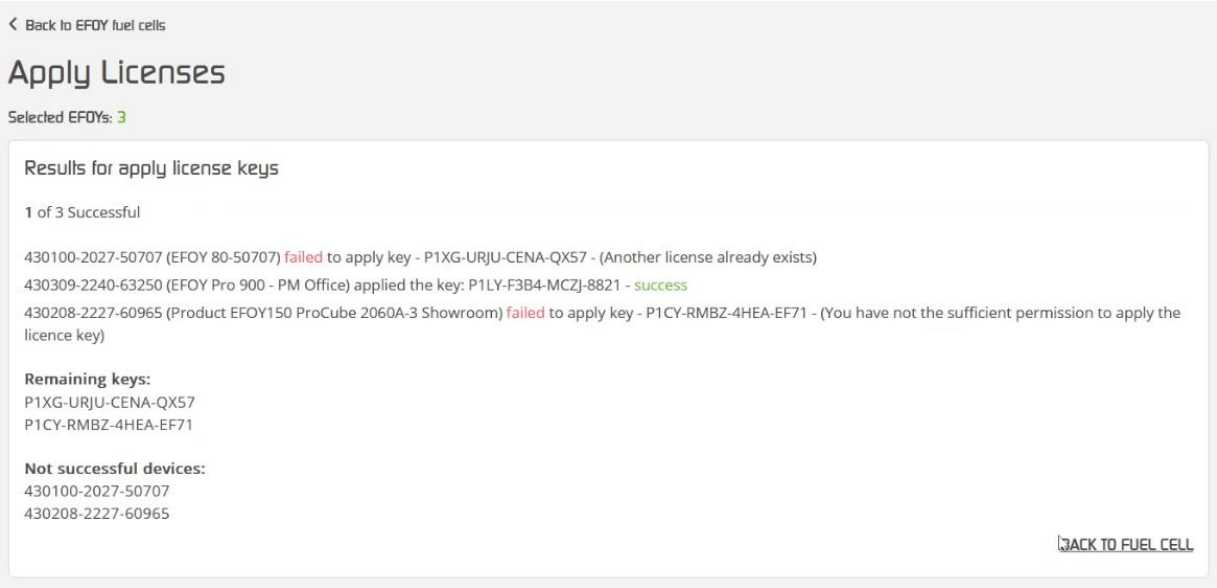
- Tags are used to “filter” or sort the devices according to customer-specific requirements.
  You can freely choose the color and name and there are your own (My Tags), which you can only see yourself and there are Group Tags, which everyone in a group can see and also change (with the right role)





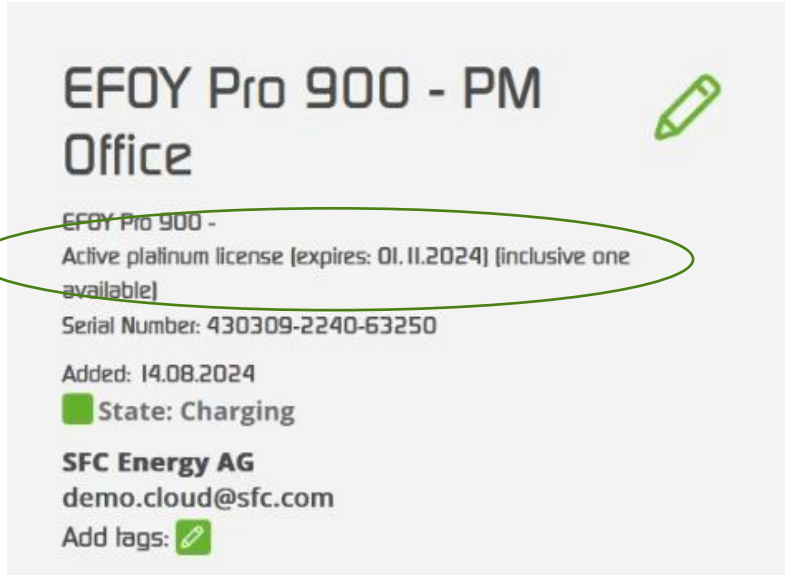
New features - License Batch Apply

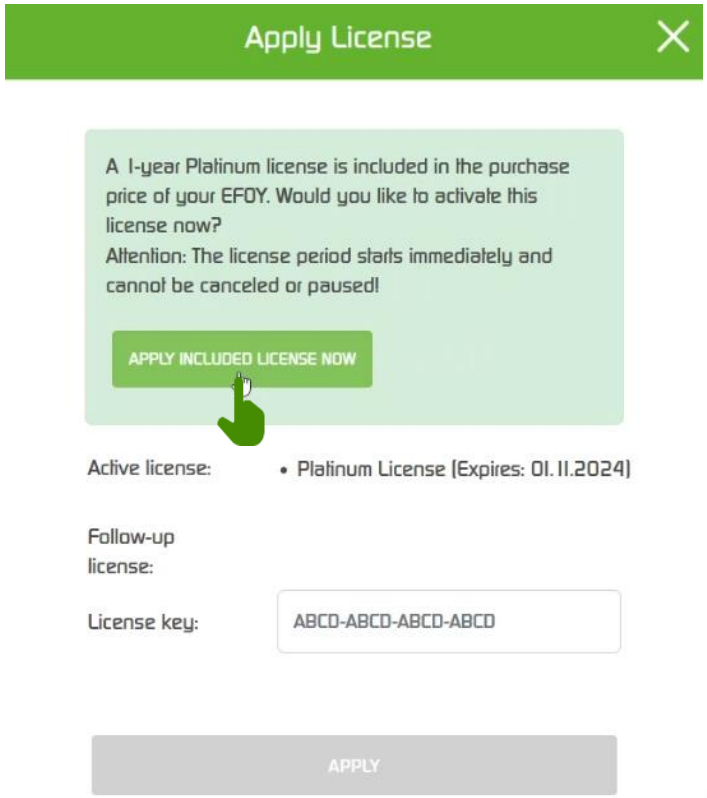
- From now on, several devices can be selected simultaneously in the EFOY Cloud, multiple license keys can also be inserted and the Cloud automatically assigns a license to the EFOYs (a follow-up for already active licenses or error messages if something did not work)
  You will then receive an overview of the remaining unused license keys and the devices that have not been successfully applied



New features - Inclusive License Apply
(Replacement for the license key label)

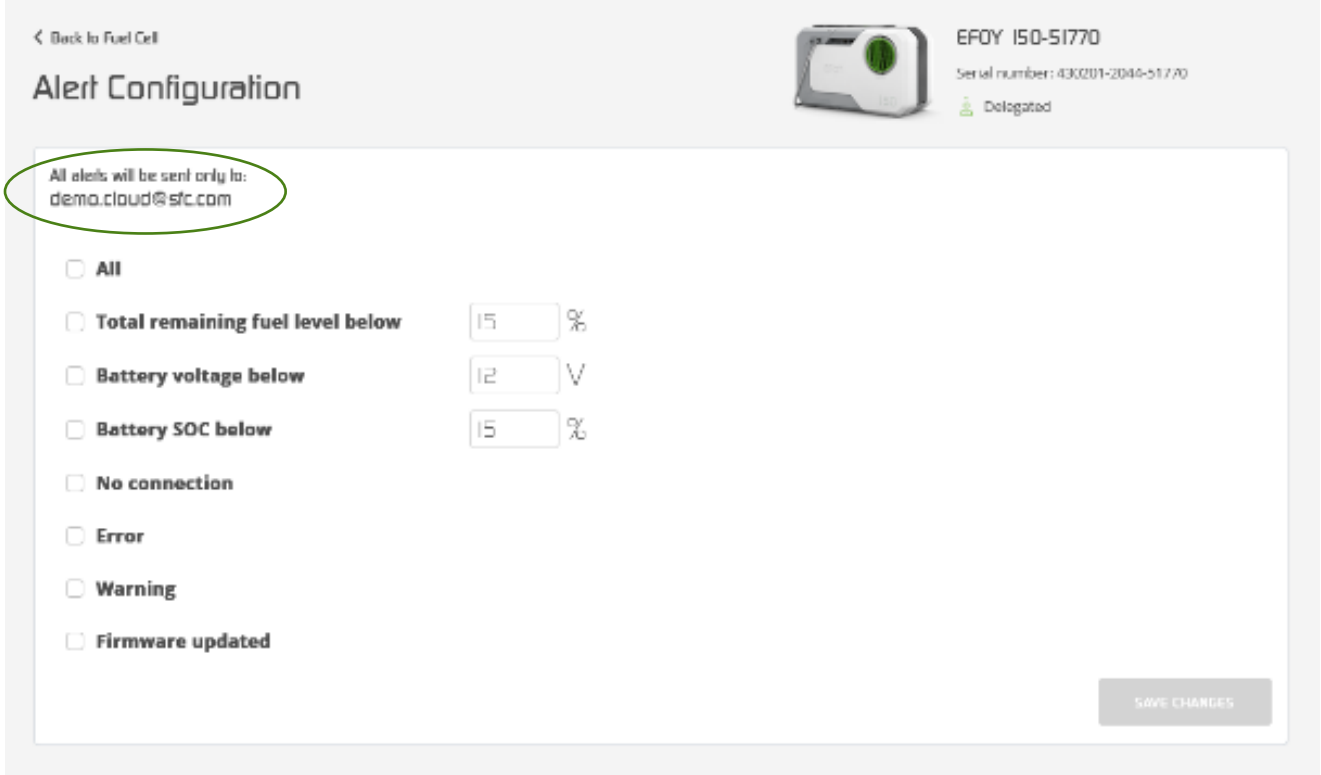
- Every new device automatically comes with an EFOY Cloud license (Platinum 6 or 12 months) and previously you had to read the key from the label under the belt and enter it online.
  Now, when claiming in the EFOY Cloud, you are asked whether you want to activate the license immediately or later.





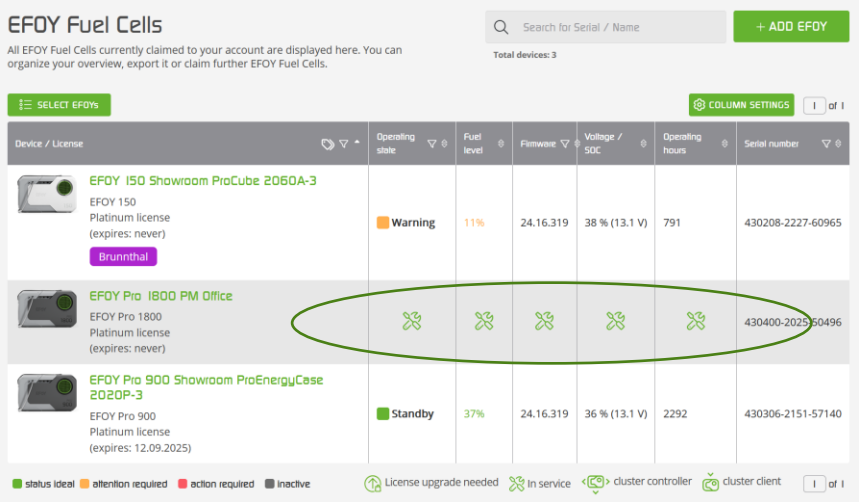
New features – Alert Configuration

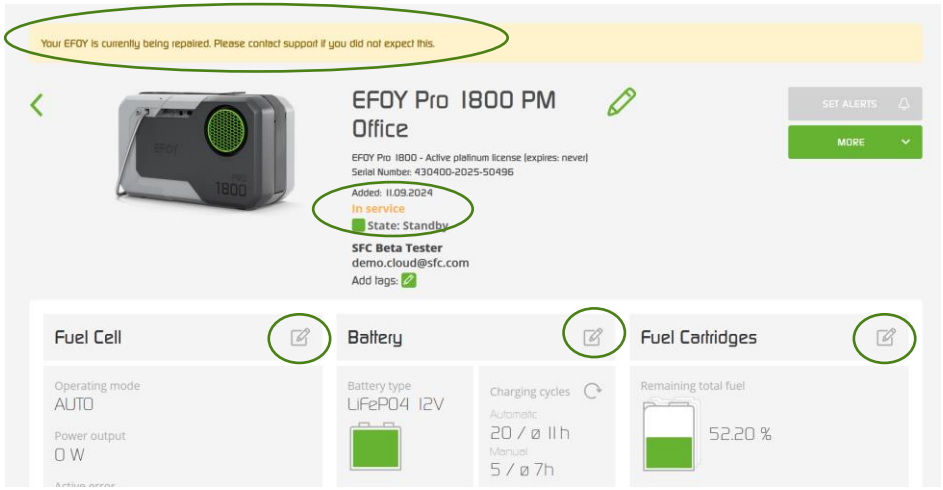
- No more Mailaccount Alert Configuration possible – just Usersaccount Alert Configuration - everyone must set their own alerts -› only possible with a EFOY Useraccount



New features – Service mode

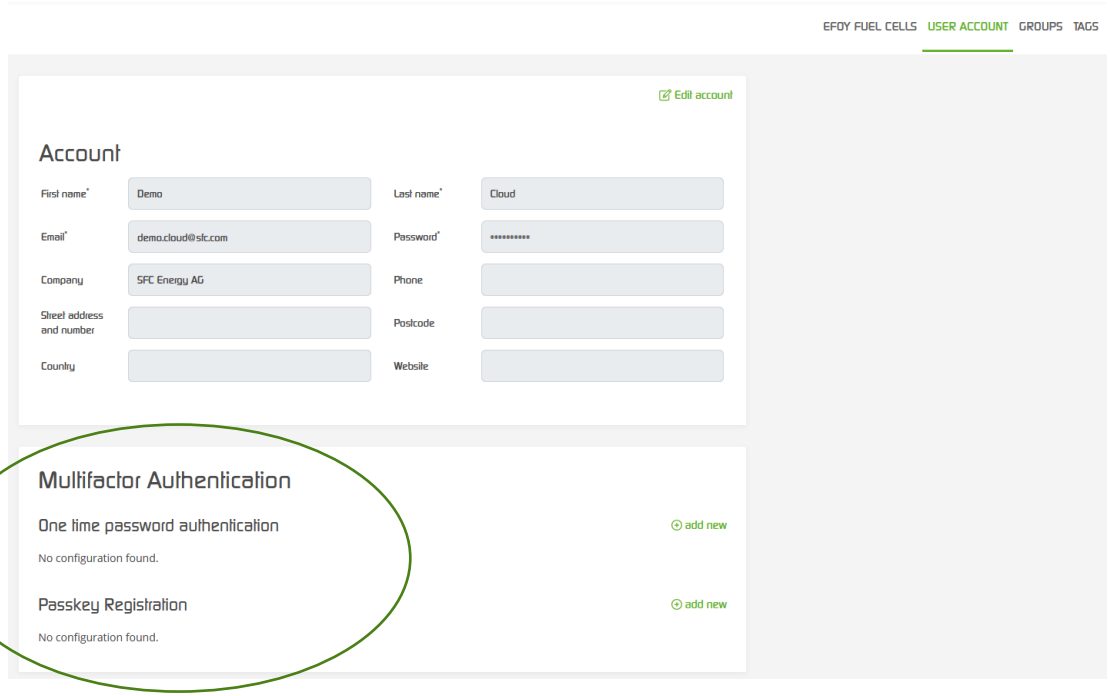
- In service mode during the repair time, no parameter settings or changes can be made by the customer and no alerts are sent

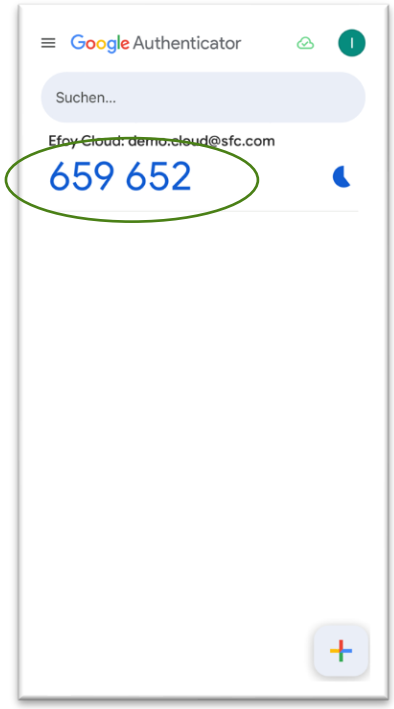




New features – Multi-factor Authentification

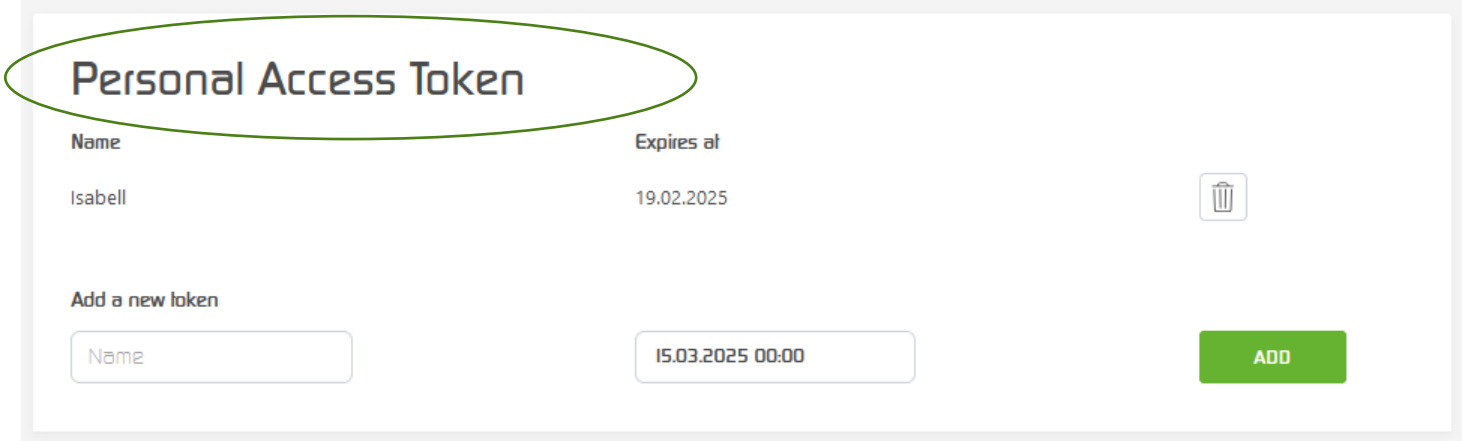
- We now offer the option of multi-factor authentication in the EFOY Cloud if you would like to use it. You will find the feature in the menu under “User Account”.





