ENERFLEX

Functioning and System Design

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1 How ENERFLEX works

ENERFLEX is an energy storage system, which provides the right solution for almost every application scenario, thanks to highly flexible variations.

- Grid-parallel with photovoltaic generator (PV) to optimize self-consumption and maximize self-sufficiency
- Zero feed-in
- Uninterrupted emergency power supply (UPS-suitable, switching time ≤ 20 ms)
- Peak shaving / reducing of power demand peaks, e.g. in the commercial sector
- Off-grid power supply

Enerflex systems always consist of a complementary set of pre-installed basic components as follows:

- 1 to 3 Victron inverter / charge controller (MultiGrid, MultiPlus or Quattro)
- Color control GX display and operating unit

Optional components:

- MSS lithium iron phosphate storage system LiFePO4 with Sony Fortelion technology (inherently safe) = recommended battery System
- Feed-in – direct meter or transformer rated counter
- Meter for PV-inverter. Fronius PV-inverters may be integrated directly without meter
- MPPT charge controller for DC-coupled PV-plant
- Relay for external grid- and system protection (VDE-AR-N 4105 certified), if required by energy supplier
- Pre-installed tablet for visualization
- Pre-configured router (FritzBox)

Installation effort is minimal, thanks to the pre-installed mounting plate. The pre-labeled connection bar for input and output minimizes error risk and facilitates an uncomplicated commissioning. An automatic grid transfer switch is already integrated in the inverter and certified in MultiGrid as grid- and system protection e.g. for Germany.

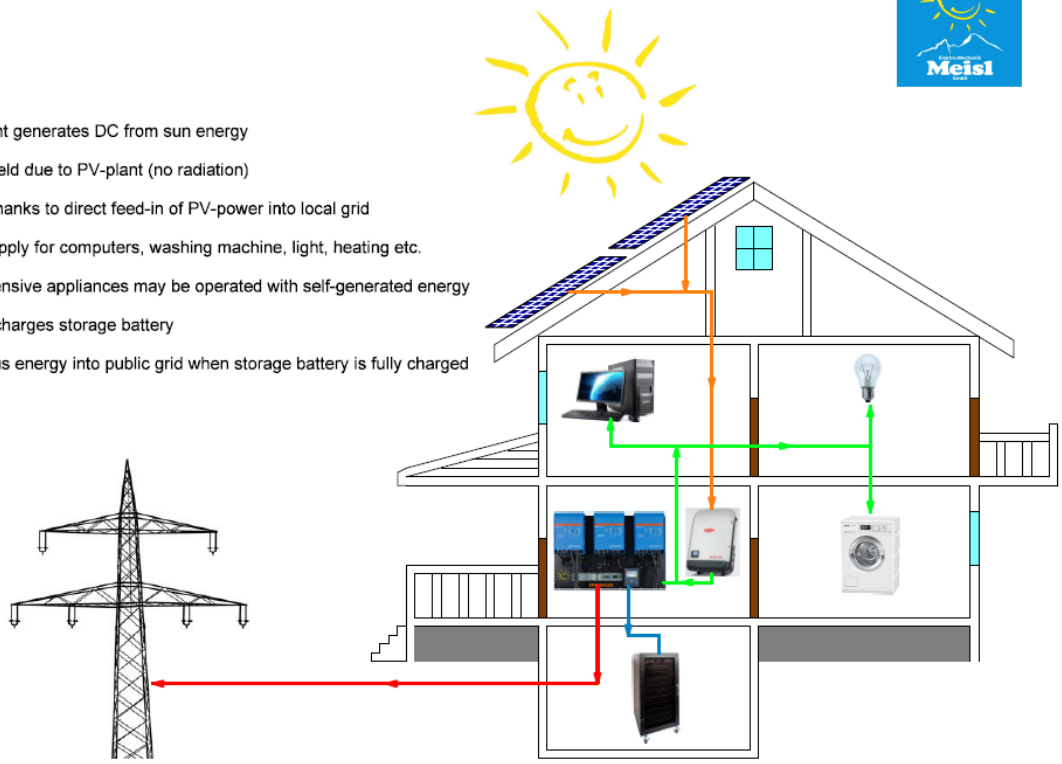
How ENERFLEX works

ENERFLEX measures PV- output at the grid feeding point. Self-generated PV-power is preferentially used to supply loads, such as appliances and other electronic devices, and to charge the battery. In case the PV produces too little electric energy in order to supply for the power demand of all connected loads, Enerflex provides the difference using stored energy from the battery and hereby prevents that additional electricity has to be imported from the grid, e.g. during nighttime. In case of a power outage, Enerflex provides the entire power supply. Switching takes place without interruption (switching time <20ms). ENERFLEX is available as single-phase unit, as well as three-phase system.

Prevention of backfeeding into the grid (Zero feed-in) may easily and safely be implemented.

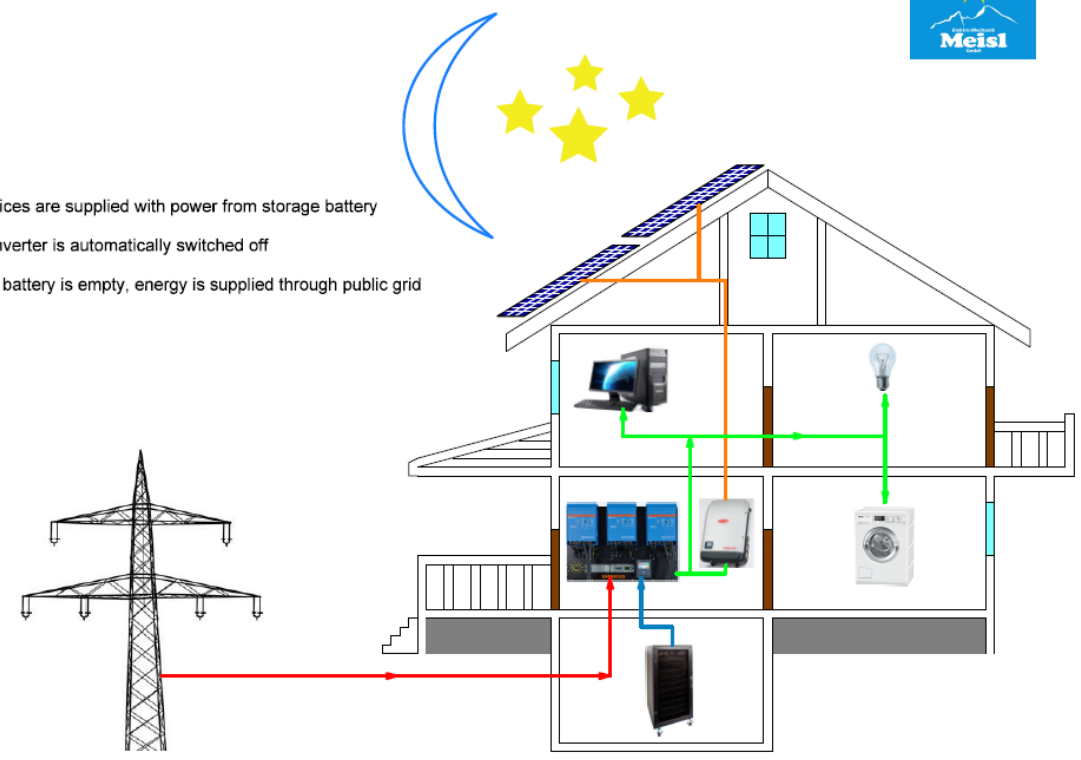
ENERFLEX by day

- Photovoltaic plant generates DC from sun energy
- No AC voltage field due to PV-plant (no radiation)
- High efficiency thanks to direct feed-in of PV-power into local grid
- Direct energy supply for computers, washing machine, light, heating etc.
- Even energy intensive appliances may be operated with self-generated energy
- Surplus energy charges storage battery
- Feed-in of surplus energy into public grid when storage battery is fully charged



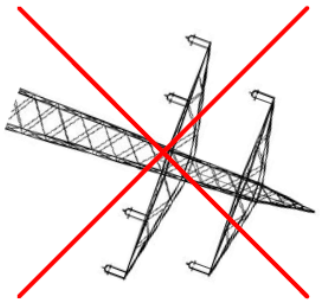
ENERFLEX by night

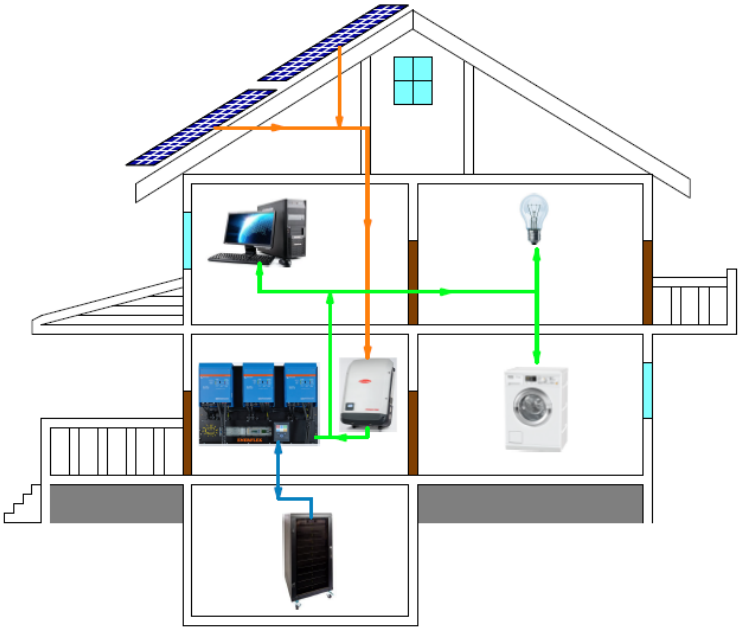
- Electronic devices are supplied with power from storage battery
- Photovoltaic inverter is automatically switched off
- When storage battery is empty, energy is supplied through public grid