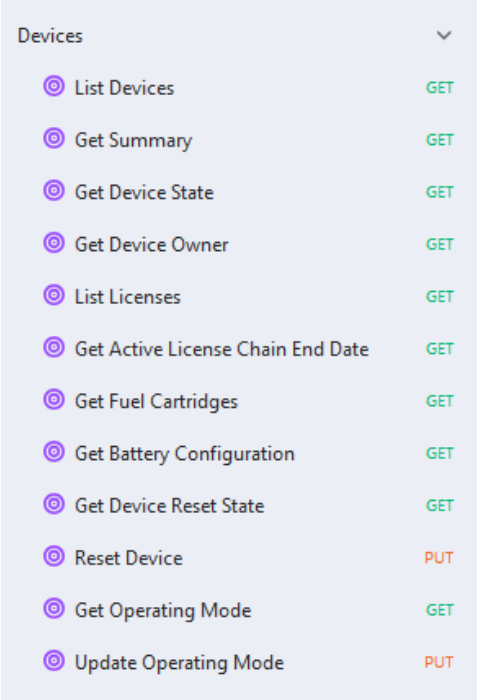
New features – Public REST API Token

- Generate your personal access token in the EFOY Cloud in the menu under “User Account” to use the public REST API. This bearer token is stored once by the user in their software in order to authenticate themselves.
- Here you can find the documentation for the REST API: https://public.efoy-cloud.com



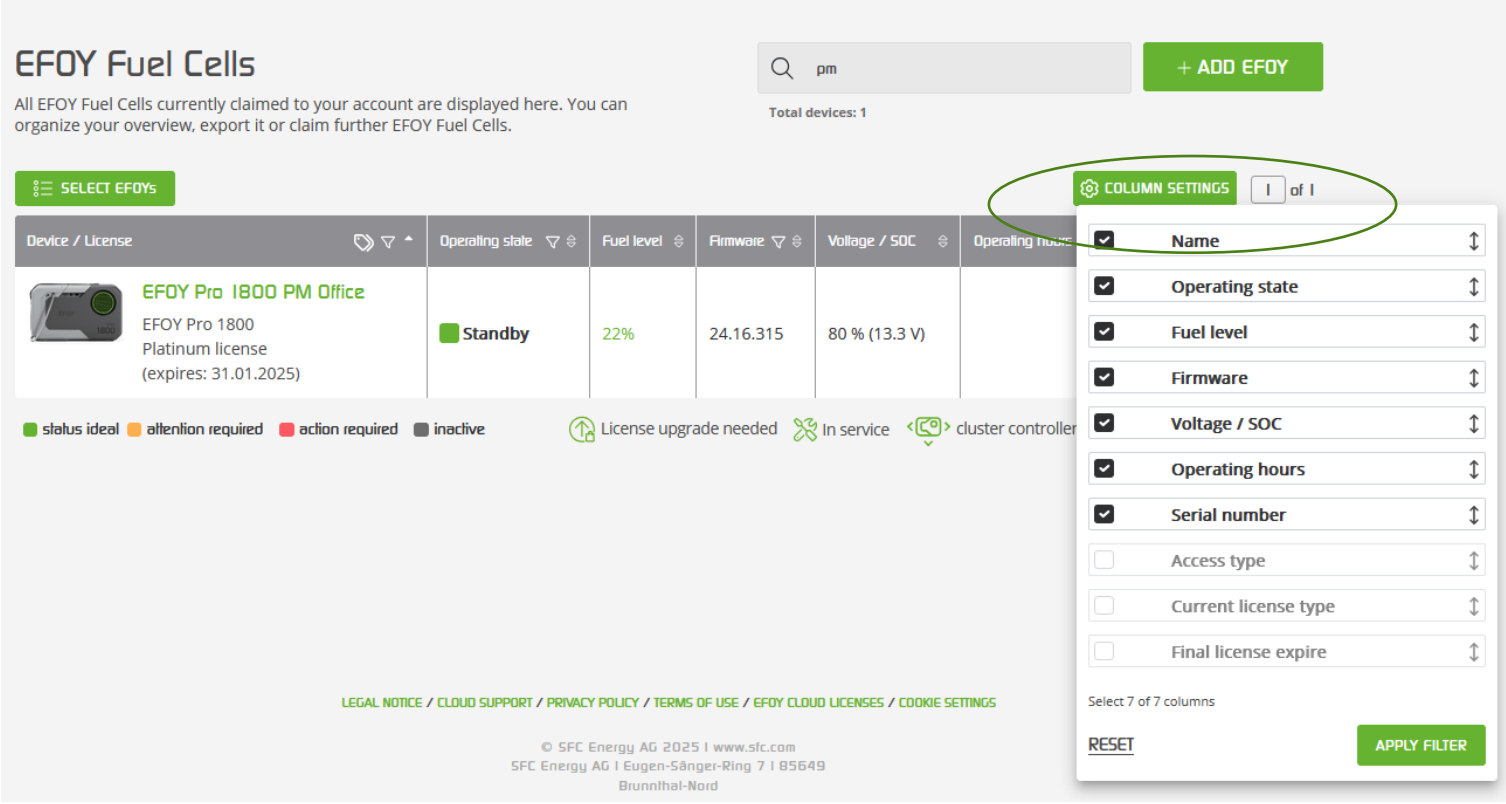
New features – Public REST API Token

- Here you can find the documentation for the REST API: https://public.efoy-cloud.com



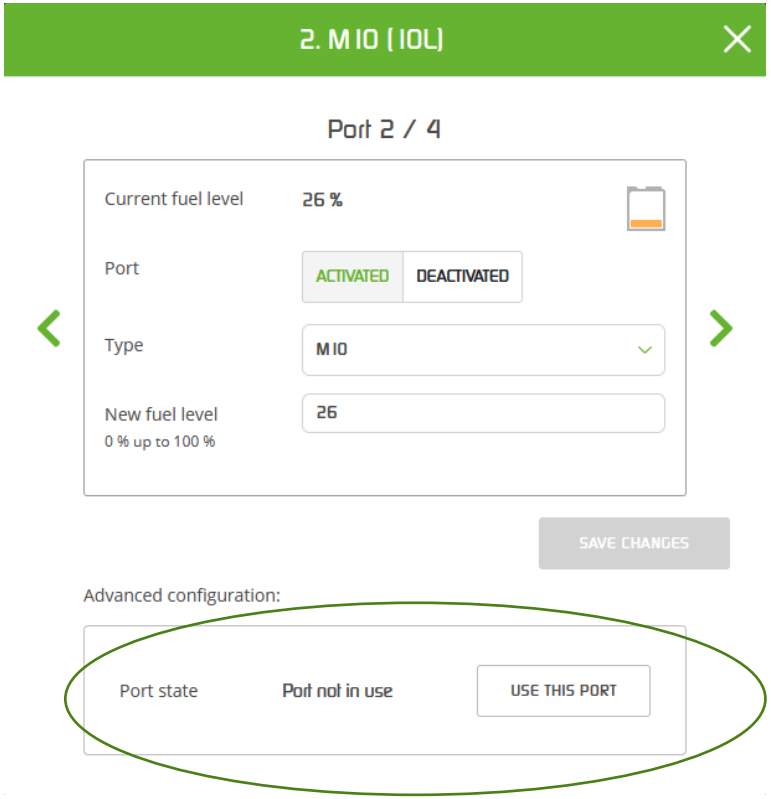
New features – Column settings

- With the column settings, you can arrange the columns of your EFOY individually and display the values that are most important to you personally on the overview page.



New features – Port in use

- With this new feature, you can actively determine from which fuel cartridge methanol is drawn. Select the port on the FuelManager and set it to “in use”.



EFOY Cloud

1	Login / Create Account
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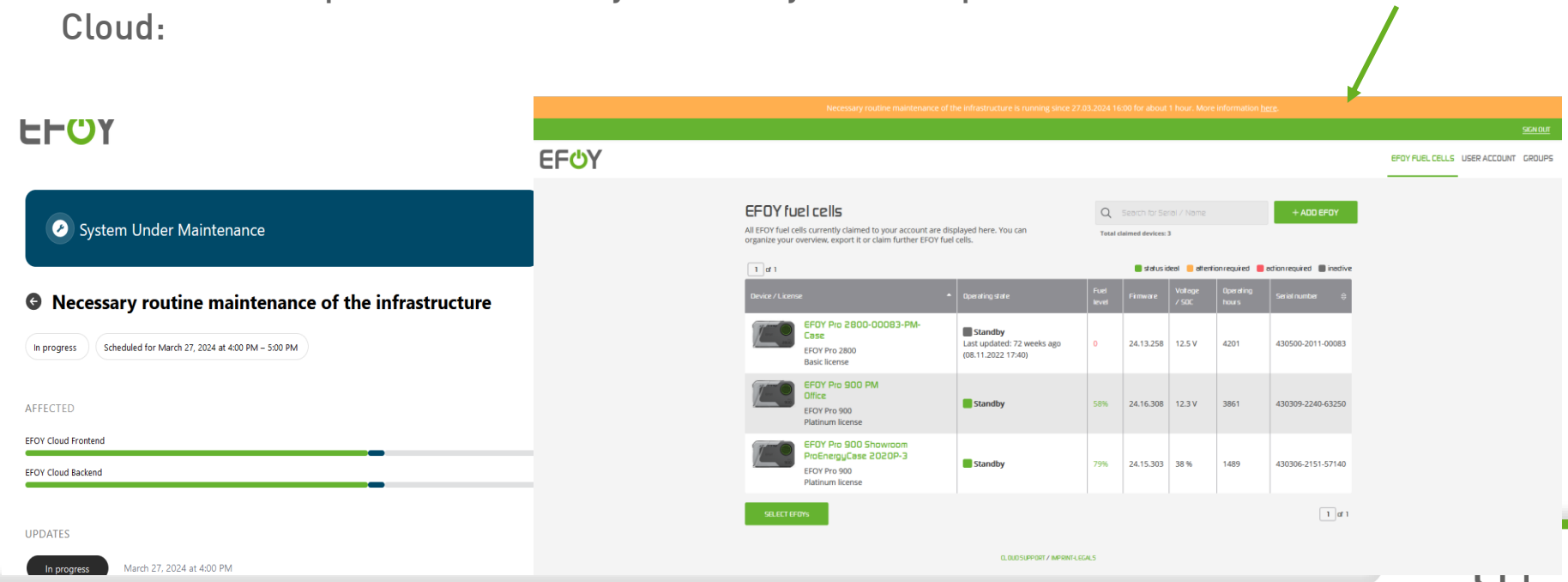
5	New features
6	Maintenance and updates

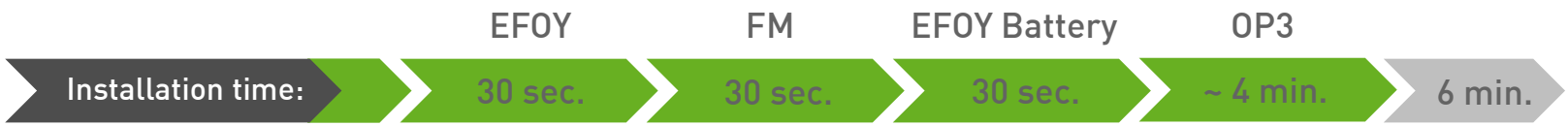
EFOY Cloud Maintenance

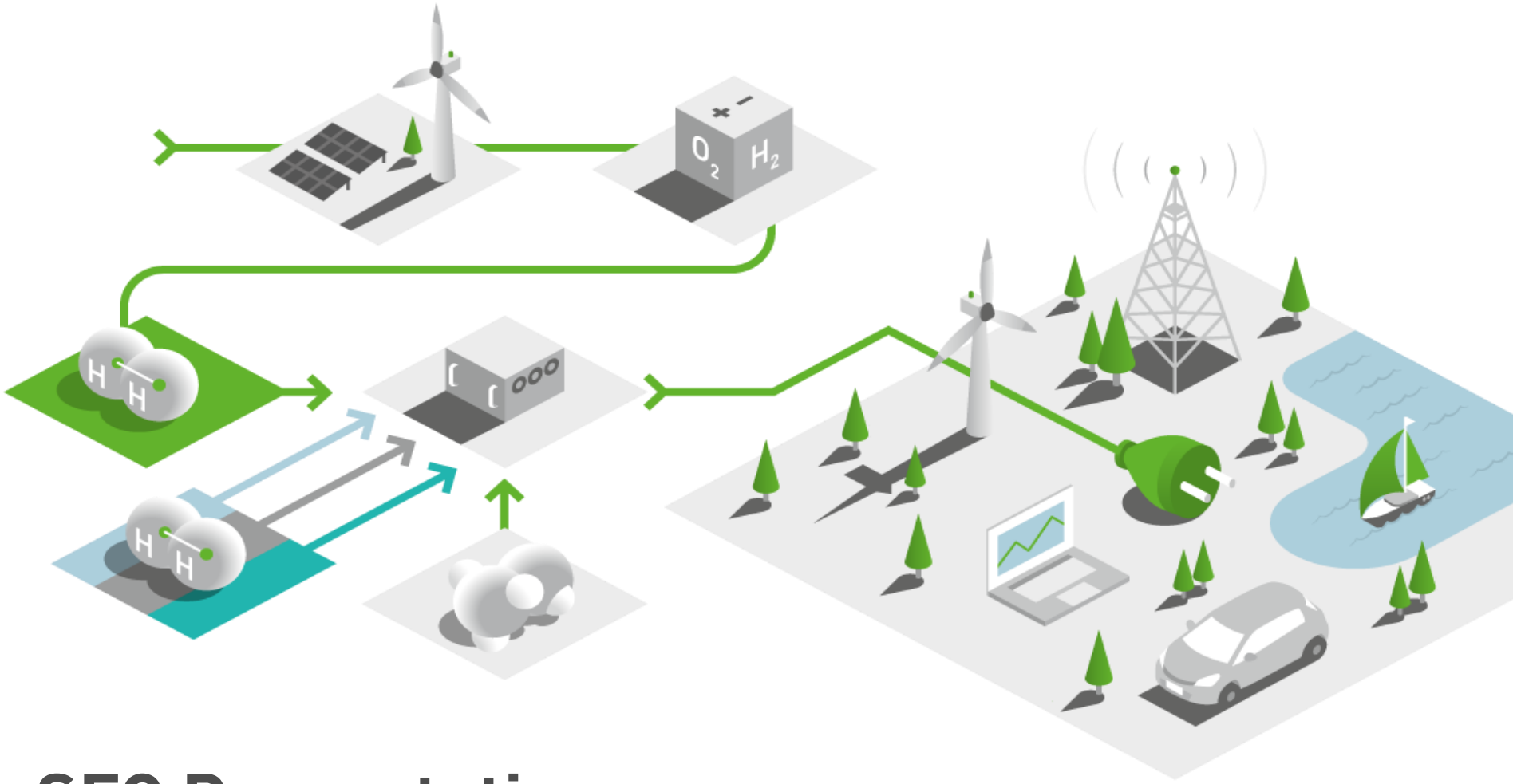
- From time to time, routine technically necessary or major maintenance work on the cloud is required to keep the application up to date and make new features available
- This maintenance work is always displayed days in advance via a banner in the EFOY Cloud
- For detailed information on maintenance, you can click on the link in the banner on “More information here” for an overview of the points that will be carried out
- Here is an example of a technically necessary routine update on the EFOY Cloud:



Firmware update via the EFOY Cloud

- The usual file size of the firmware file is 3 MB
- The file transfer of the firmware to the EFOY can take 5 to 10 minutes via the Internet with a “normal” Internet connection
- The installation of the update on the EFOY and on all connected accessory devices takes approx. 6 minutes
- The EFOY requires approx. 500 MB of data per month





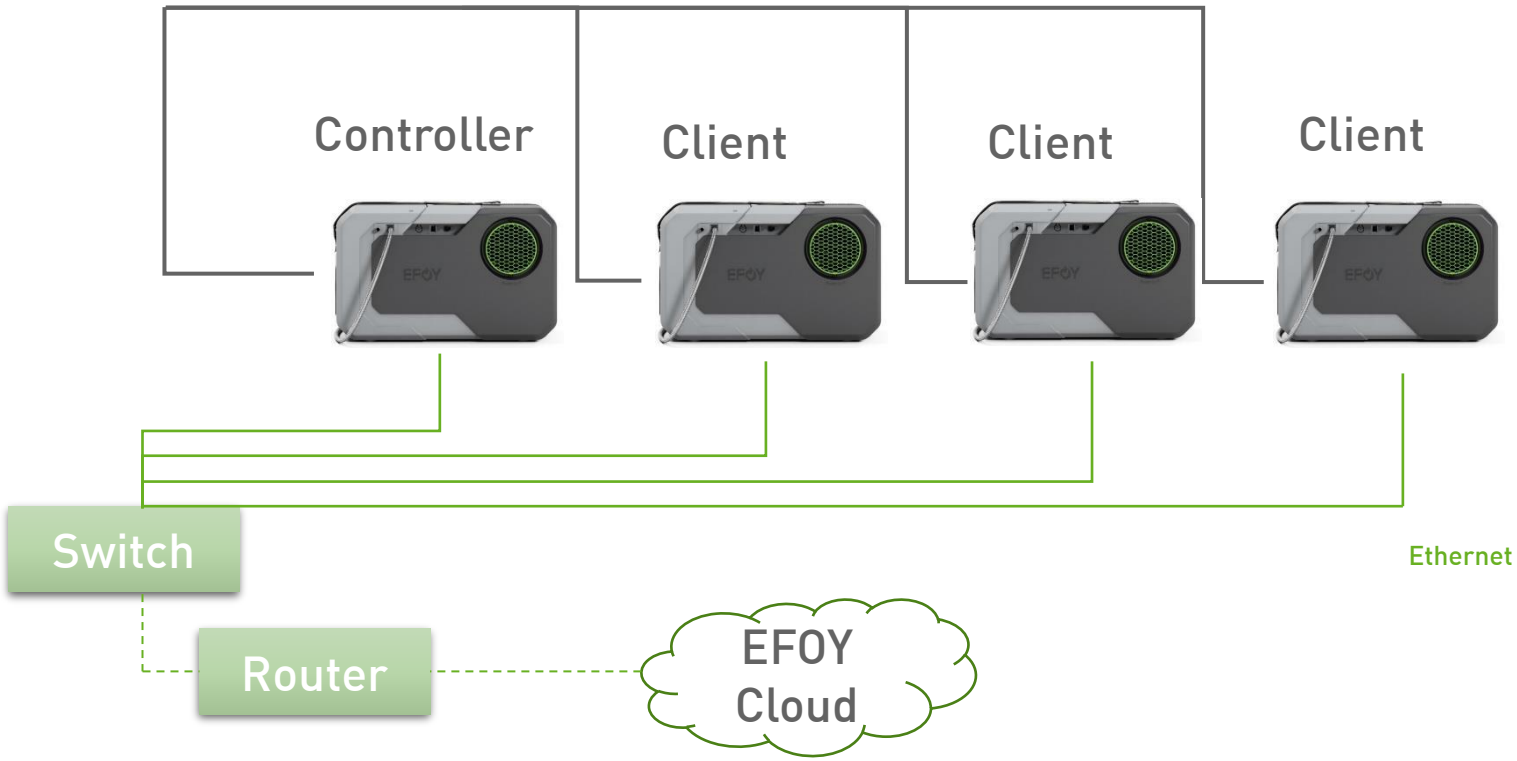
SFC Presentation

EFOY Cluster functionality

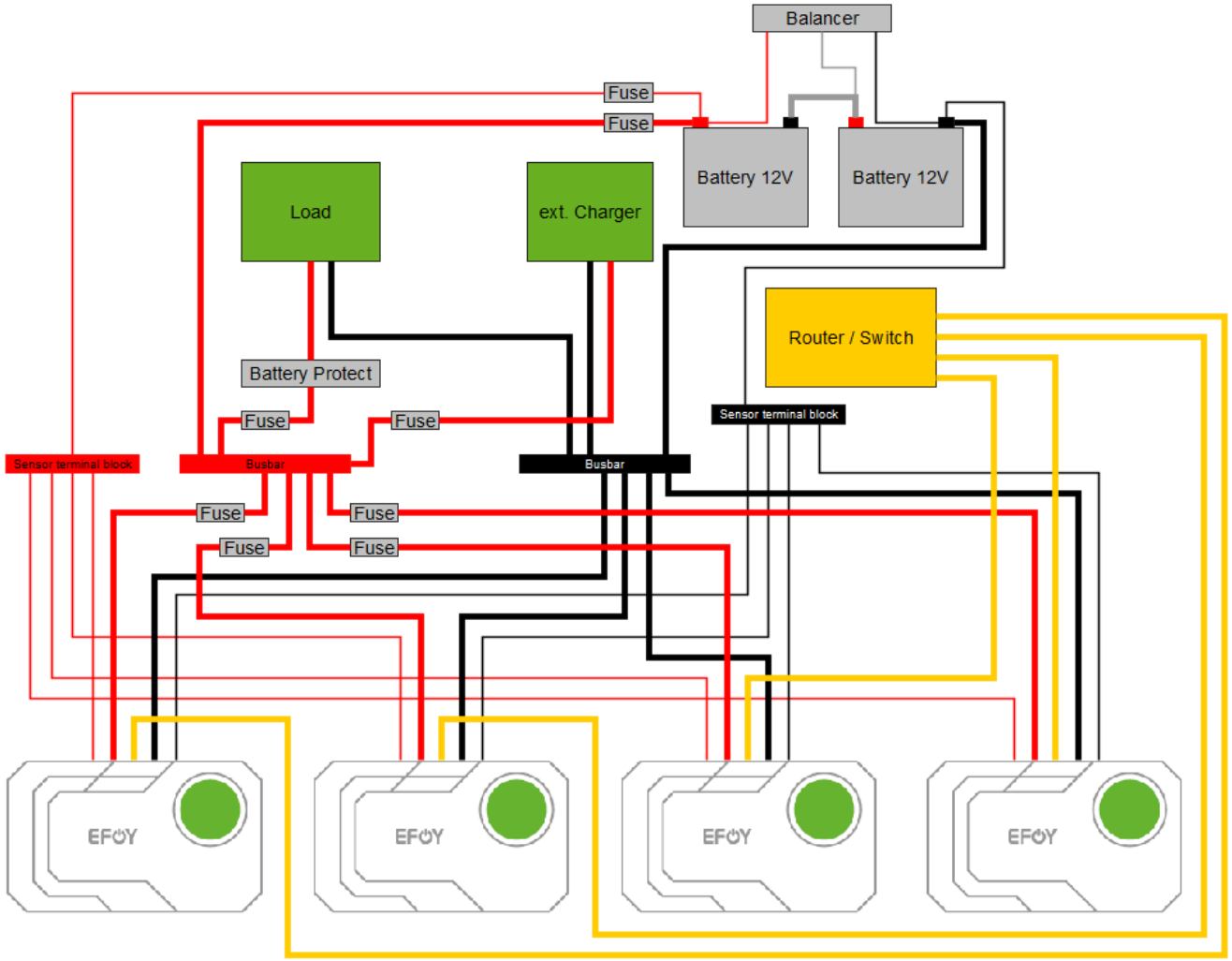
SFC ENERGY

Cluster - Functionality

- Cluster of 4 EFOYs
  - 1 Controller / max. 3 Client
  - Advantage: Same operating hours, same fuel consumption
- Connection via ethernet cable to switch or router (if enough ports available)

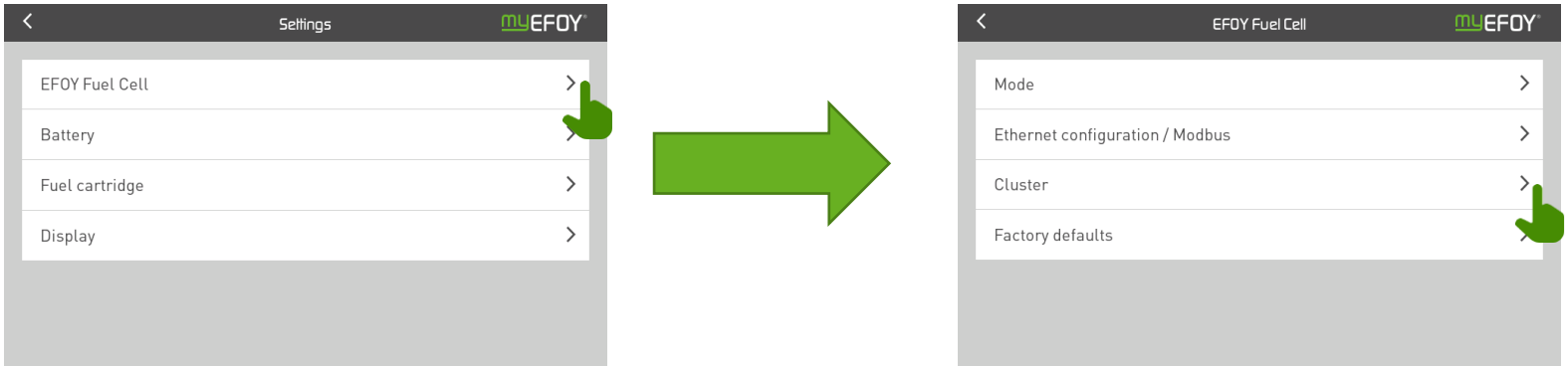


Cluster – Electrical connection



Start cluster configuration

- Available with
  - EFOY firmware 24.14.275 or higher
  - Operatin panel OP3 firmware 27.08.49
- **Configuration is mandatory, start in the settings menu at the operating panel**

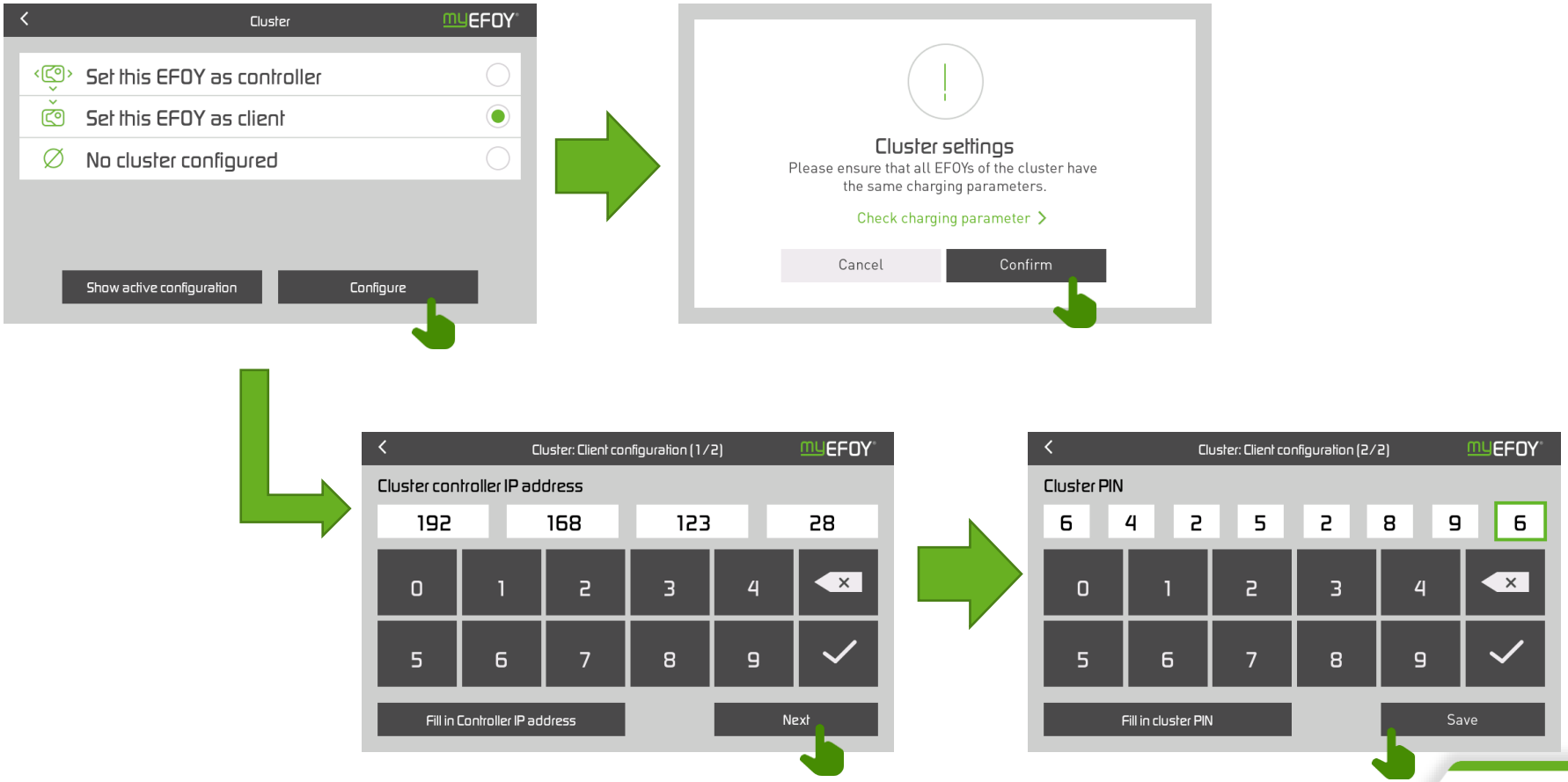


Configuration via operating panel

- Set the “Controller” EFOY
  - **Same charging parameter for all EFOYs in the Cluster is essential**
  - If necessary assign IP-address
  - Note IP-address & PIN or save on operating panel (automatically)

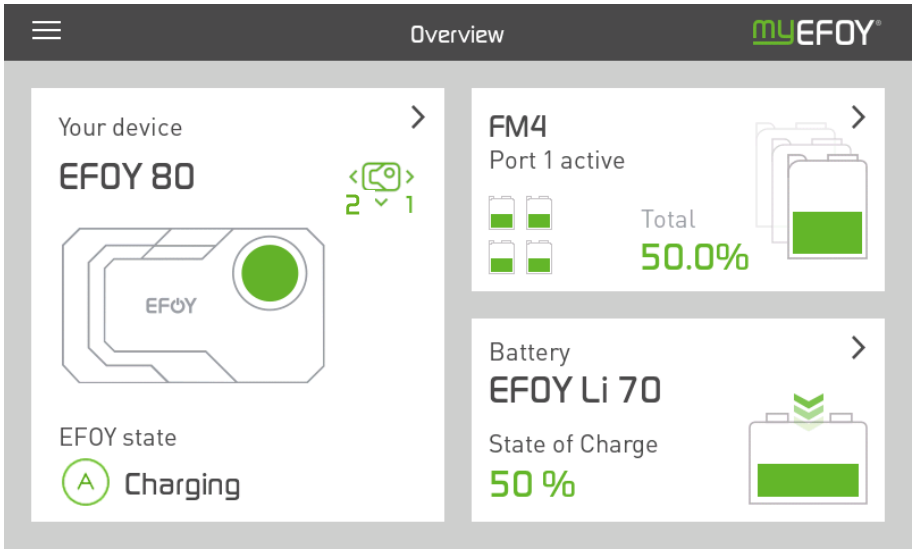
Configuration via operating panel

- Set further EFOYs as client
  - Enter IP-address & PIN from controller or **use same operating panel and restore**