ENERFLEX during power outage

- Uninterupted emergency power supply
- Switching time < 20 ms (UPS functionality)
- Computer, light, washing machine, heating and water system are supplied through storage system
- PV-plant continues to generate power
- Surplus energy is used to charge storage battery



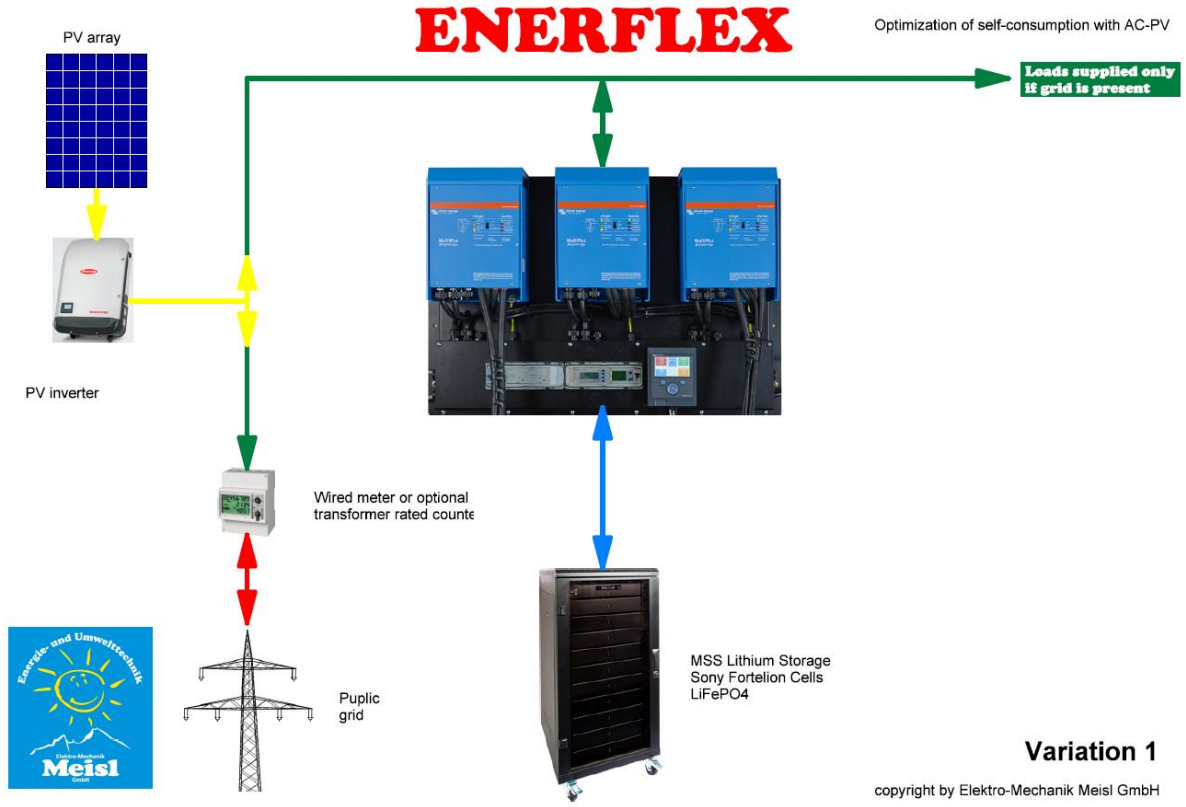


2 System structure

2.1 Variations – Connection diagrams

Thanks to its great flexibility, ENERFLEX may be purchased in 9 basic variations. Each variation is pre-configured and is easily installed and commissioned (plug-and-play). It disposes of the particular connection bar needed for installation (input public grid, output local grid, input emergency power generator, output emergency power/UPS, PV at output, etc.)

Combinations of several variations are also possible.



VARIATION 1 – OPTIMIZATION OF SELF-CONSUMPTION WITH AC-PV

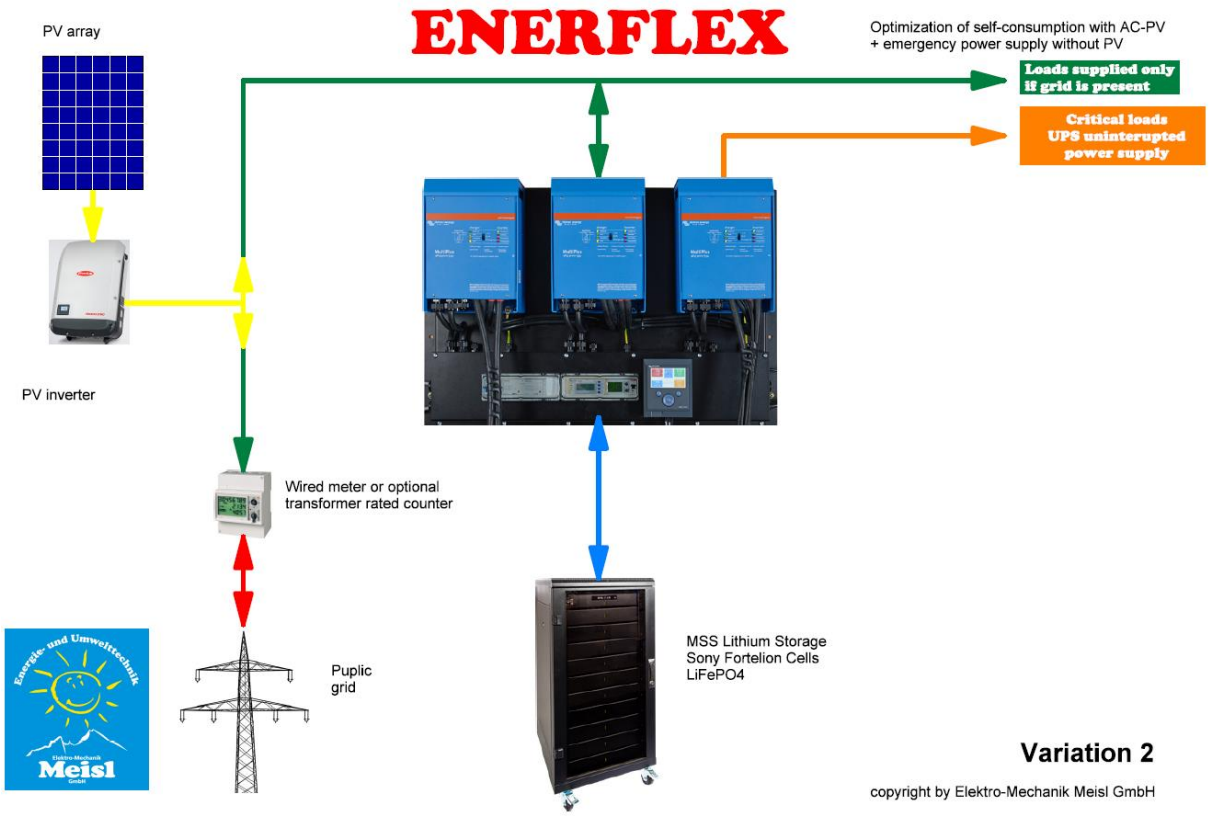
In Variation 1, ENERFLEX is exclusively used to increase self-consumption of self-generated PV-power. All the loads as well as the PV-inverter are connected in parallel /at the AC-input of the ENERFLEX system.

Advantages:

- Maximization of self-consumption
- Minimal installation effort
- Easy integration into existing systems

Disadvantages:

- No emergency power supply
- Backfeeding into grid can only be prevented with Fronius-PV-inverters (zero feed-in)
- Installation of a meter at the grid feeding point is necessary



VARIATION 2 – OPTIMIZATION OF SELF-CONSUMPTION WITH AC-PV + EMERGENCY POWER WITHOUT PV

Variation 2 also places the main focus on optimizing self-consumption but additionally provides full emergency power supply to loads connected to the UPS-supplied AC-output of the ENERFLEX system. These electronic devices are still supplied in case of a power outage - until battery power has been used up.