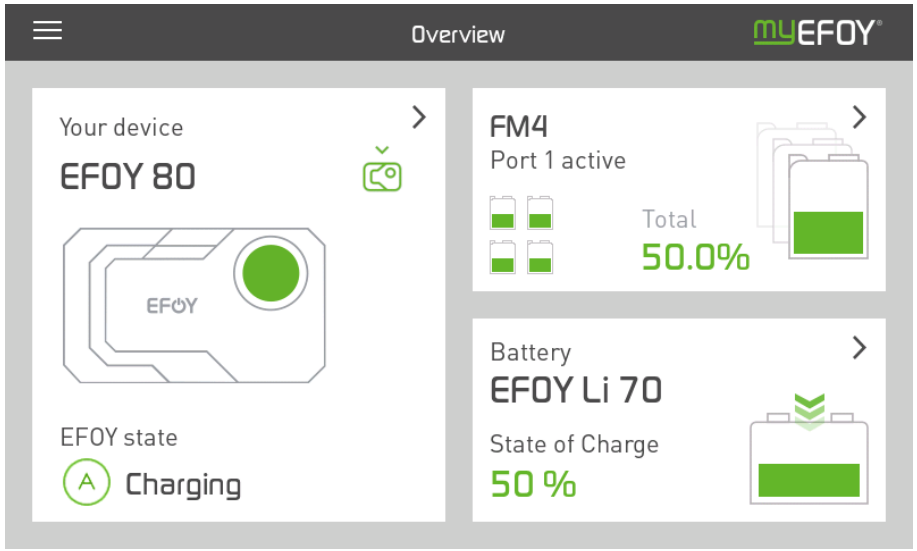


Overview

Controller



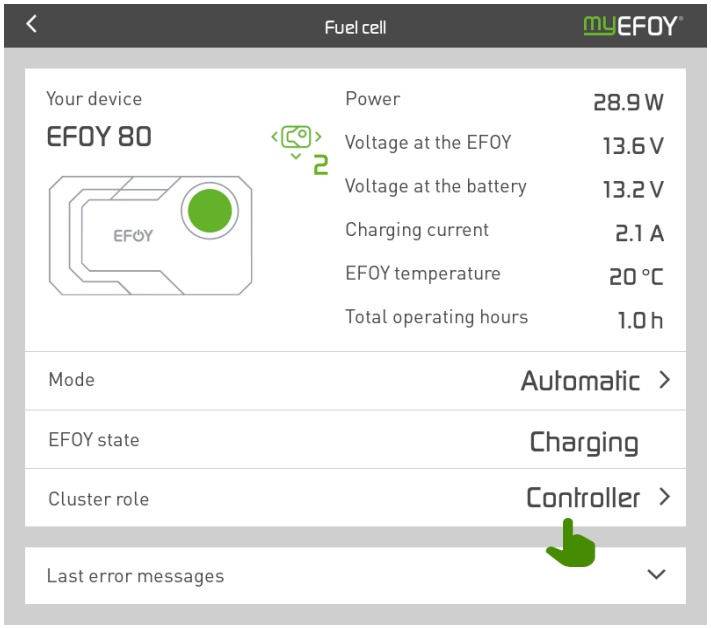
Client

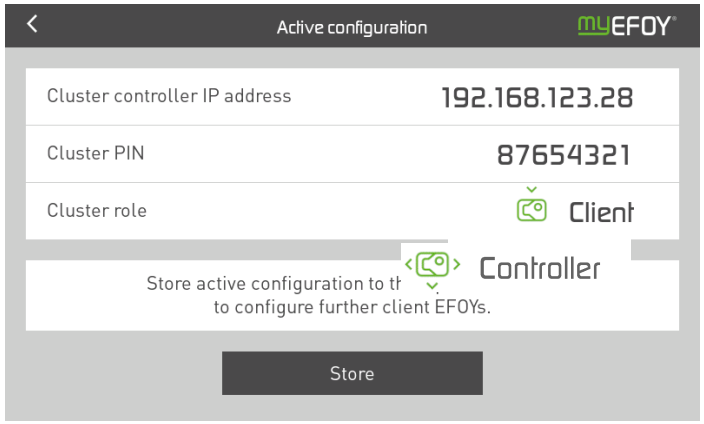


- Controller shows the total number of EFOYs in the cluster

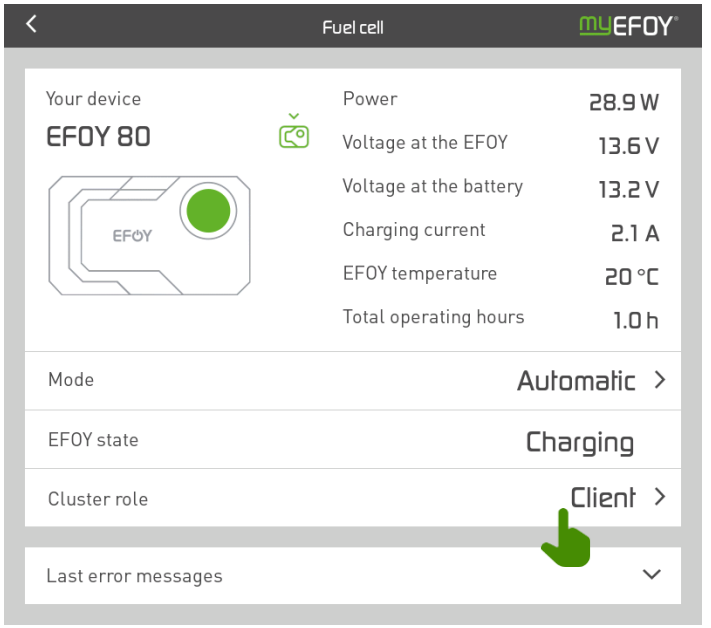
Detail page

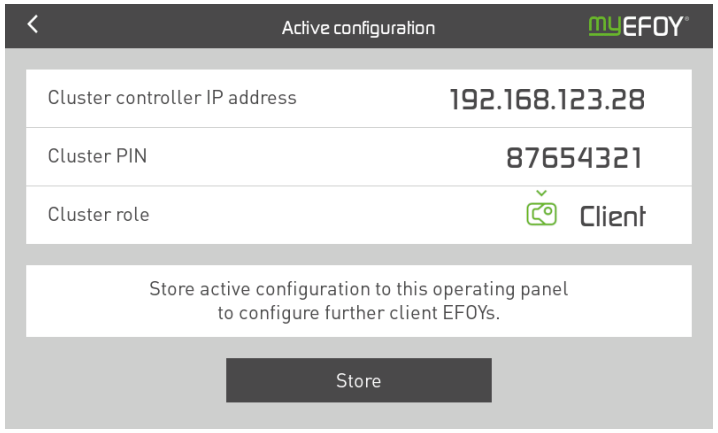
Controller





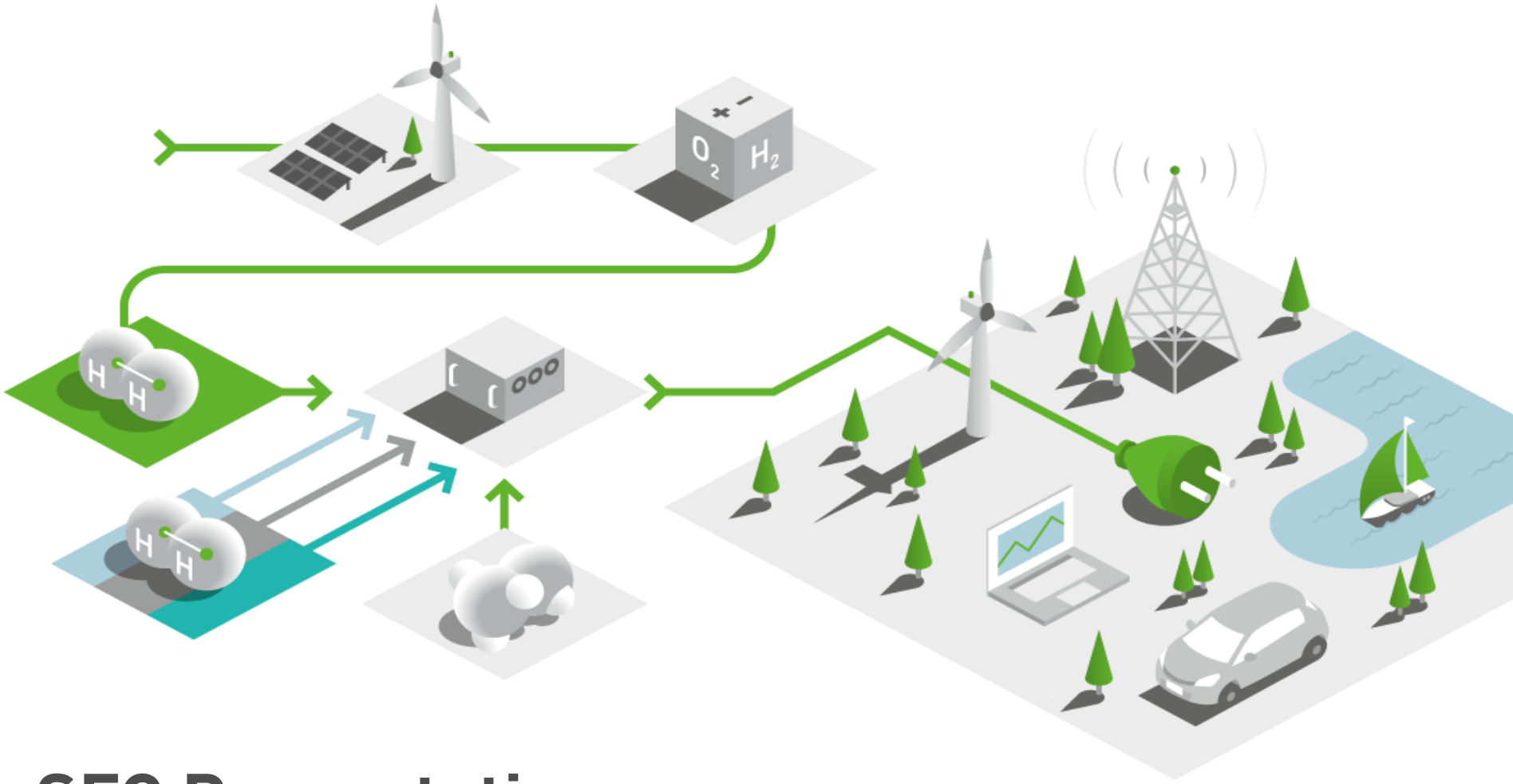
Client





Typical questions

- What happens if a Client has an error?
  - Cluster stays if more than one client is involved
  - Only 1 Client: Warning on the controller => no clients connected
- What happens if the Controller has an error?
  - Warning on the clients => No connection to controller
  - Every EFOY operates on it‘s own
  - Error solved => Cluster automatically forms again
- Cluster possible without router?
  - Yes, Controller needs a static IP address



SFC Presentation

EFOY Multisense

SFC ENERGY

EFOY MultiSense

Extended data collection

Measurement of electrical currents such as load currents or PV charging currents
Measurement of temperatures in the installation area
Additional integration of digital I/O sensors and actuators.

Intuitive configuration and operation

Intuitive configuration and operation of the EFOY MultiSense
All measured values are displayed on the OP3 control panel and in the EFOY Cloud.

Simple installation

Easy mounting option (DIN-rail mounting) Communicative integration via the SFC bus.

Data monitoring via EFOY Cloud

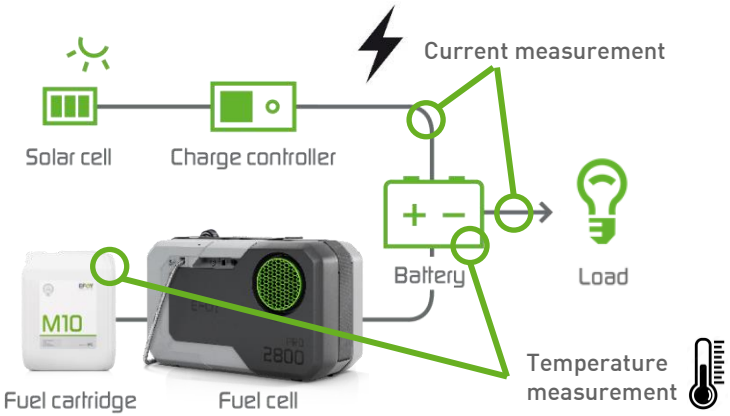
All sensor data can be viewed via the EFOY Cloud.
Historical display of measured values and notification via alerts possible.

Extended data collection

Temperature and current measurement, digital I/Os

Your application:
Fuel Cell + solar + battery

Gain more data on your overall application with the EFOY MultiSense



- Measure additional charging currents, e.g. from your solar panels
- Measure your real-time electrical load
- Measure temperatures outside or inside your installation situation or measure the battery temperature
- With MultiSense MS8: Include digital inputs / outputs, e.g. door-contacts

EFOY MultiSense Sets

Delivery content

EFOY MultiSense MS4 Set Basic

- EFOY MultiSense MS4
- Power supply cable (including fuse)
- SFC Bus cable
- Port Doubler

Part no. 158 000 196

EFOY MultiSense MS8 Set Basic

- EFOY MultiSense MS8
- Power supply cable (including fuse)
- SFC Bus cable
- Port Doubler

Part no. 158 000 197

EFOY MultiSense MS4 Set Sensors

- EFOY MultiSense MS4
- Power supply cable (including fuse)
- SFC Bus cable
- Port Doubler
- Temperature sensor type PT100 probe
- current sensors: max. 50 A

Part no. 158 000 198

*Note: preliminary illustration

Sensors overview

The following sensors are available to be used in combination with the

EFOY MultiSense MS4 and MS8:

current sensors: max. 10 A
(with cable)

current sensors: max. 50 A
(with cable)

current sensors: max.150 A
(with cable)

Temperature sensor:
type PT100 probe
(with cable)

Temperature sensor for
battery temperature:
type PT100 cable lug
(with cable)

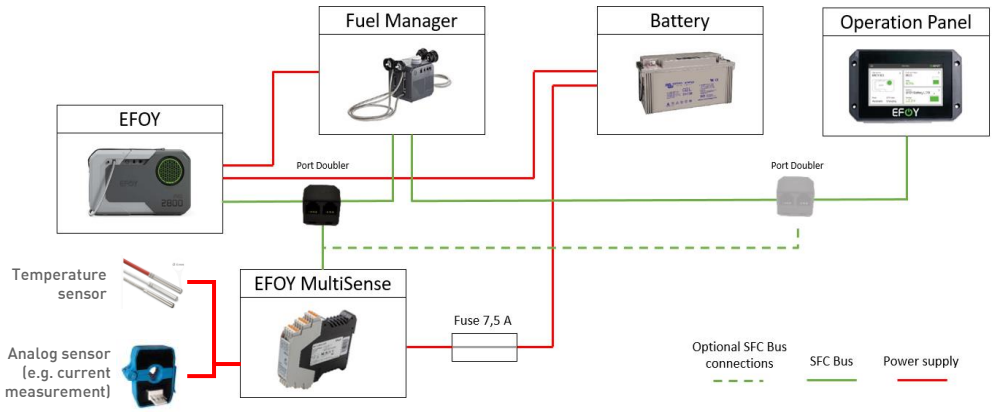
EFOY MultiSense MS4/MS8

Installing & removing the EFOY MultiSense

- Can be mounted on a top-hat rail
- Required connections should be easily accessible in the installation space
- At least 10 cm below the top-hat rail

EFOY MultiSense MS4

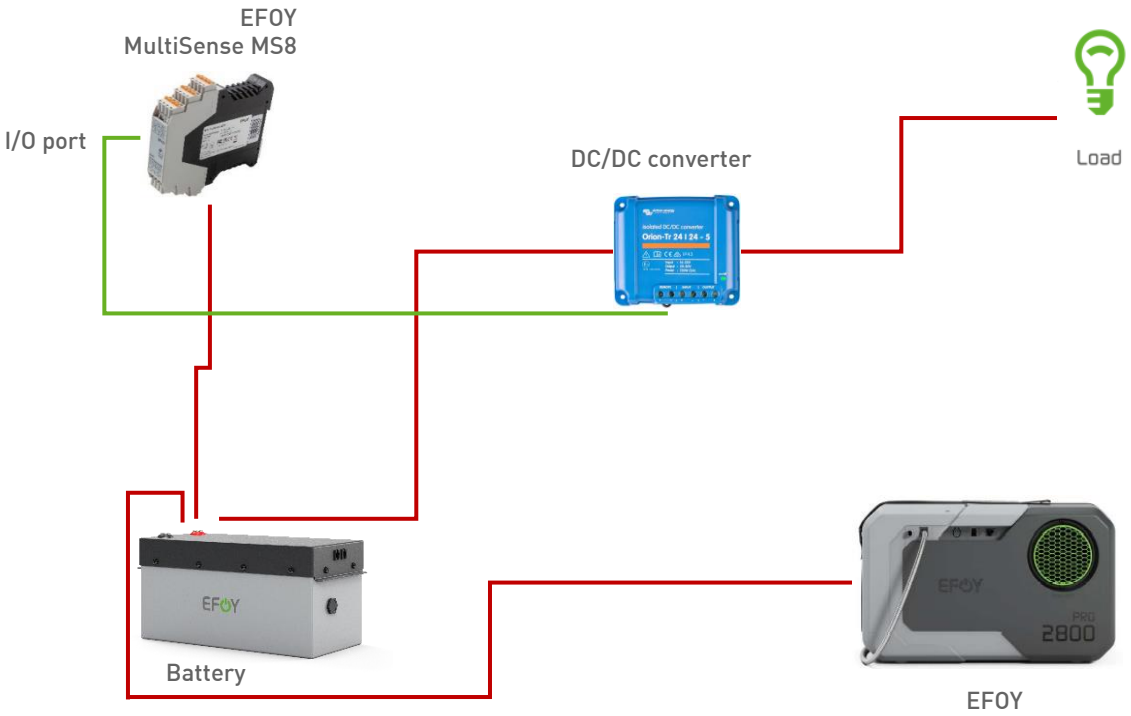
Wiring and communication connection



- The EFOY and the OP3 control panel are connected as permanently terminated devices
- Data transmission via the SFC Bus using a port doubler as an unterminated stub line
- The sequence of the undermined devices in the system and of the EFOY MultiSense is not relevant and can be determined as required
- If no OP3 control panel is connected, the EFOY Fuel Manager or the EFOY battery must be terminated using a terminating resistor
- Power supply of the EFOY MultiSense via battery connection (protected by a 7.5 A fuse)
- Sensors are connected directly to the EFOY MultiSense

EFOY MultiSense MS8

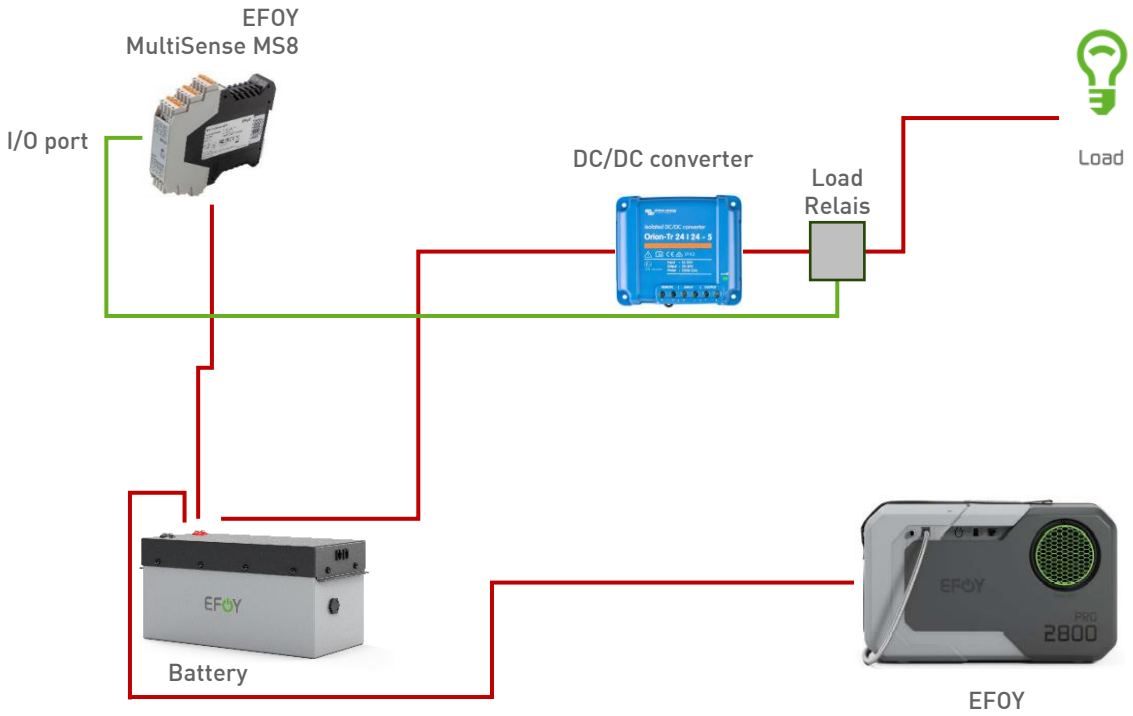
Using I/Os for load disconnection (Option 1)



- Configure I/O port as output port
- Send a signal to the remote on/off port of the DC/DC converter

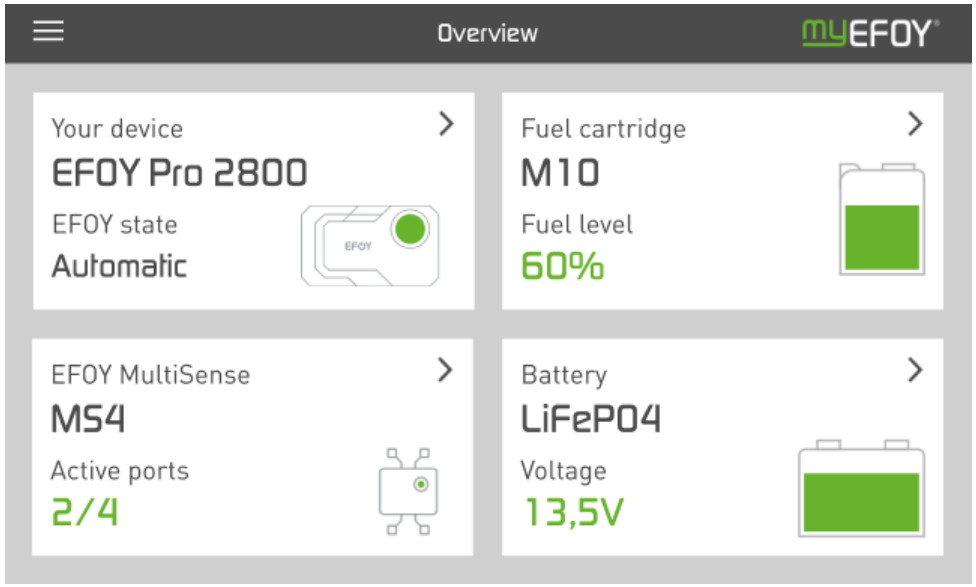
EFOY MultiSense MS8

Using I/Os for load disconnection (Option 2)



- Configure I/O port as output port
- Send a signal to a load relais to open the relais and disconnect the load from the DC/DC converter

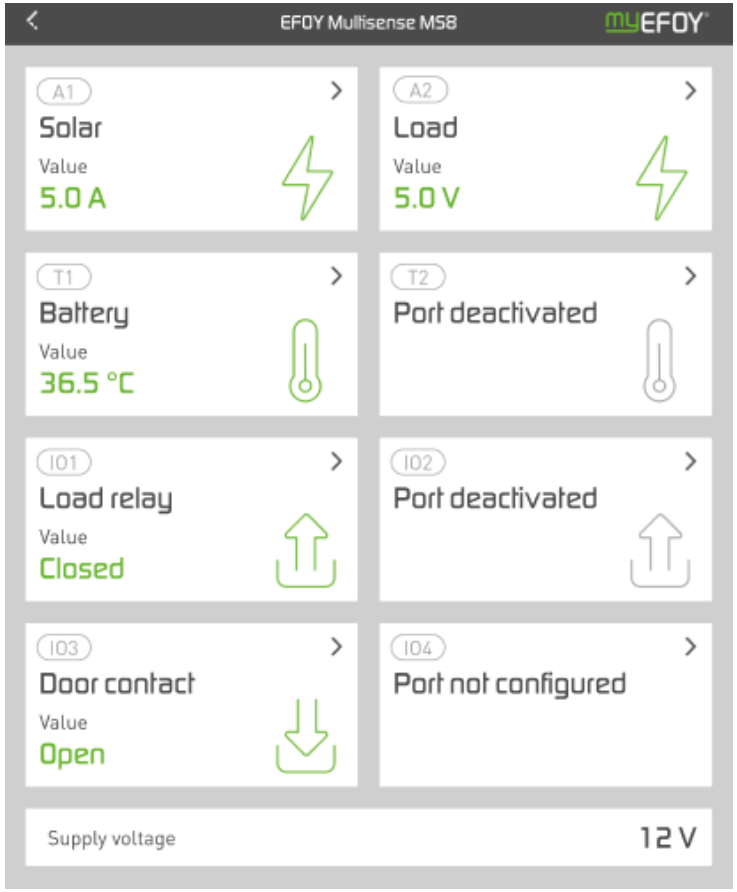
Configuration of the EFOY MultiSense
Main Screen



- The EFOY MultiSense is displayed in the main menu of the operating panel, next to the fuel cell, the fuel cartridge and the battery overview
- Product type is visible at first glance (MultiSense MS4 or MS8)
- Number of active ports is visible
- For detailed information: click on the EFOY MultiSense menu

Tutorial: https://www.efoy-pro.com/service/efoy-cloud/

Configuration of the EFOY MultiSense
Detail Screen

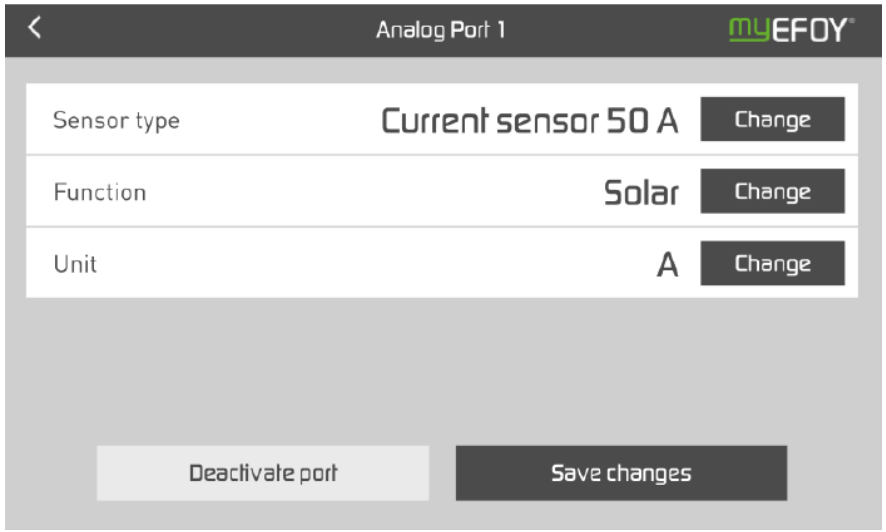


- Overview on analog sensors (current measurements)
- Overview on temperature sensors
- Overview on I/O ports (only for EFOY MultiSense MS8)
- Supply Voltage is displayed
- List of last error messages

The initial configuration as well as the activation or de-activation of each port can be done by clicking on the respective icon.

Configuration of the EFOY MultiSense

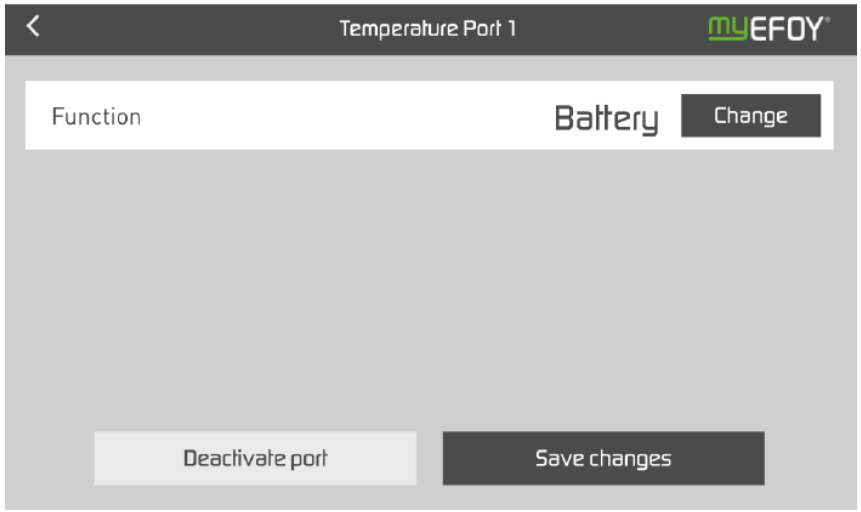
Analog Ports



The configuration of the analog ports can be set by selecting port A1 or A2. The sensor type, the function and the unit can each be selected from a drop-down menu.

Confirm the changes to the configuration using the save button.

Configuration of the EFOY MultiSense
Temperature Ports

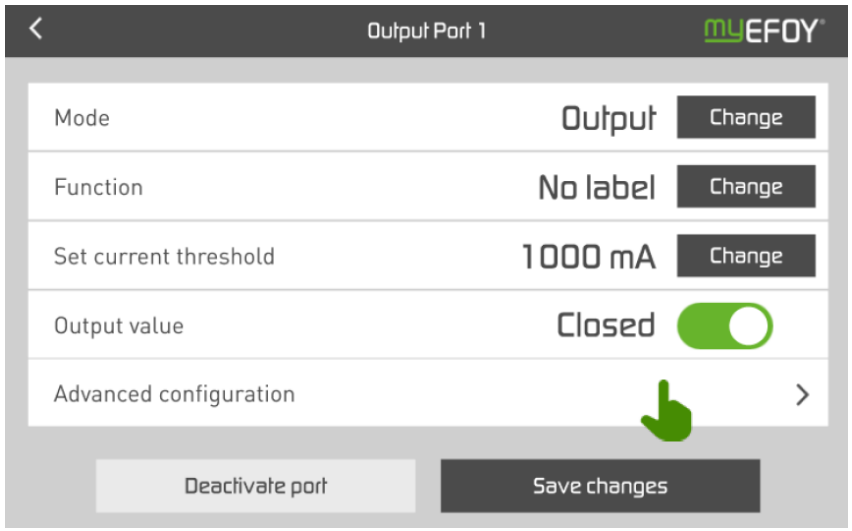


The configuration of the temperature ports can be set by selecting port T1 or T2. The measuring environment can be selected from a drop-down menu.

Confirm the changes to the configuration using the save button.

Configuration of the EFOY MultiSense

Digital I/O Ports



The configuration of the I/O ports can be set by selecting ports IO1 - IO4. The mode, the function, the current threshold setting and the output value can each be selected from a drop-down menu.

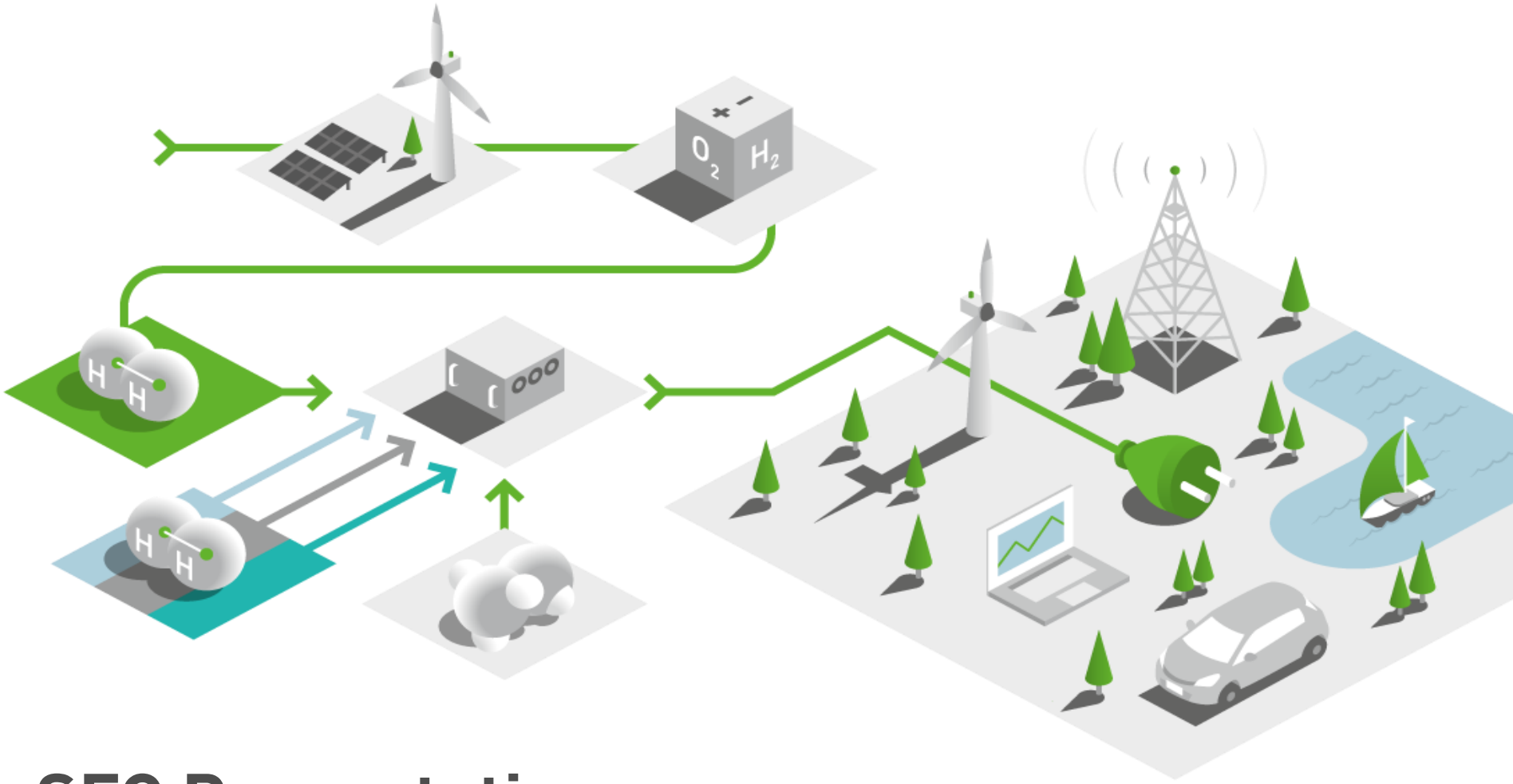
Confirm the changes to the configuration using the save button.

Maintenance and Troubleshooting

- There are no firmware updates on the EFOY MultiSense needed

- Information on the displayed error codes can also be found in the SFC Service Tool:

  https://www.efoy-pro.com/service/servicetool/



SFC Presentation

Energy Solutions

SFC ENERGY

Product portfolio

Overview: ProEnergyCase, ProCube & ProFuelBox

ProEnergyCase 2020P-3	ProCube 2030A-3	ProCube 2060A-3	ProCube 2060A-3 XF	ProFuelBox 2120A
153 002 080	153 002 090	153 002 060	153 002 070	153 002 130

Operating temperature:	-20 to +50°C
Protection class:	IP 33
Compatible fuel cell:	EFOY 80/150, EFOY Pro 900/1800/2800

Product portfolio

Overview: ProCabinet

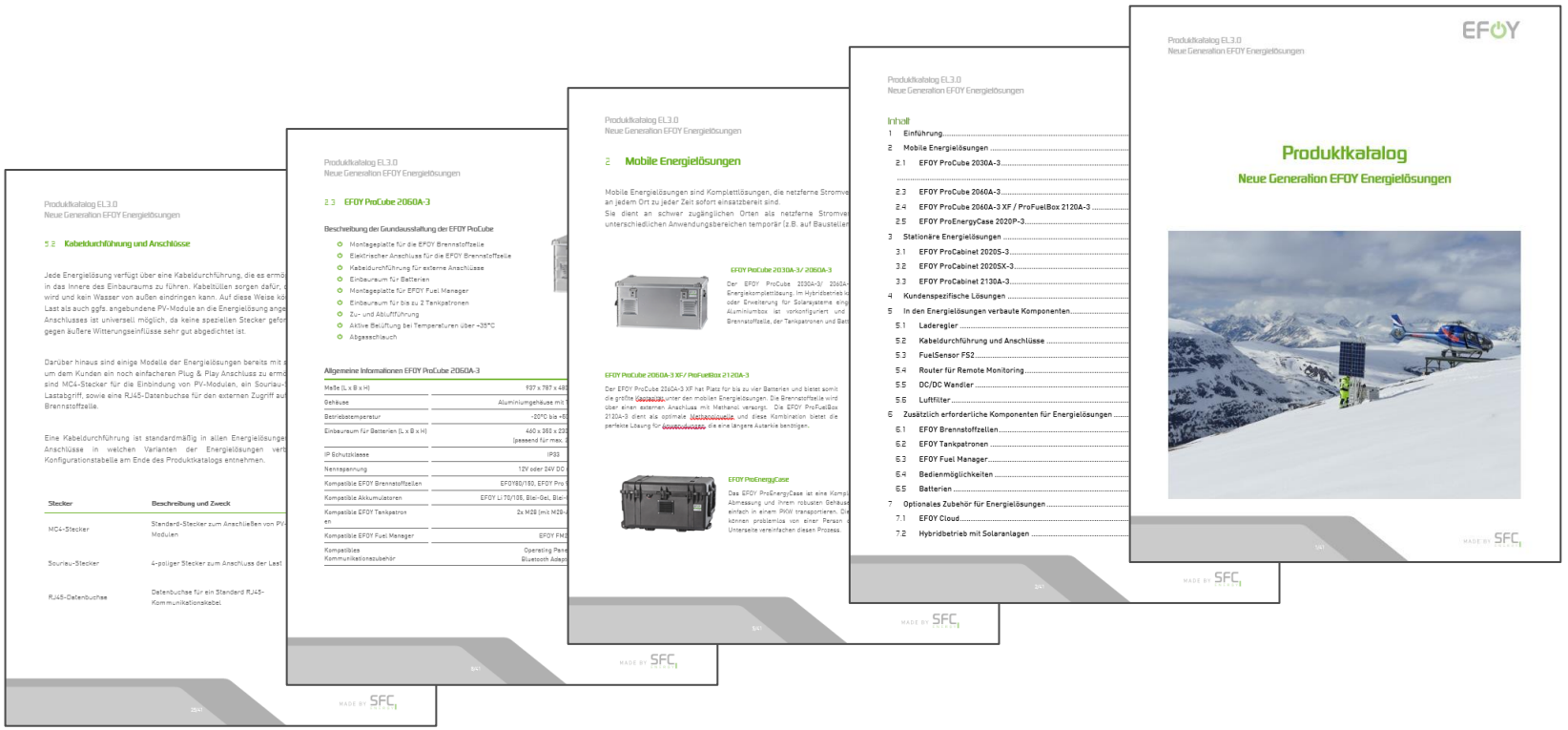
ProCabinet 2020S-3	ProCabinet 2020SX-3	ProCabinet 2130A-3	ProCabinet 2260A
153 002 100	153 002 110	153 002 120	153 002 150
Operating temperature:	-20 to +50°C		
Protection class:	IP 33	IP 54	
Compatible fuel cell:	EFOY 80/150, EFOY Pro 900/1800/2800		EFOY Pro12000