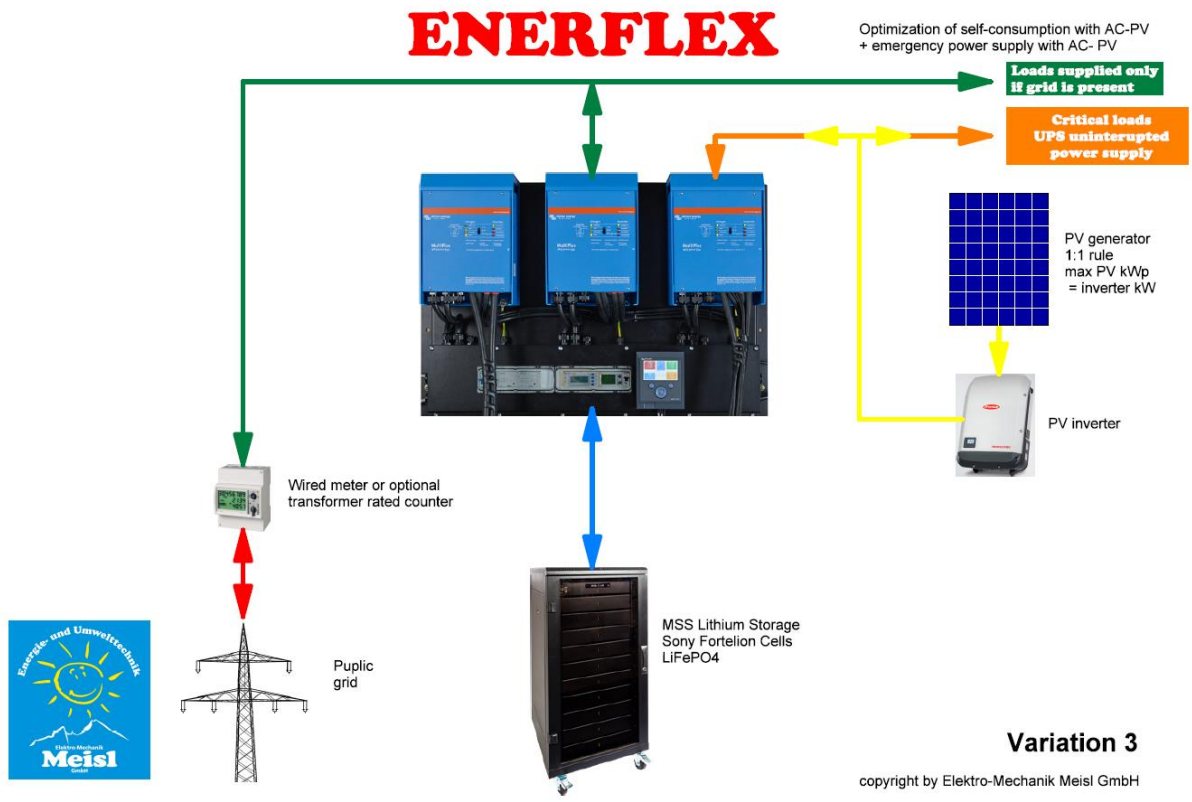
Advantages:

- Maximization of self-consumption
- Emergency power supply for selected appliances (e.g. computers, heating, freezer, fridge, light)
- Easy integration into existing systems

Disadvantages:

- Energy generated by PV cannot be used during a power outage
- Emergency power supply is temporary – it lasts until battery power is used up, adequate battery storage capacity has to be taken into account
- Backfeeding into grid can only be prevented with Fronius-PV-inverters (zero feed-in)

To avoid a supply cut during a failure of the ENERFLEX system, it is recommended to install an emergency-switch (output to input) in order to bypass the inverters.



VARIATION 3 – OPTIMIZATION OF SELF-CONSUMPTION WITH AC-PV + EMERGENCY POWER WITH AC-PV

Variation 3 also combines optimization of self-consumption and emergency power supply for selected appliances. In this variation, loads connected to the USP-supplied AC-output can be supplied completely self-sufficient even for longer time periods, as the PV keeps on feeding in electricity during a power outage.

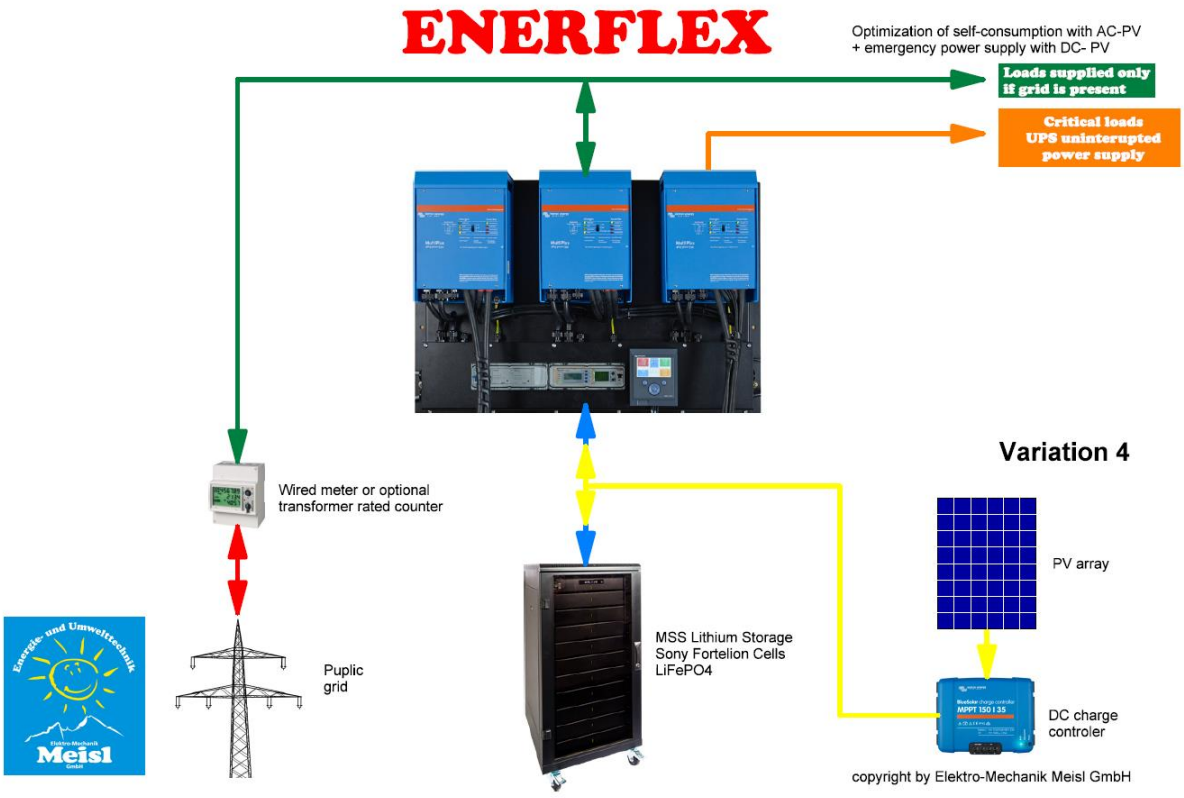
Advantages:

- Maximization of self-consumption
- Emergency power supply for selected loads (e.g. computers, heating, freezer, fridge, light) through AC-PV
- Part of the energy generated by PV can still be used during a power outage (respecting the 1:1 rule – peak-power from PV must not surpass nominal power of the battery-inverters; feed-in of the PV-inverter/s must be symmetrical)

Disadvantages:

- Potentially, effort for installation is higher, as loads supplied through emergency power have to be connected separately
- Backfeeding into grid can only be prevented with Fronius-PV-inverters (zero feed-in)

To avoid a supply cut during a failure of the ENERFLEX system, it is recommended to install an emergency-switch (output to input) in order to bypass the inverters.



VARIANTE 4 – OPTIMIZATION OF SELF-CONSUMPTION WITH DC-PV + EMERGENCY POWER WITH DC-PV

Mainly the same features as in variation 3, except PV is DC-coupled through a charge controller.

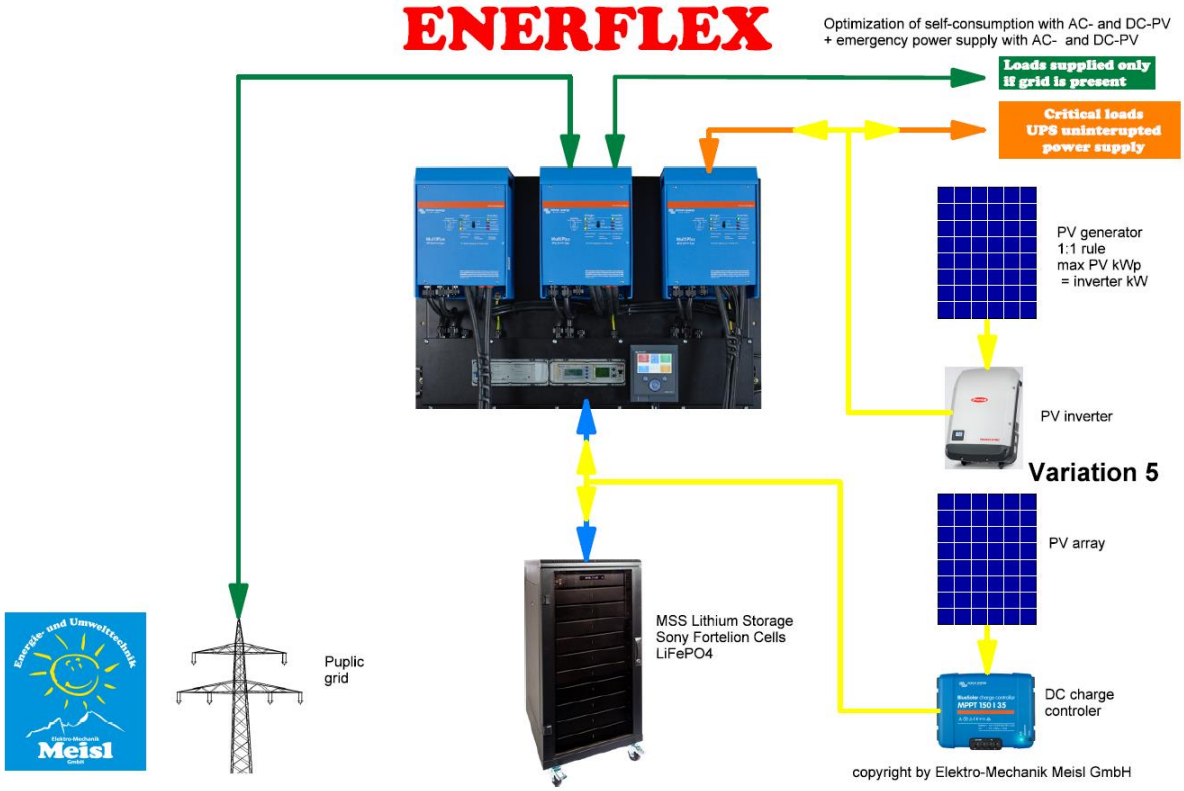
Advantages:

- Maximization of self-consumption
- Emergency power supply for selected loads (e.g. computers, heating, freezer, fridge, light) through DC-PV
- Battery is charged directly and efficiently through charge controller
- Charge controllers are considerably easier to afford than PV-inverters
- Energy generated by PV can still be used during a power outage
- Backfeeding into the grid is easily prevented (Zero feed-in)

Disadvantages:

- Loads are not directly supplied through an AC-coupled PV

To avoid a supply cut during a failure of the ENERFLEX system, it is recommended to install an emergency-switch (output to input) in order to bypass the inverters.



VARIATION 5 – OPTIMIZATION OF SELF-CONSUMPTION WITH AC- AND DC-PV + EMERGENCY POWER WITH AC- AND DC-PV

Variation 5 provides maximum self-sufficiency. PV-power is always used efficiently and to full capacity through combination of AC-coupled PV supplying power directly to connected loads without conversion loss. The battery is charged at a minimum energy loss through the DC-coupled PV with charge controller.

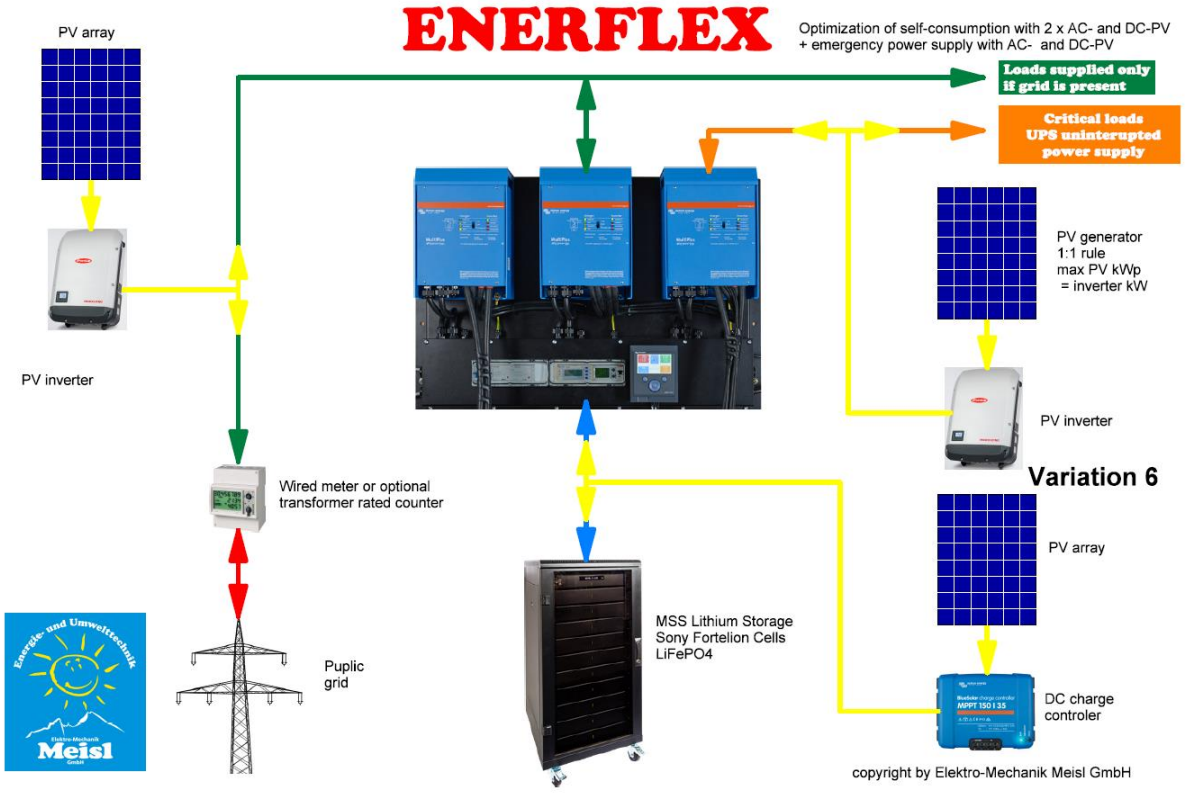
Advantages:

- Maximization of self-consumption
- Emergency power supply for all terminal loads connected to UPS-output
- Battery is charged directly and efficiently through charge controller
- Charge controllers are considerably easier to afford than PV-inverters
- Energy generated by PV can still be used during a power outage (respecting the 1:1 rule – peak-power from the PV must not surpass nominal power of the battery inverters; feed-in of PV-inverter/s must be symmetrical)
- No meter necessary, minimal installation effort

Disadvantages:

- Size of AC-coupled PV-unit is limited due to 1:1 rule
- Zero feed-in only possible with Fronius PV-inverter

To avoid a supply cut during a failure of the ENERFLEX system, it is recommended to install an emergency-switch (output to input) in order to bypass the inverters.



VARIATION 6 – OPTIMIZATION OF SELF-CONSUMPTION WITH 2 X AC AND DC-PV + EMERGENCY POWER WITH AC AND DC-PV

Variation 6 provides maximum flexibility for large PV systems. The 1:1 rule minimizes the size of PV at the AC-output as in variation 5. Nevertheless, at the AC-input / parallel to the ENERFLEX system, any number of PV-units may be installed.

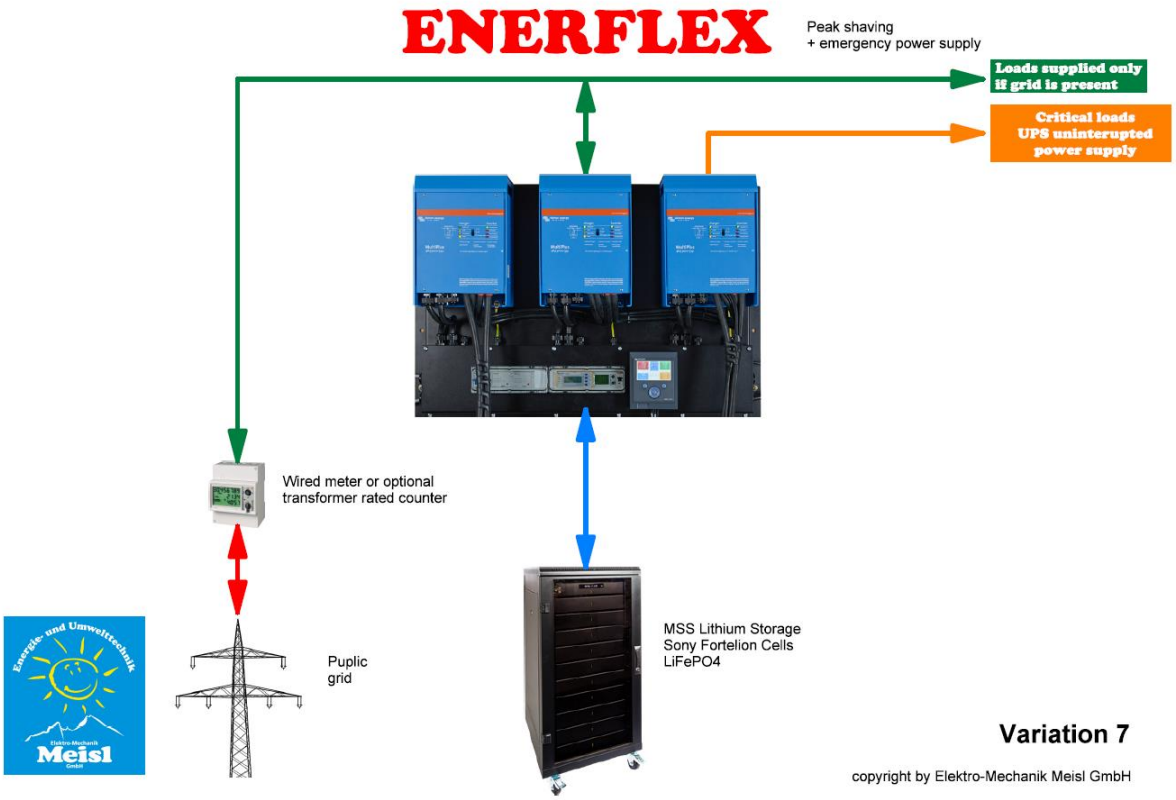
Advantages:

- Maximization of self-consumption
- Emergency power supply for selected loads (e.g. computers, heating, freezer, fridge, light)
- Battery is charged directly and efficiently through charge controller
- Charge controllers are considerably easier to afford than PV-inverters
- Part of the energy generated by PV can still be used during a power outage (respecting the 1:1 rule – peak-power from the PV must not surpass nominal power of the battery inverters; feed-in of PV-inverter/s must be symmetrical)

Disadvantages:

- Backfeeding into grid can only be prevented with Fronius-PV-inverters (zero feed-in)

To avoid a supply cut during a failure of the ENERFLEX system, it is recommended to install an emergency-switch (output to input) in order to bypass the inverters.