Product portfolio

Overview: SFC CA Energy Solutions

ProEnergyBox 4060P 24V	ProCabinet 4060S 24V	ProCabinet 4060SX 24V
153 002 140	153 002 160	153 002 170
Operating temperature:	-40 to +50°C	
Protection class:	IP 43D	IP 54
Compatible fuel cell:	EFOY 80/150, EFOY Pro 900/1800/2800	

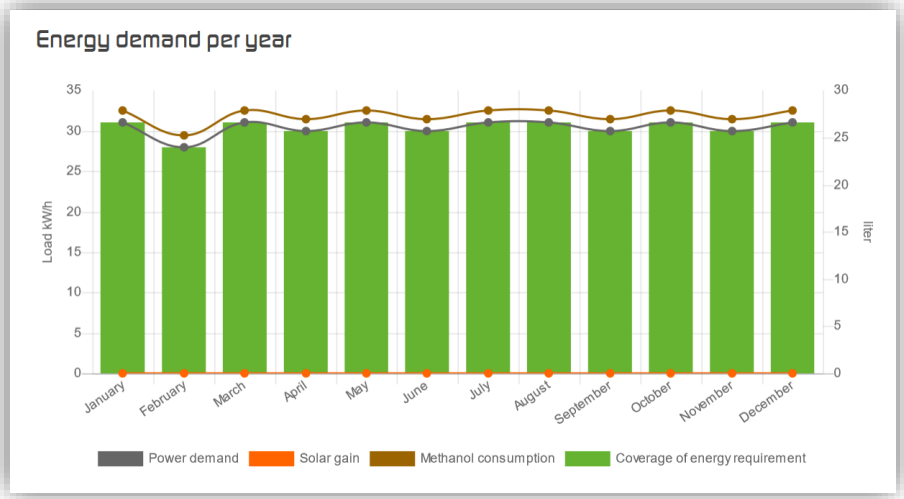
Product catalogue for Methanol Energy Solutions

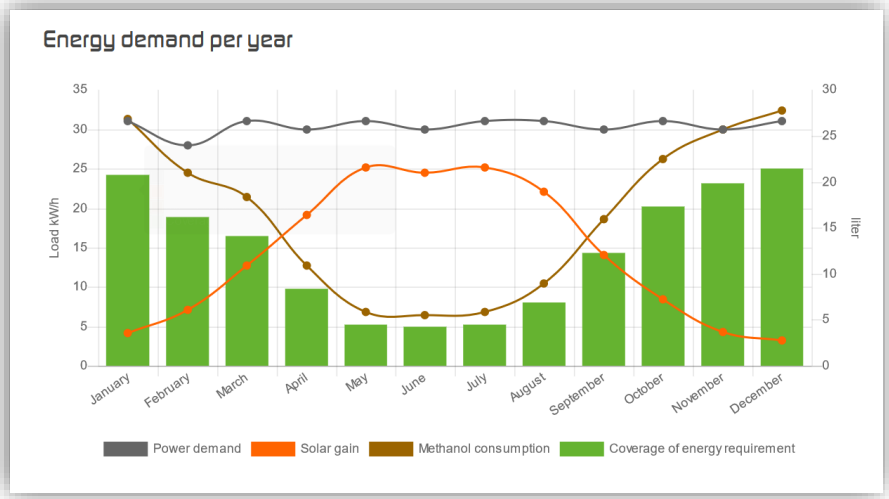


Catalogue contains **description of all Energy Solution models and variants** and also all the **additional accessories** (PV-modules, PV-holder, batteries, etc.)

Energy Calculator Example

Solar hybrid system





Example:
Energy demand: 1000 Wh/day
No Solar

Recommendation:
EFOY Pro 2800

Example:
Energy demand: 1000 Wh/day
Solar 200 Wp/Germany

Recommendation:
EFOY Pro 1800

Hybridization of EFOY Pro Fuel Cells with a solar panel combines the advantages of both off-grid power solutions.

Energy Calculator

For every application

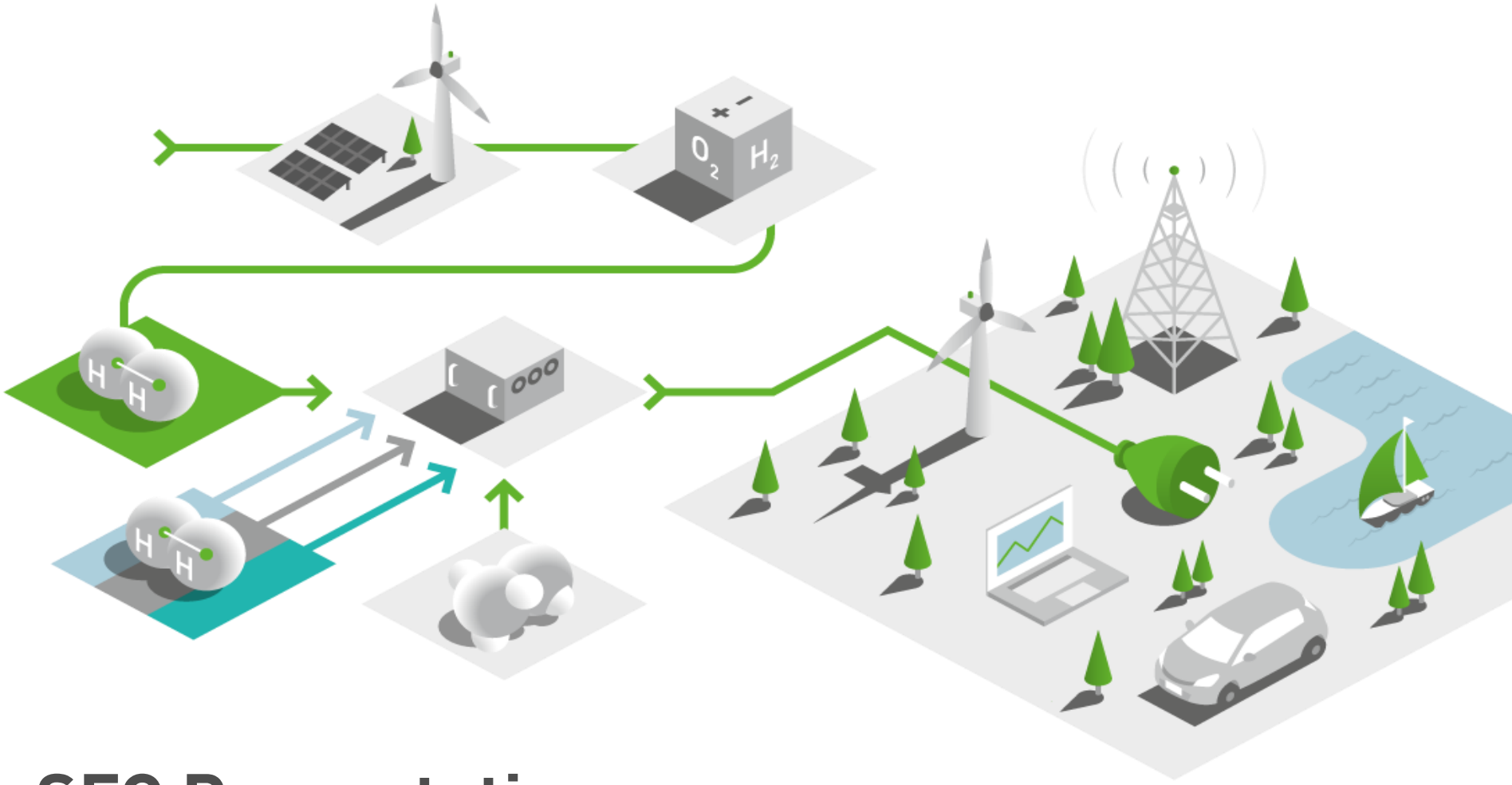
- Enter your energy demand or choose one of our application scenario
- Enter the nominal power of your solar panel, if available, including geographical region
- Calculate your recommended EFOY fuel cell
- See an overview of your annual energy demand / energy supply, autonomy, operating hours and methanol consumption per year

> Calculate

Off-grid calculator

Back-up calculator

https://www.efoy-pro.com/en/service/energy-calculator/



SFC Presentation

Batteries & EFOY charging parameters

SFC ENERGY

Batteries and EFOY charging parameters

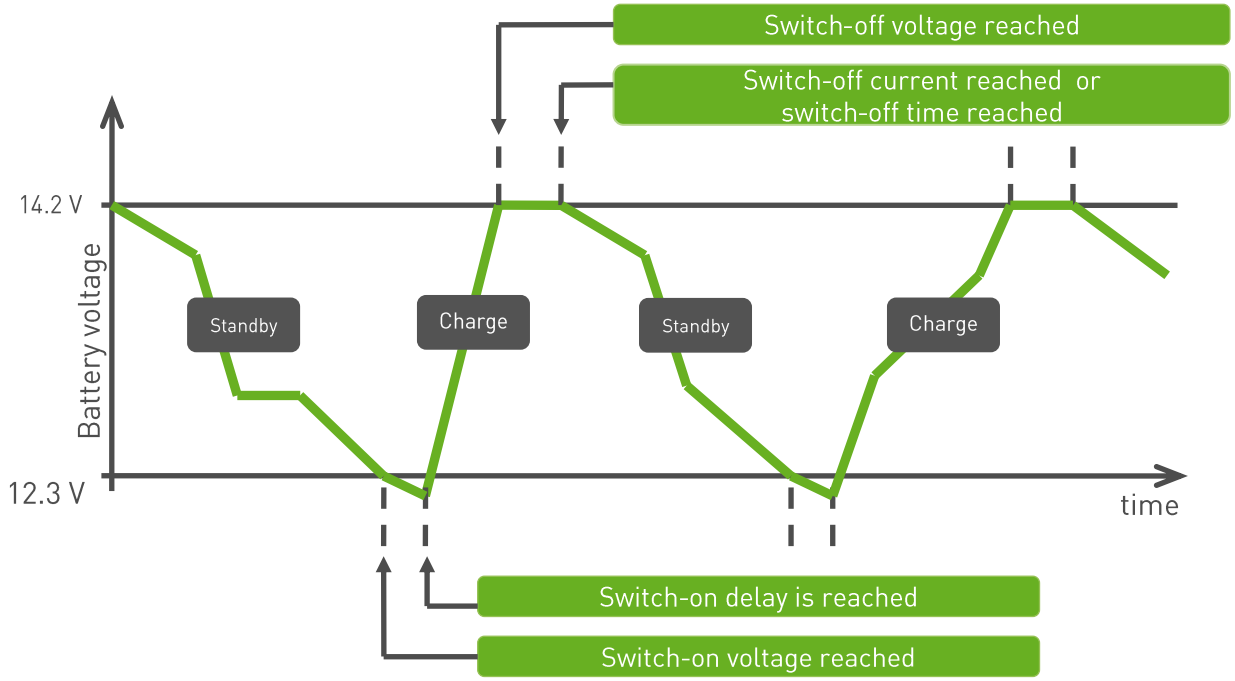
Target values for good charging behavior

- Max. 1x charging cycle per 24h
- Min. 4h charging cycles
- **Recommendation**: 5-8h charging cycles

Electrical installation
Dos and don´ts

- Sense cables should be connected directly to the battery terminals and not via any relays, common blocks, etc.
- The voltage difference during charging at the fuel cell and at the battery should be as low as possible, best 0.1 V
- To keep power losses as low as possible, make sure to keep the power cable as short as possible
- Size the battery correctly and ensure that the battery is in good health to avoid short charging cycles
- Electrical installation and interconnection can be done with own fuses.
- Fuses must be placed close to the battery.

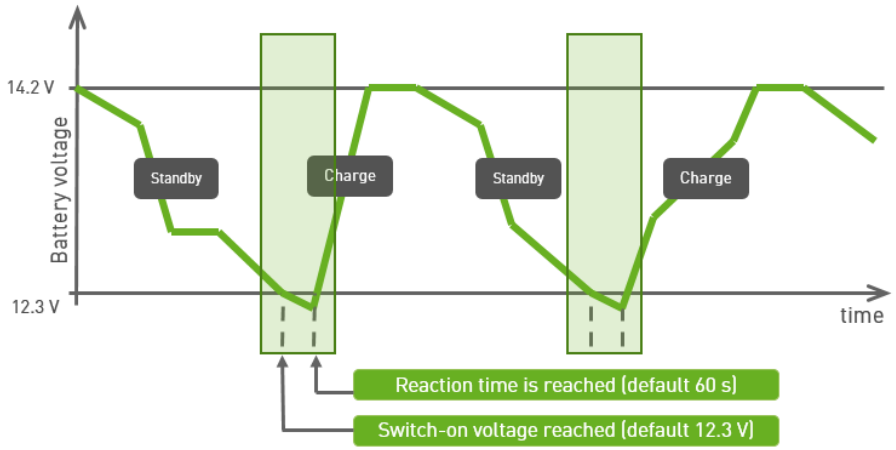
EFOY Mode: Automatic Charging



*All stated standards are default settings for a lead-battery with 12 V.
Settings can be changed with operating panel, EFOY App or EFOY Cloud

Switch-on voltage and switch-on delay
Lead Batteries

- If the voltage remains below the “switch-on voltage” for a longer time than the "switch-on delay", the fuel cell switches on
- Default setting: Switch-on voltage: 12.3 V - corresponds to approx. 50% charging capacity
- Default setting: Switch-on delay: 60 seconds → Can be set up to 5 minutes
- **Info:** Above 13.2 V the fuel cell can NOT be switched on manually (battery full!)