VARIATION 7 – PEAKSHAVING + EMERGENCY ENERGY SUPPLY

Variation 7 is a backup system that can also be employed for peak shaving (cutting cost-intensive peaks when importing power from the grid). This applies especially for companies interested in minimizing load peaks. Simultaneously, important appliances are supplied uninterruptedly through the AC-output, even during power outages. On request, the peak shaving feature is also viable for systems equipped with PV.

Advantages:

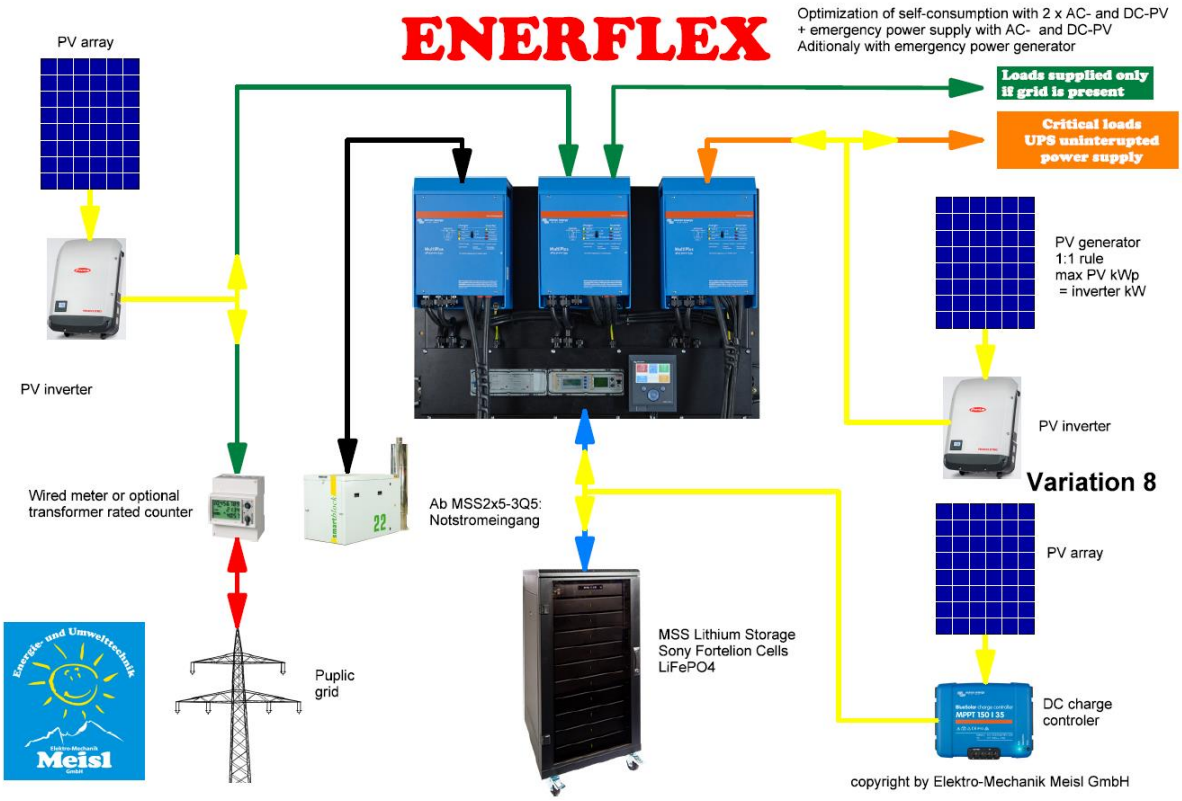
- Emergency power supply for selected loads (e.g. computers, heating, freezer, fridge, light)
- Peakshaving-function, grid control point adjustable as needed
- Minimization of costs for provision of elevated power level from the grid (measuring every quarter of an hour)

Disadvantages:

- Emergency power supply is temporary – it lasts until battery power is used up - adequate battery storage capacity has to be taken into account
- No self-generated energy, only buffering energy import from public grid.

To avoid a supply cut during a failure of the ENERFLEX system, it is recommended to install an emergency-switch (output to input) in order to bypass the inverters.

The peak shaving function is also viable in all other system variations equipped with PV-unit.



VARIATION 8 – OPTIMIZATION OF SELF-CONSUMPTION WITH 2 X AC AND DC-PV + EMERGENCY POWER WITH AC AND DC-PV, ADDITIONAL CONNECTION OF EMERGENCY POWER GENERATOR

The complete solution for any scenario. In essence identical to variation 6, but in addition this version integrates a combined heat and power plant (CHP) or a motor generator. During a longer power outage, supply is therefore always guaranteed – even in case PV generates too little energy (adverse weather conditions etc.)

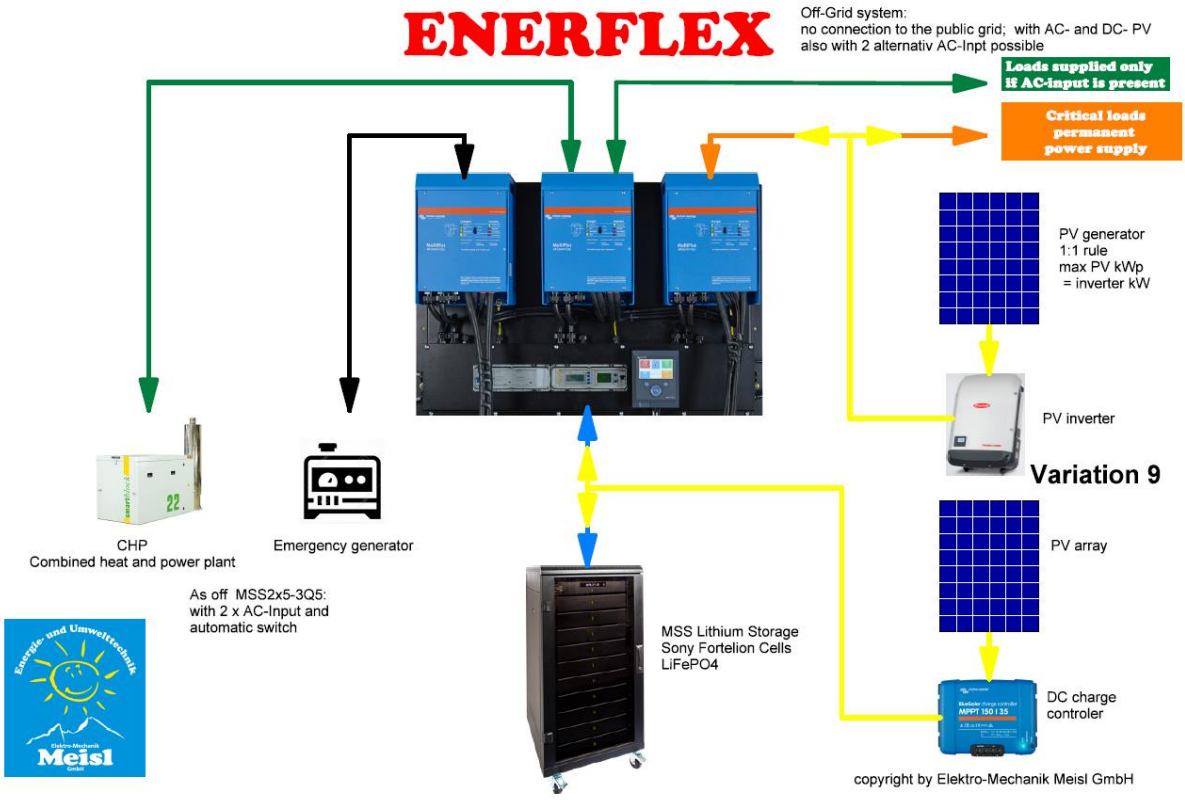
Advantages:

- Maximization of self-consumption
- Emergency power supply for all appliances, uninterrupted switching for selected loads
- Battery is charged directly and efficiently through charge controller
- Charge controllers are considerably easier to afford than PV-inverters
- The part of the AC-coupled PV is connected to the AC-output, which in turn is supplied through emergency power and will thus continue to operate during a power outage (respect 1:1 rule)

Disadvantages:

- Only possible for systems as of MSS2x5-3Q5 (with battery inverter Quattro)
- Backfeeding into grid can only be prevented with Fronius-PV-inverters (zero feed-in)

To avoid a supply cut during a failure of the ENERFLEX system, it is recommended to install an emergency-switch (output to input) in order to bypass the inverters.



VARIATION 9 – Off-grid system without connection to public grid with AC- and DC- coupled PV + optional two alternative AC-In

All ENERFLEX variations provide uninterrupted emergency power supply (UPS) with full power capacity in case of power outage, equivalent to a stand-alone off-grid system. A PV-plant may be integrated, both AC- as well as DC-coupled. A combination of AC- and DC-coupling is also possible.

Off-grid-systems with MultiPlus off-grid inverters come with 1 AC-in. Systems with the more powerful Quattro off-grid inverters offer 2 AC-in, which may be used alternatively through automatic switching, thereby providing maximum redundancy for off-grid energy supply.

Advantages:

- Flexible and high-performance design for individual off-grid systems
- Different energy generators (PV, CHP, emergency generator, small hydroelectric power plant, aeolic power plant, fuel cell) may be integrated
- Connection to the public grid at a later point in time is possible
- A deficient public grid may be connected to the ENERFLEX AC-in serving as back-up, equivalent to a gen-set
- MSS Storage capacity may be upgraded at a later time, even after years

ENERFLEX off-grid systems can be individually established with a permanent AC power output of up to 180 kVA and a storage capacity of up to 307,2 kWh.

To avoid a supply cut during a failure of the ENERFLEX system, it is recommended to install an emergency-switch (output to input) in order to bypass the inverters.

2.2 Models – system sizes and add-ons

ENERFLEX is available in three basic versions which may all be used with the system-variations 1 to 7 described above. Variation 8 with its second AC-in can only be implemented as of model MSS2x5-3Q5 or higher.

ENERFLEX	MSS4-1MPII3	MSS6-3MPII3	MSS2x5-3MPII5	MSS2x5-3Q5
System type	1-phase	3-phase	3-phase	3-phase
Emergency power supply (USV<20ms)	1-phase	3-phase	3-phase	3-phase
Nominal power inverter on- and off-grid	1 x 3 kVA	3 x 3 kVA	3 x 5 kVA	3 x 5 kVA
Overload capacity inverter up to	1 x 5,5 kW	3 x 5,5 kW	3 x 5,5 kW	3 x 10 kW
Number storage racks	1	1	1	2
Installation type inverter	Integrated into storage rack	Mounting plate	Mounting plate	Mounting plate
Number storage module basic equipment	4	6	2 x 5	2 x 5
Total battery capacity	4,8 kWh	7,2 kWh	12 kWh	12 kWh
Expandable in standard rack up to max.	9,6 kWh	12 kWh	21,6 kWh	21,6 kWh
Standard rack mm (HxWxD)	1550x600x600	1085x600x600	1085x600x600	1085x600x600
Expendable in big rack max.	14,4 kWh	19,2 kWh	38,4 kWh	38,4 kWh
Big rack mm (HxWxD)	1800x600x600	1800x600x600	1800x600x600	1800x600x600
Grid- and system protection	Integrated into inverter	Integrated into inverter	Integrated into inverter	External, integrated on mounting plate
VDE-AR-N 4105 certified	yes	yes	yes	yes
TOR D4 certified	yes	yes	yes	no
Second AC-in for generator (Variation 8)	no	no	no	yes

EXPANDABILITY

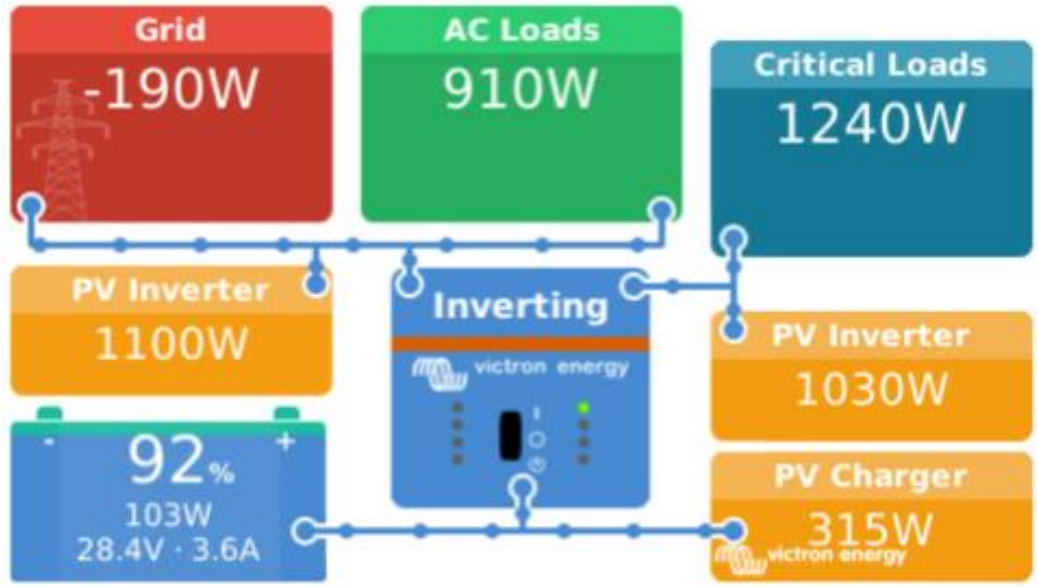
All storage systems are flexibly expandable at any time with modules in 1,2 kWh steps and additional racks reaching up to maximum 16 x 16 modules equating 307,2 kWh.

Caution – Adequate battery storage capacity has to be taken into account:

A storage rack as a single-string storage with a single-string-controller may only be expanded up to max. 16 modules equating 19,2 kWh. For several storage racks (up to 16) working as multi-string-storages, a multi-string-controller for max. 16 storage modules respectively, as well as a hub in order to regulate the multi-string-controller are needed.

2.3 Connecting the photovoltaic unit – possibilities for coupling

The ENERFLEX storage system may be combined flexibly with AC- and DC coupled PV. A combination of both is also possible. The decision on how PV is coupled, depends on the individual dynamics of power demand, local conditions, as well as planned operating method of the ENERFLEX-storage system.



Scheme above: example display on the ColorControl of an ENERFLEX-system variation 6 with a combination of an AC-coupled PV inverter on the left (grid side), and another on the right (UPS supplied critical loads), as well as a DC-coupled PV (PV charger).

2.3.1 DC-coupled PV with Victron MPPT-charge controllers

Advantage of the DC-coupled PV is that it charges the batteries directly through an MPPT solar charge controller with a very high efficiency ratio. When PV generates more power than needed to charge the battery, this electricity is available to supply loads as needed through the battery-inverter. In case no self-generated PV surplus energy is supposed to be fed-in into the grid (zero feed-in), this is established in the easiest and safest way through a DC-coupled PV. However, distance between PV-modules and battery should be minimal in order to avoid high conduction loss as well as high costs for wiring and installation. Moreover, due to the relatively low maximum input voltage in charge controllers and the small number of PV-modules that can be connected in series, installation effort in large PV-systems is disproportionately high.

Caution:

For DC-coupling of a PV, exclusively Victron-MPPT-charge controllers with updated firmware are to be used. Charge controllers by other manufacturers cannot communicate with the ENERFLEX-control unit ColorControl, which in turn makes display and logging of performance data of the PV-unit impossible.

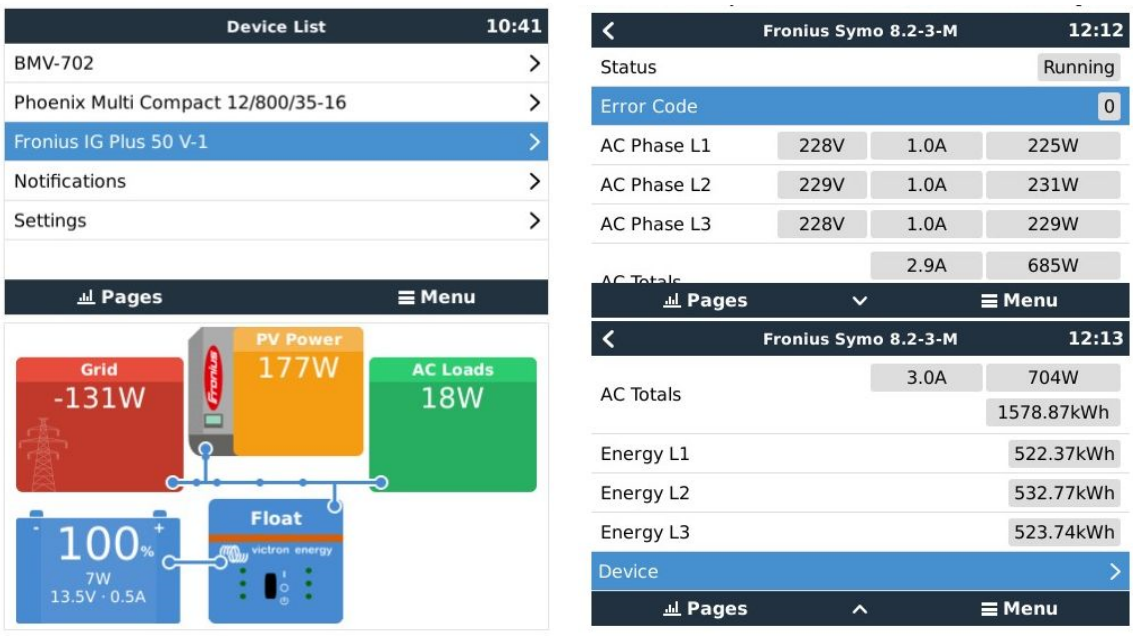
2.3.2 AC-coupled PV with Fronius PV-inverters

If power demand is high during the day and sunshine, this demand should be supplied directly through an AC-coupled PV-plant for highest efficiency (e.g. office with air conditioning). Combination of an AC-coupled PV-plant with a correspondent PV-inverter by Fronius also holds the possibility to prevent backfeeding into the grid (zero feed-in). For this purpose, the zero feed-in function needs to be activated. When preventing backfeeding with a Fronius PV-inverter, it is necessary to respect the grid operator's input requirements, as technically feed-in cannot be avoided 100%. Only the moment a minimal feed-in is detected, can it be stopped. In a more narrow sense, an AC-coupled PV is thus to be understood as a balanced zero feed-in. In contrast with a DC-coupled PV a 100% secure zero feed-in can be achieved.