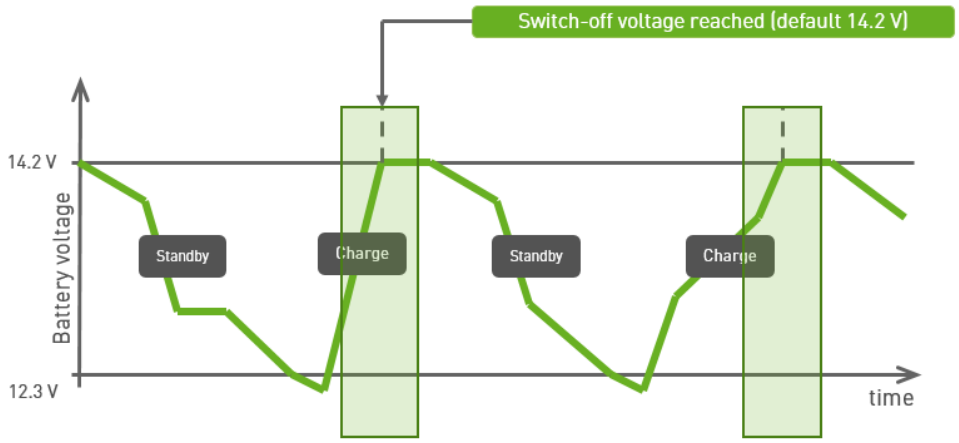
Recommendation

- Switch-on voltage: Do not set the switch-on threshold too low. The EFOY has a start-up phase in which it still needs power from the battery. Do not set the switch-on voltage too high since this might result in short charging cycles

- Switch-on delay: Useful in any application where a high load is switched on for a very short time and this might result in a voltage drop but immediate switch-on of the fuel cell should be avoided

Switch-off voltage

- The switch-off voltage must be reached for the fuel cell to automatically end its charging process and goes to standby
- Default setting 14,2 V (Lead) / 14,5 V (LiFePO4)
- The battery voltage alone cannot be used as the only criterion for end of charge, otherwise sulfating of the battery can occur more intensively (only for Lead-Battery types)



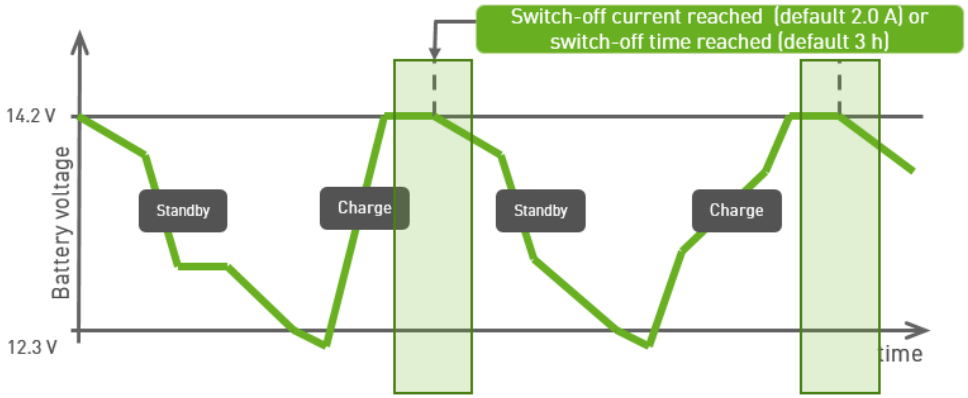
Switch-off current and switch-off time

Switch-off current:

- After reaching the switch-off voltage, the charging current is reduced. When it meets the switch-off current the EFOY will finally stop charging. This behavior serves to further fully charge the battery and keep the battery healthy
- Default setting (Lead & LiFePO4): 2A @ 12 V

Second criterion: Switch-off time

- If the switch-off current is NOT reached within the switch-off time, the second criterion takes effect and the EFOY is switched off
- Default setting (Lead & LiFePO4): 3 hours



Recommendation

- With constant load it makes sense to set the switch-off current as follows :
  - Load + 0,5 A
  - Example: 3 A load -> rise Switch-Off current to 3,5 A
- **Note**: If the switch-off current is below the load, this would never be reached and the EFOY will switch-off with the second criterion: switch-off time / absorption phase

Automatic Charging
Additional parameters

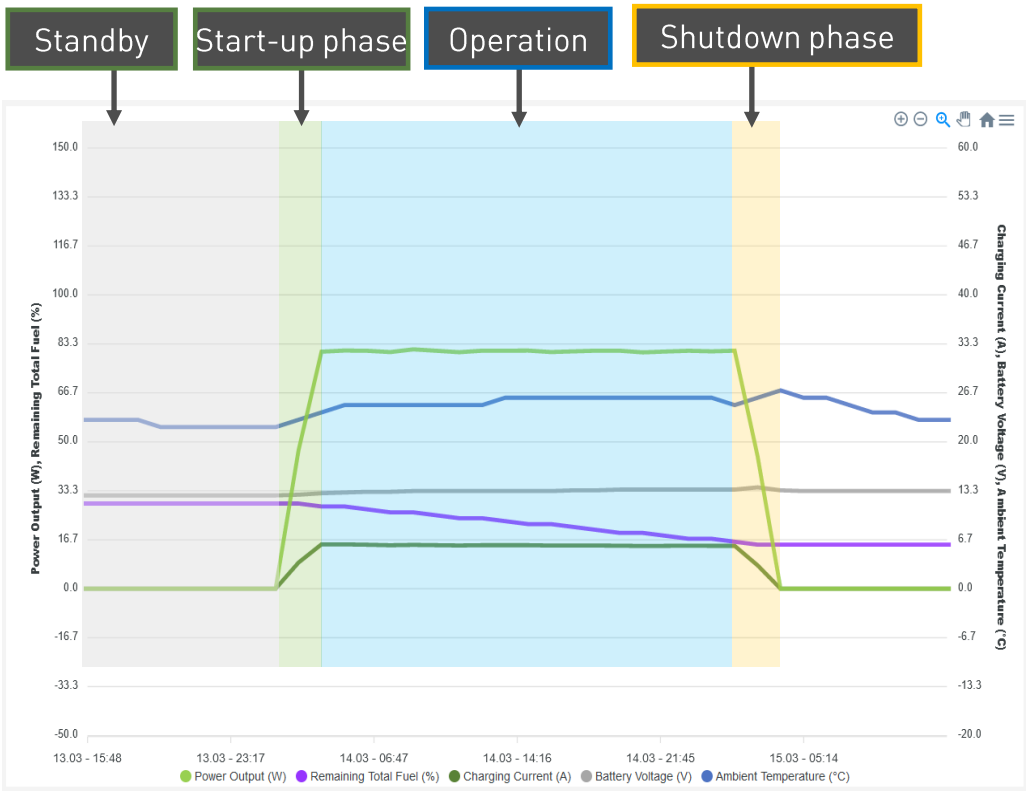
Maximum charge time

- Protection against unintentionally long charging cycle with high associated methanol consumption
  - For example: Large battery banks
- If the switch-off voltage is not reached within the set maximum charge time, the EFOY fuel cell will still switch off, independently of the battery voltage
  - Default setting: 24 h (Lead) / 48 h (LiFePO4)
  - **Attention:** Maximum charge time should never be set too short. It could lead to too short charging cycles, and damage the battery (never fully charged) and the fuel cell

Minimum charge time

- Protection against short charging cycles and faster degradation of the EFOY stack
- If this minimum charge time is not reached for several charging cycles, it is recommended to the customer to verify the battery settings or the battery itself
- This value is used in the warnings (151.001) and errors (051.001)
  - Default setting: 30 minutes

EFOY phases during charging

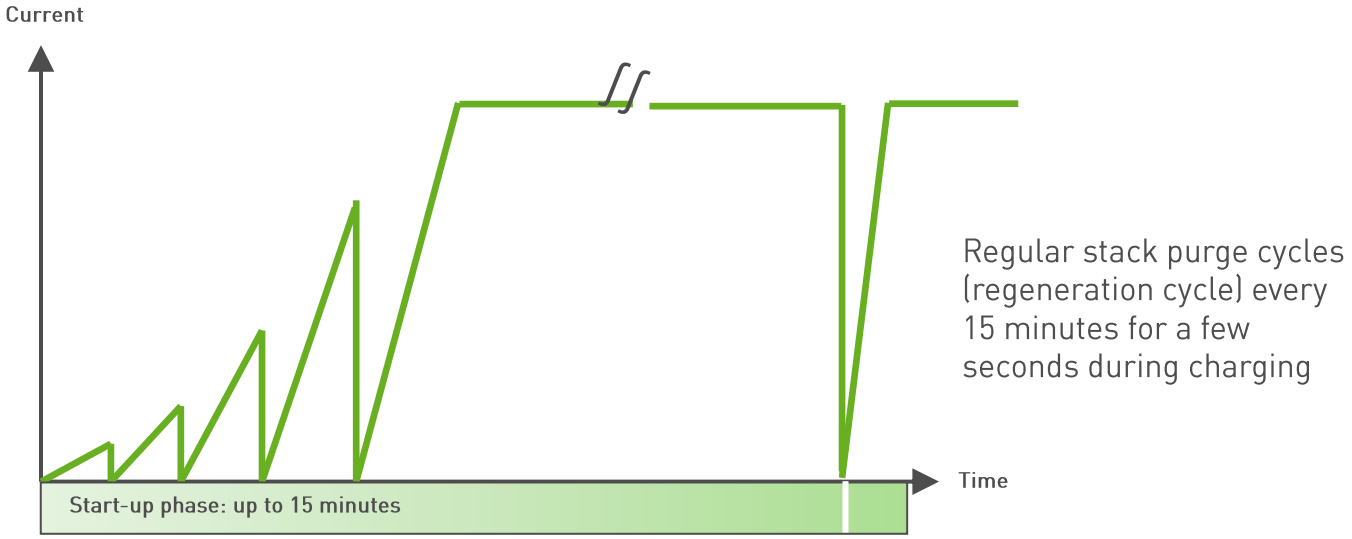


- **Standby:** Monitoring the battery voltage
- **Start phase:** Continuous increase of power output (max. 15min)
- **Operation:** Continuous power output
- **Shutdown phase**: Controlled termination of the charging process (depending on switch-off current & switch-off time)

Recommendation

- Avoid interrupting the Shutdown phase!
- When EFOY is switched-off manually, the started charging cycle will be ended

Start-up phase and short purge cycles



- Regular purge cycles needed to clean the stack from possible deposits (regeneration)
- Necessary to ensure guaranteed operating hours and high power output
- No influence on the charging behavior of the EFOY

Recognizing poor charging cycles

Short charging cycles

- Switch-off voltage quickly reached
- Very short operation time followed by direct shutdown phase
- Five very short charging cycles in a row
- Incident 051.001 is set by the EFOY “short cycle error”

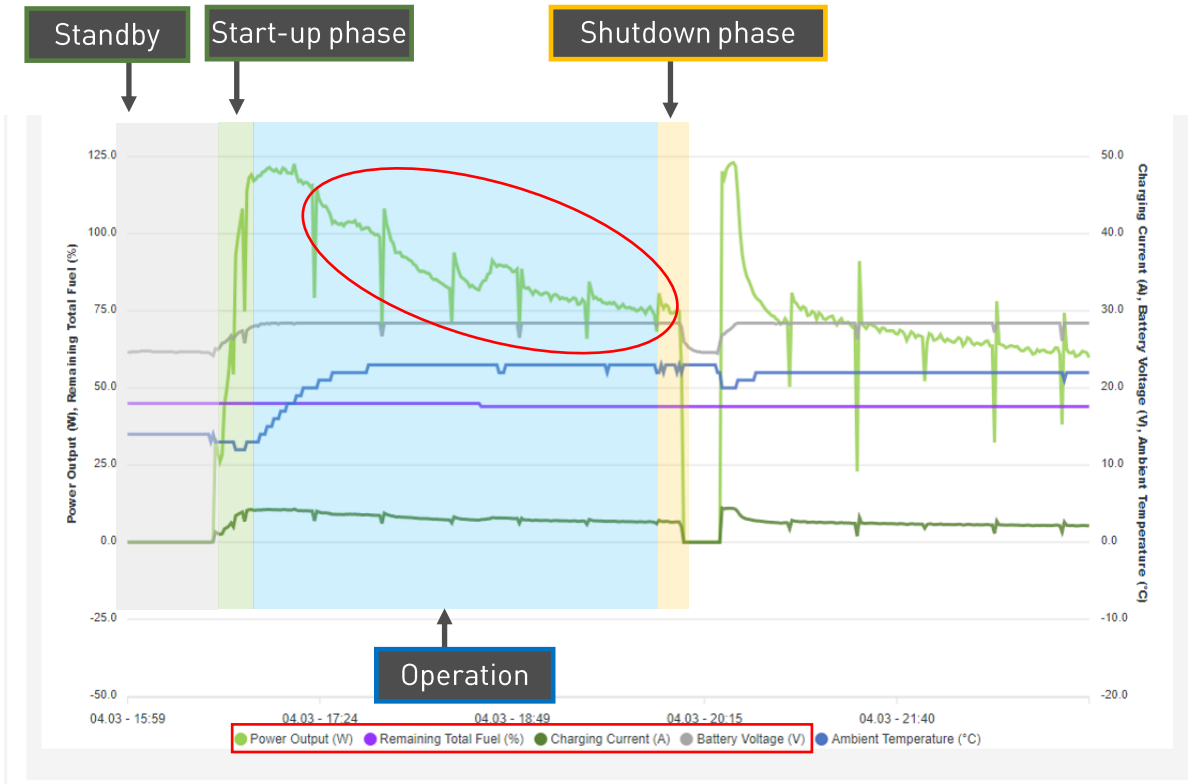
Reason

- Too small battery capacity
- Battery ageing
- Incorrectly set battery parameters

Recommendation

- Check your battery capacity

Recognizing poor charging cycles



Parameter Setup

- Switch-off time set to 3 hours
- EFOY does not stop before reaching the set switch-off time

Reason

- Switch-off current is not reached, therefore the Switch-off time takes effect

Recommendation

- Adapt your switch-off current to your connected load
- Long part-load operation should be avoided

Choosing a battery

Using the manufacturer's data sheet

- Checking the correct battery type (LiFePO4/AGM/Lead)
- Checking the correct battery voltage (12 V & 24 V)
- Checking the recommended battery capacity
- Checking the heating mat (only for LiFePO4)
  - Check how much the heating mat consumes
    - → Must not exceed the output of the EFOY
    - → Output of the heating mat max. 50% EFOY output

	Float Service (V)	Cycle service Normal (V)	Cycle service Fastest recharge (V)
Victron AGM 'Deep Cycle'			
Absorption		14,2 - 14,6	14,6 - 14,9
Float	13,5 - 13,8	13,5 - 13,8	13,5 - 13,8
Storage	13,2 - 13,5	13,2 - 13,5	13,2 - 13,5
Victron Gel 'Deep Cycle'			
Absorption		14,1 - 14,4	
Float	13,5 - 13,8	13,5 - 13,8	
Storage	13,2 - 13,5	13,2 - 13,5	

Attention

Without a heating element, the EFOY cannot charge a battery at ‹0°C

→ Heavy partial load operation would lead to rapid ageing of the stack

Choosing EFOY Parameters

Most important parameters for stack lifetime

Switch-off current

- Never to small → Switch-off current must be greater than the connected load

Switch-off time

- The shorter, the better → recommendation approx. 15min (default 180min)

→Both parameters ensure that the battery is not charged “completely full”

→This protects the stack from partial load operation

Attention for LiFePO4 batteries with heating mat

- Switch-off current and switch-off time must be adapted to heating mat, otherwise the battery cannot be heated for long enough before loading is possible

Recommendation for series connections

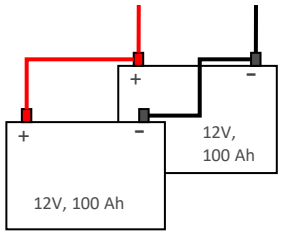
24 V Battery Setup

Series connection of 2x 12 V batteries

- Balancer recommended
- Same ageing condition required
- Same battery type
- Same capacity
- Ideally same production batch

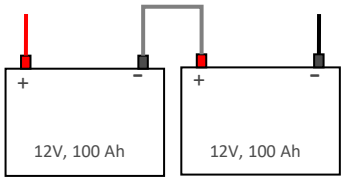
Parallel connection

= 12 V, 200 Ah



Series connection

= 24 V, 100 Ah



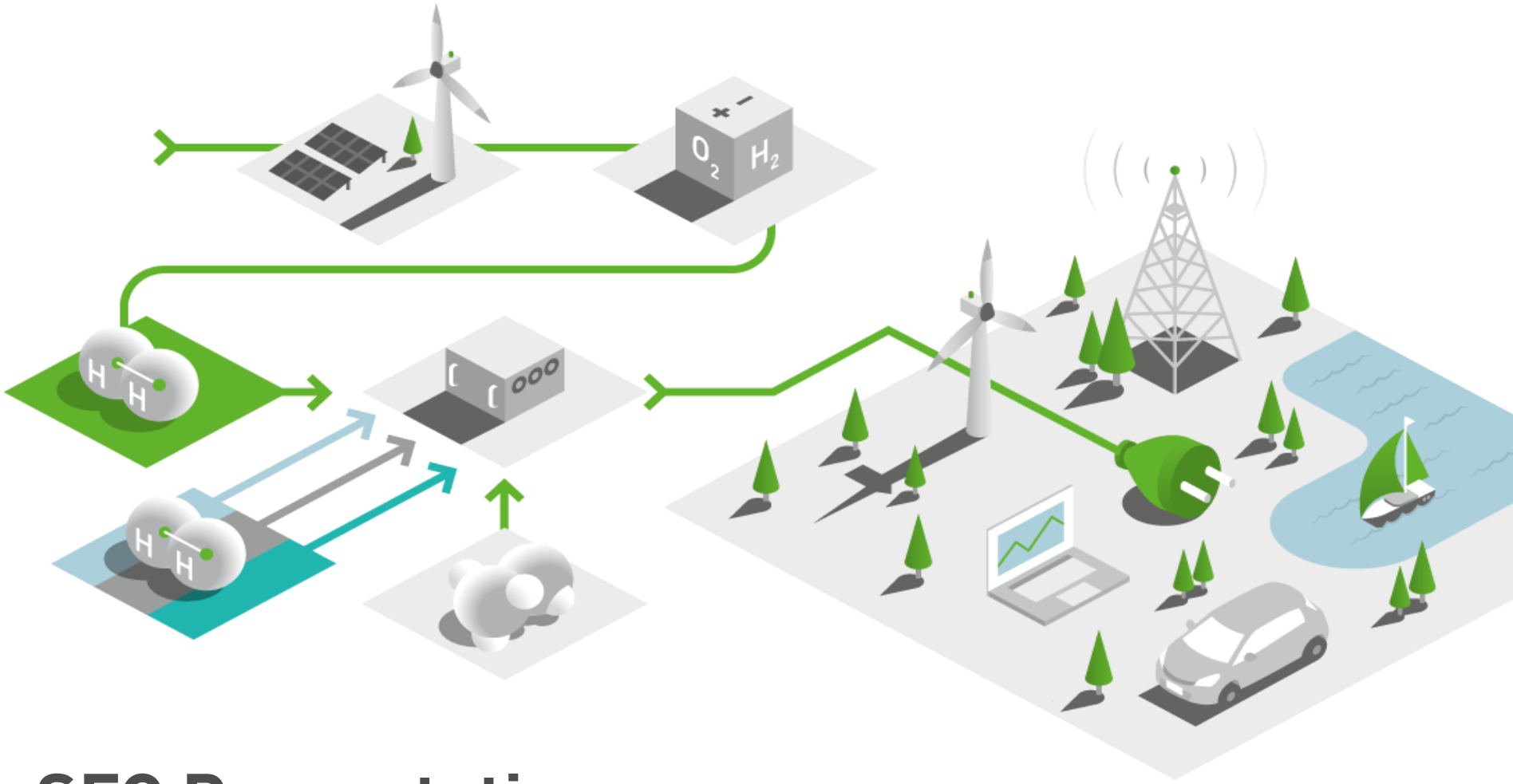
Attention

Completely charge each battery independently before connecting them to a 24 V battery set up and connect this set up to the EFOY

Industrial Application SetUp

Necessary information about the installation?