In the ENERFLEX-system, an AC-coupled PV-unit may be connected both between grid and storage system as well as on the other side at the outlet of the storage system:

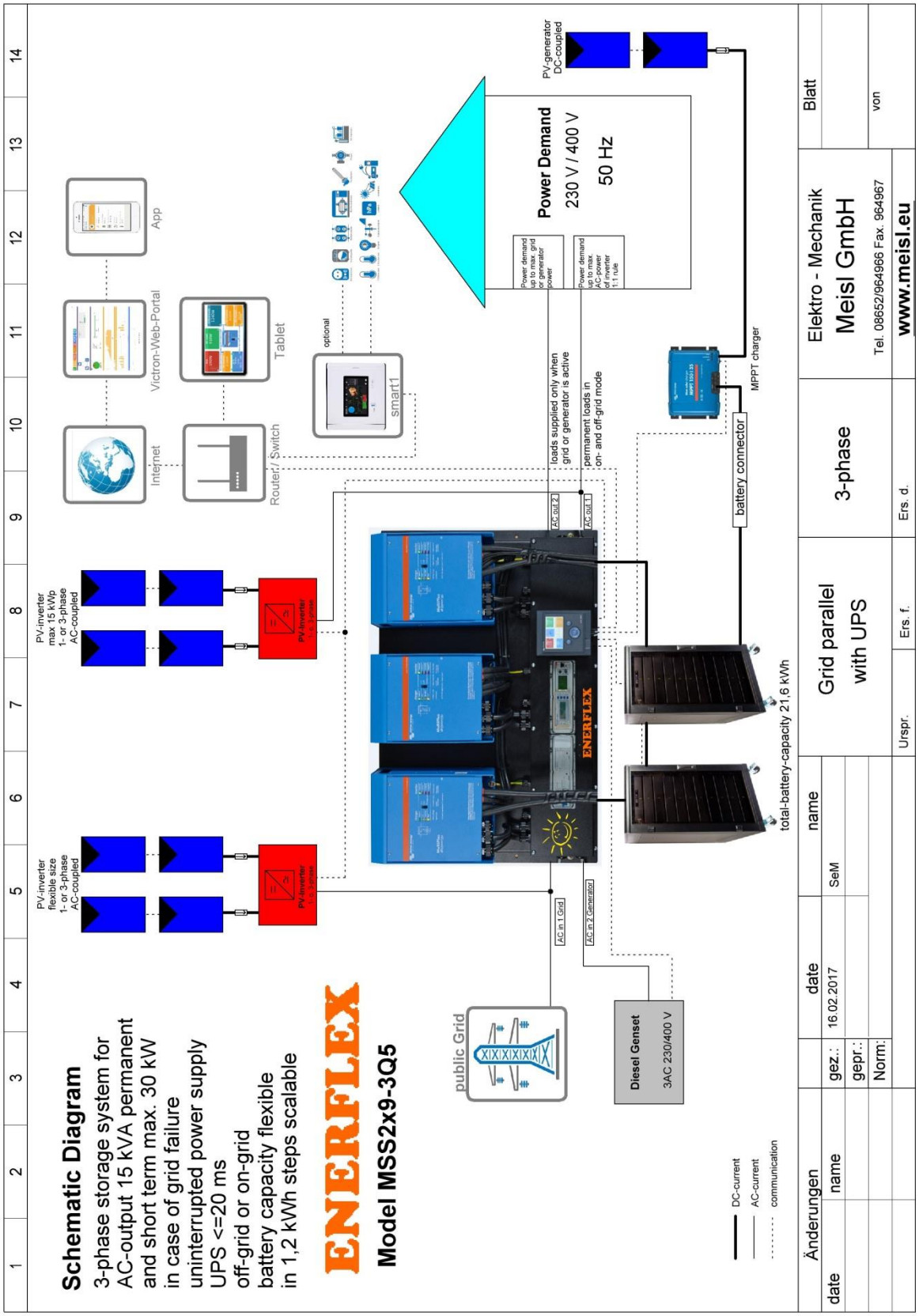
- In case the PV is coupled at the ENERFLEX-AC-input side, it is going to fail during a power outage accordingly and cannot generate energy in emergency power mode.
- In contrast, if the PV is coupled at the ENERFLEX-AC-out for emergency power supply, the PV can feed-in into the local emergency power grid. However, this PV must not surpass a 1:1 proportion to the battery-inverter's nominal capacity.

For AC-coupling, implementation of Fronius PV-inverters is recommended, as these are able to communicate directly with ENERFLEX through the network, and thus performance data may be displayed and recorded directly on the ColorControl display. Furthermore, prevention of backfeeding into the grid (zero feed-in) is easily and safely implemented with this system configuration. Inverters by other manufacturers have to be integrated into the system through an additional separate meter, in order to be visualized on the ColorControl display.



Scheme above: Display of a Fronius PV-inverter in the ColorControl display operating unit

2.4 Block chart showing communication, internet access and additional integration of the energy management unit Smart1



2.5 Regulation, Display, Internet access and Web portal

ColorControl - Display, Data logger und operating panel

Visualization of the system's entire energy flow and parameters is provided in the standard-set through ColorControl, which also serves as operating panel on-site and data logger (accessories kit micro-SD-card). Through a local network, a tablet may be used as external display with the same user interface as ColorControl.
For extended energy management and complex regulation, the ENERFLEX System may be combined with the Smart1 energy management central control/switchboard. In this way, further regulation to optimize internal consumption, continuous charging regulation of heating rod or e-vehicle and integration of sensors is possible (see documentation Smart1).

Web portal and remote access

In case there is internet connection, the ENERFLEX-unit should be registered free of charge on the Victron web portal through the ColorControl panel. This way, all of the relevant system data is continuously transferred to and stored in the web portal and a data analysis as well as a system overview can be done at any time. Provided admission authorization, the remote access also provides the possibility to directly access the system e.g. to perform maintenance work. This is done through the same ColorControl user interface as appearing on the display on-site.
Furthermore, direct access to the system is possible through the corresponding app.

Examples of an ENERFLEX-system overview in the web portal

2.6 MSS lithium battery LiFePO4 from Meisl with Sony technology

MSS Lithium-storage from Meisl with Olivine LiFePO4 Technology

Battery	Lithium-iron-phosphate LiFePO4 Olivine – Murata/Sony Fortelion cell in 19" modules each with 1,2 kWh (U1001M)
Controller	One controller for up to 16 modules (185 A with high overload capacity up to more than 450 A); single string or multi string controller with different firmware for Victron or SMA
Nominal voltage	51,2 V
Safety / ecology	Maximum inherent safety due to unique thermal stability; No gas emission – no additional room ventilation required; No heavy metals; Take-back obligation for recycling by Murata/Sony
Lifespan	20 years (73% remaining capacity after 12.000 cycles) may be expected, 1 C, DoD 100%
Working temperature	Discharge: -20 °C to +60 °C, charge: 0 °C to +50 °C, optional charging down to -10 °C possible with Meisl´s special firmware; storage: -40 °C to 65 °C
Compatible inverter	For On Grid and Off Grid with Victron MultiPlus and Quattro from 3 kVA to 15 kVA and SMA Sunny Island 3.0 to 8.0 as well as SMA Sunny Backup
Storage capacity	Modular design in 1,2 kWh steps scalable; single string small rack up to 12 kWh and with big rack up to 19,2 kWh extendible – multi string systems up to max. 16 racks in parallel with 307,2 kWh
Storage rack	Front glass door lockable; rear and side board removable; heavy duty rollers; cable duct on the upper part of the rear board or the back part of the base plate; color: black
Accessories inclusive	3 m battery cable; mounting material; power bars; communication cables
Warranty	Battery warranty Murata/Sony through Elektro-Mechanik Meisl for On- or Off-Grid: 15 years down to 75% of capacity at Temperature -20°C to 25° C up to shortly 50° C 15 years down to 65% of capacity at Temperature -20°C to 35° C up to shortly 60° C KFW-eligible fair value warranty 10 years down to 80%
Rack size	small: 1085x600x600 mm (h/w/d) max. 10 storage modules – 12 kWh big: 1800x600x600 mm (h/w/d) max. 16 storage modules – 19,2 kWh

Elektro-Mechanik Meisl GmbH; 83471 Berchtesgaden vertrieb@meisl.eu, www.meisl.eu

MSS lithium storage system from Meisl with Olivine LiFePO4 technology – Datasheet 1