- Battery technology (lead/AGM or LiFePO4)
- Voltage level of the installation (12V or 24V)
- Total electrical consumption of the installation
- In general, you need to know:
  - when which load is applied
  - for how long it is applied and
  - how much current it draws
- Installed battery capacity
- Additional PV modules available?
  - If yes, how many watts are installed?
  - Location of the system (geographical and local e.g. under trees or on a field)
  - Alignment of the PV modules (do not calculate with the maximum possible yield)
- Background to the operating strategy of the installation
  - How is the installation to be used?
  - For which case should the EFOY be used (all year round/winter only)?

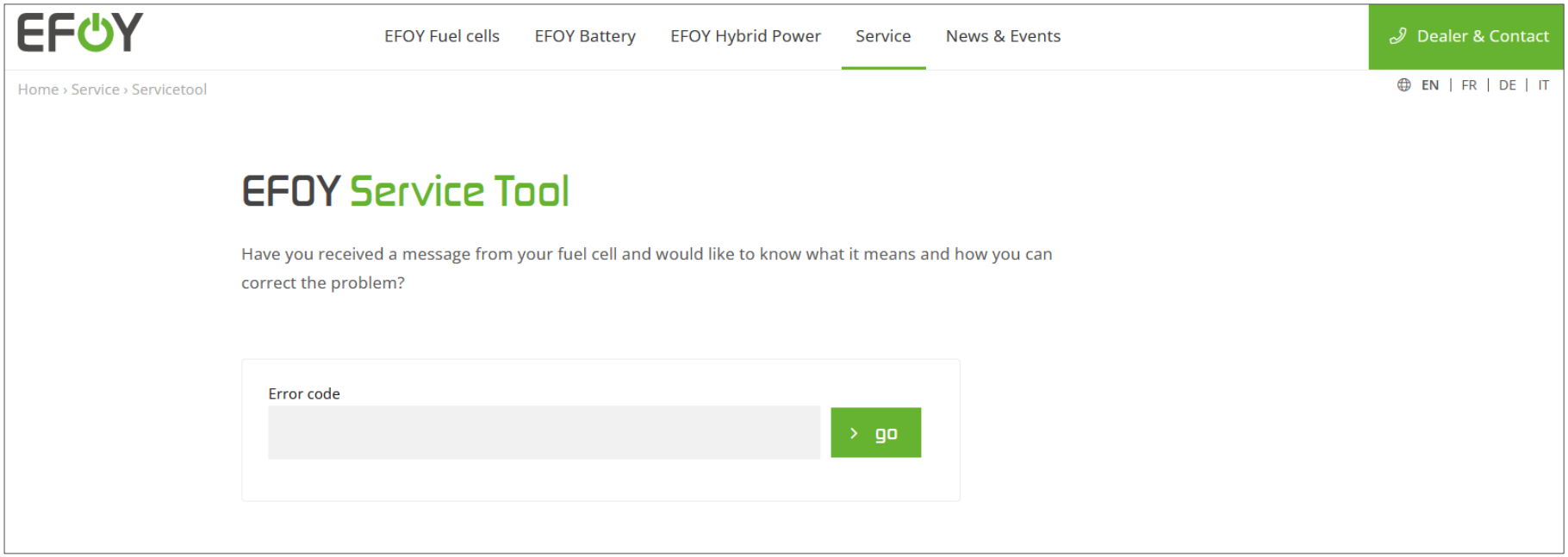


SFC Presentation

Warnings & Errors

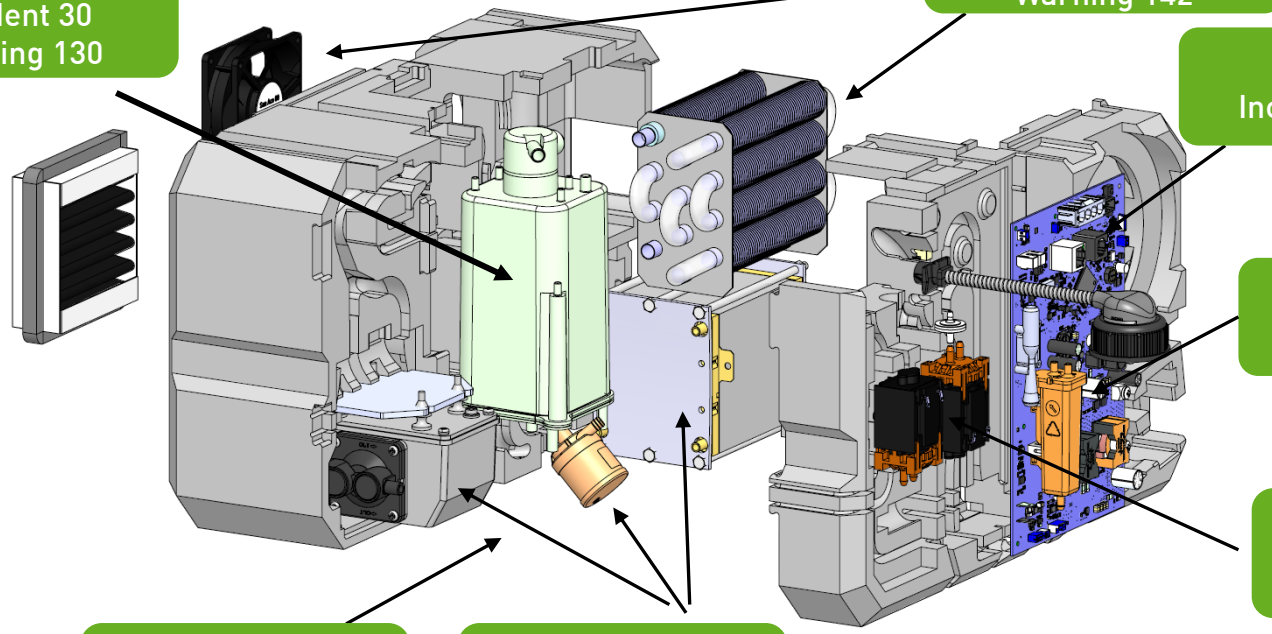
SFC ENERGY

Warnings and Error Codes



The EFOY Service Tool can be found here:
https://www.my-efoy.com/service/servicetool/

Trouble Shooting EFOY Fuel Cells



Interim tank
Incident 30
Warning 130

Heat exchanger
Incident 42
Warning 142

PCBA
Incidents 80 / 90

Reservoir
Incidents 70

Feeding pump
Incidents 20

Circulating pump
Incidents 90.014 &
several

Stack
Incidents 10
Freezing: 43 / 40

Battery
Incidents 50
Warning 150

Fuel Cartridge /
Fuel Manager
Incidents 20
Warning 120

Operting Panel
999

Warnings and Errors

- Different warnings and error code types for EFOY fuel cells
- Major Codes:
  - Starting with „0“ : Incident / Error on the EFOY itself
  - Starting with „1“ : Warning – EFOY can proceed with operation, but without intervention, this will eventually lead to an Error
  - Starting with „2“ : Indicents /errors on the EFOY Fuel Manager
  - Starting with „4“: Incidents / errors on the EFOY Battery
  - Starting with „999“: Incident / errors on the Operating Panel OP3 itself – no communication to the EFOY Fuel Cell possible

Warnings and Errors
General

- Different warnings and error code types for EFOY fuel cells
- Major Codes:
  - Starting with „0“ : Incident / Error on the EFOY itself
  - Starting with „1“ : Warning – EFOY can proceed with operation, but without intervention, this will eventually lead to an Error
  - Starting with „2“ : Indicents /errors on the EFOY Fuel Manager
  - Starting with „4“: Incidents / errors on the EFOY Battery
  - Starting with „999“: Incident / errors on the Operating Panel OP3 itself – no communication to the EFOY Fuel Cell possible

Dos and don'ts
General

- **DO NOT RESTART THE FUEL CELL MORE THAN TWICE IN A ROW**

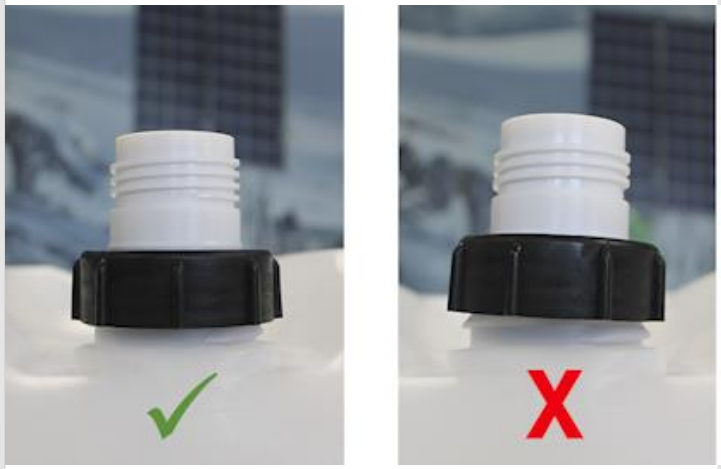
  When trying to reset an error, do not attempt a restart more than twice in a row. If the error persists after two restarts, a service is required.

- Please disconnect the charging cable of the EFOY when replacing the battery.

- Do not connect the operating panel directly to the battery.

Incidents „20“
020.001 – 020.004

- 20.001 Fuel Cartridge is empty during startup.
  - If fuel cartridge is not empty, check the cartridge itself, the cartridge connection (including M28 adapter)
- 20.002 Fuel Cartridge is empty during operation
  - Mostly the cartridge is empty.
- 20.003 No fuel available at the Fuel Manager. Error at the Fuel Manager or not methanol available.
- 20.004 No fuel available at the Fuel Manager, for a prolonged time. The error is set after 24 minutes.

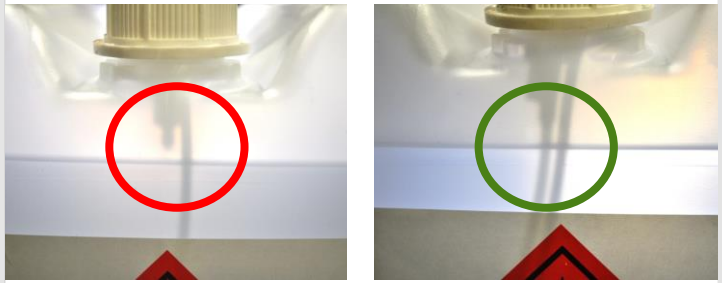


Fuel Supply

Incidents „20“
Fuel not empty

Follow these steps:

- Check the fuel cartridge connection.
  - Is the connector correctly screwed on the M28 adapter?
  - Is the M28 adapter correctly screwed on the fuel cartridge?
  - Please unscrew fuel cartridge and M28 adapter when changing the fuel cartridge and screw the separately
- Check the fuel cartridge itself
  - Verify that both tubes are in place
  - Check the intermediate cap
  - Make a picture of the batch number
- Change connectors in case of EFOY Pro Duo or Fuel Manager



Visual inspection of the tubes

Warning 120.001 / 120.002

- 120.001
  - EFOY detects an incident on the Fuel Manager while the EFOY is in standby or sleep mode.
  - This warning will lead to an error if EFOY tries to start a charging cycle.
  - **Solution:** check EFOY Fuel Manager
- 120.002
  - The connected Fuel Sensor FS2 detects no methanol
  - **Solution**: Level of methanol below sensor

Fuel Manager / Fuel Sensor

Incidents „40“, Warning 142 040.001 – 043.001 (I)

- Warning 142, Incidents 41 & 42. high temperature
- EFOY has measured high temperatures.
  - 41 temperature at the reservoir
  - 42 temperature at the heat exchanger above 70 °C. Resets when temperature falls below 30 °C
  - 142 – early warning, EFOY charges with reduced power
- **Solution:** ambient temperature, installation and cooling must be checked

Installation, ambient

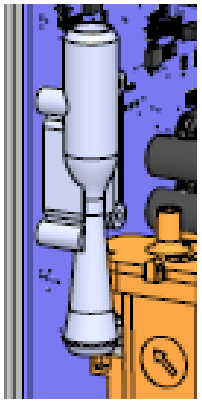
Incidents „40“, Warning 142 040.001 – 043.001 (II)

- Incident 43 and 40 – low temperature
  - 43 : EFOY would need to start frost protection. Operation is not possible because another incident has occurred.
  - 40: EFOY is frozen. **Solution:** Gentle defrost needed
  - **Solution**: verify previous incidents and solve them

Installation, ambient

Warning 160 / 161

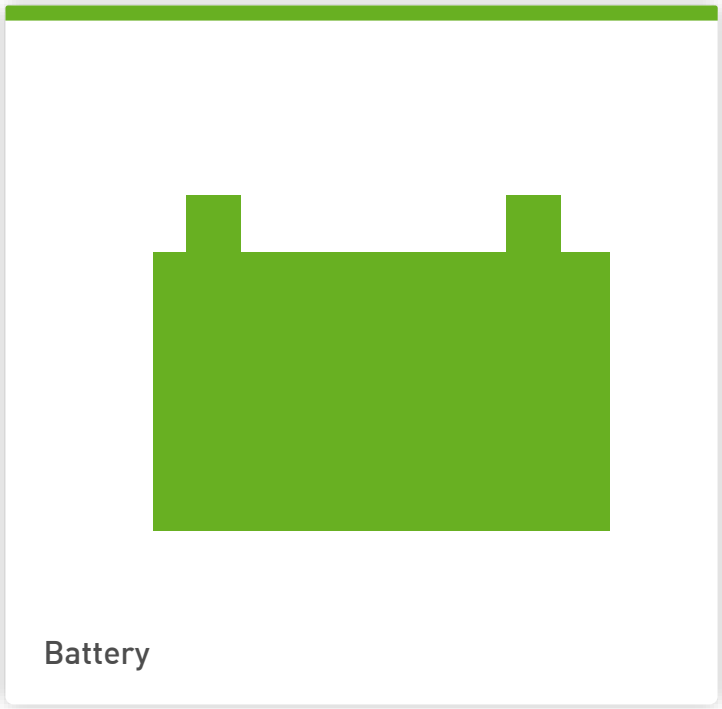
- Warning 160
  - Irregular ambient pressure and air volume flow was measured.
  - EFOY runs without detail air pressure measurement, which may reduce the performance
- Warning 161
  - Air supply is insufficient.
  - Please check the exhaust hose and installation



Air pressure measurement

Incidents „50“, Warning 151 / 152
050.001 – 051.001

- Warning 151.001
  - EFOY has measured short charging cycles.
  - At least 5 charging cycles below the configured limit (factory setting 30 minutes)
- Incident 051.001
  - EFOY has measured 5 short charging cycles in a row.
  - EFOY stops charging the battery
  - Indication of battery damage or battery parameter configuration
  - **Solution:** verify the battery and the parameters.
  - **Important note**: repeated incidents 051.001 will lead to a faster degradation of the EFOY fuel cell !



Incident „999“

Incident 999

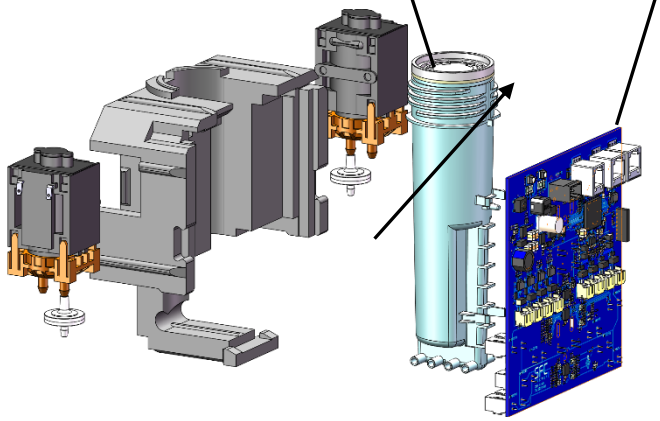
- Incident related to the operating panel OP3
- The EFOY fuel cell cannot communicate with the operating panel OP3
- Possible causes:
  - Cable, plug or socket defective.
  - The firmware of the operating panel is newer than the firmware of the EFOY. Communication is not possible. A firmware update of the EFOY is necessary.
  - If both products are up to date, then communication may be interrupted.
  - **Solution:** if both products are up to date, then communication may be interrupted.

Operating Panel OP3

Incidents EFOY Fuel Manager

Reservoir
Incidents 270

Component
290



Temperature
Incidents 241

Feeding pump
Incidents 220

Tilt
Incident 260

Battery
Incidents 250

Fuel Cartridge /
Fuel Manager
Incidents 220

Incidents „220“
220.002 – 220.003

- 220.002
  - All fuel cartridge connections on the EFOY Fuel Manager are deactivated. At least one connector must be activated.
- 220.003
  - The Fuel Manager is not supplied with Methanol. All cartridges are empty.

Methanol supply

Incident 241.001

- 241.001
  - The ambient temperature measured at the EFOY Fuel Manager is too high.
  - The Fuel Manager restarts automatically when the temperature has dropped.

Methanol supply

Thank you
for your attention