Data sheet MSS storage system

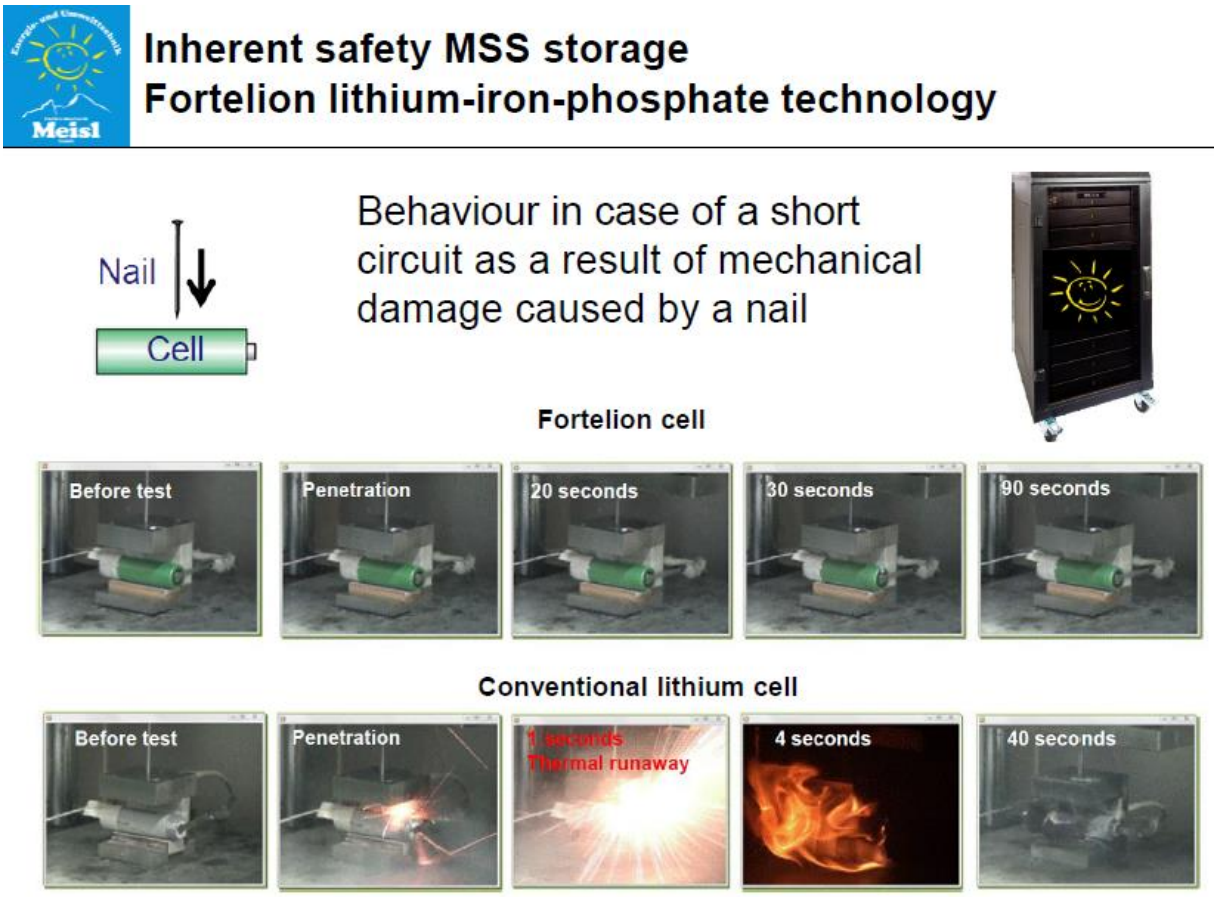
SAFETY CONSIDERATIONS LITHIUM BATTERY

The Olivine iron-phosphate-technology by Sony/Murata is one of the safest technologies in the field of lithium ion batteries. No harmful or dangerous gases are produced during operation. A special room ventilation while running is expendable. The battery does not contain heavy metals nor acid.

Sony/Murata energy storage modules are certified as being worldwide the first lithium ion storage system with "UL Subject 1973" accreditation by Underwriters Laboratories.

In contrast to other lithium batteries with differing chemical composition and cell structure, the MSS-storage system Fortelion with Olivine iron-phosphate-technology by Sony/Murata can be considered as intrinsically safe, thanks to its unique thermic stability.

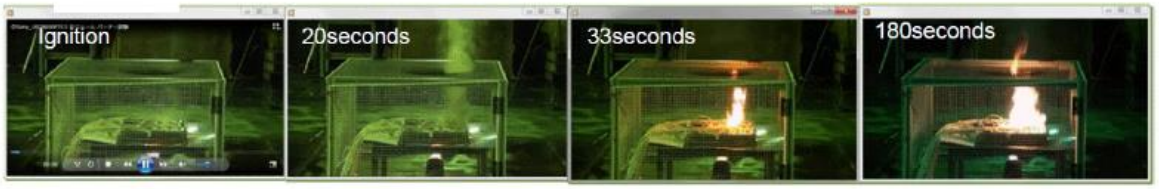
By the current state of the art and in accordance with safety standard UL1973, no special safety arrangement for the battery room, such as fire protection or ventilation, has to be collocated with the MSS-storage system.



Inherent safety MSS storage
Fortelion lithium-iron-phosphate technology

Test for the emergency situation such as heating by fire in the surrounding area Sony´s Fortelion prevents secondary damage with its inherent safety characteristics

Fortelion cell

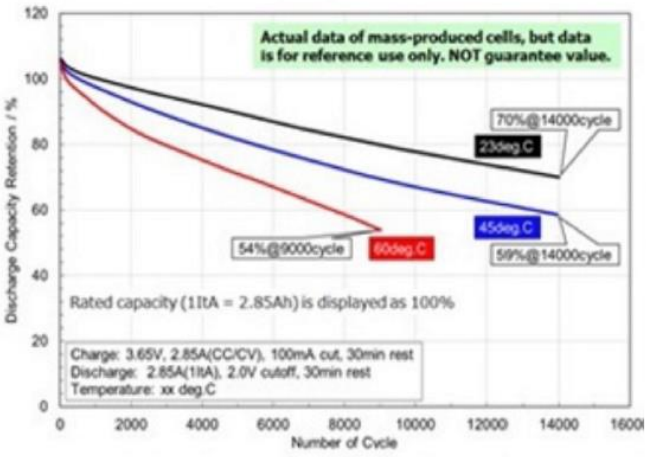


Conventional lithium storage/cell

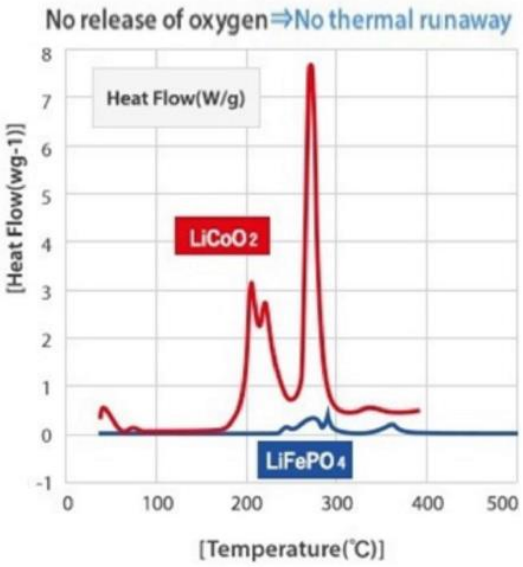
MSS storage – Independent cycle test carried out by KIT (Karlsruhe Institute for Technology)

Great quality differences in lithium storage systems!
Cycle test of different lithium batteries currently available on the market, 25°C;1C/1C, 100% DoD; KIT 2015

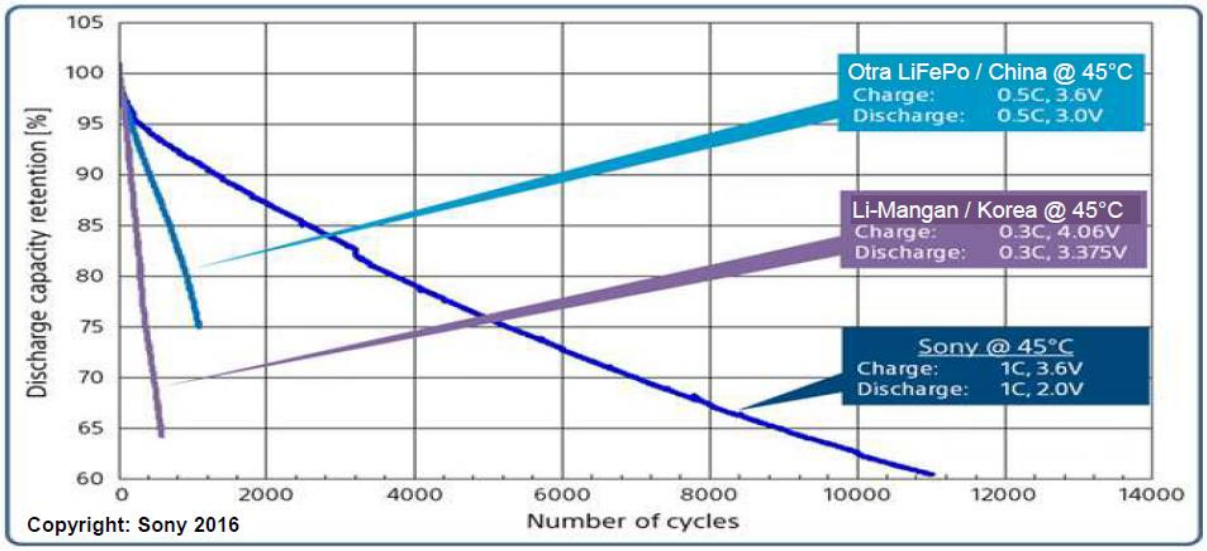
Lifespan and thermal stability of Fortelion lithium-iron-phosphate technology



tested cycle lifespan at 100% DoD and C1, Sony/Murata Fortelion at 23° , 45° C and 60°C battery temperature



Thermal runaway of typical lithium batteries(upper curve in red) compared to inherent safe Fortelion lithium-iron-phosphate battery (lower curve in blue)



MSS-Fortelion Storage System Sony/Murata tested cycle lifespan at 45°C with 100% DoD and C1 compared to other lithium batteries

Features of MSS-Storage System with Fortelion lithium-iron-phosphate technology

	Feature	Benefit
1	Inherent safety	Ideal for residential and commercial use
2	Long cycle-life	Best for PV applications
3	Long calendar life	No replacements during project duration
4	High discharge power	Best suited for back-up and hybrid applications
5	Outstanding performance at high temperatures	Increased reliability under severe whether
6	Deep discharge capability	No system over-dimensioning needed
7	Iron used as cathode	Environmental friendly, no rare metal disposal
8	Quick charge	Adaptability to fast changing energy sources

Warranty conditions MSS Storage system Fortelion lithium-iron-phosphate technology

Storage warranty Sony/Murata through Elektro-Mechanik Meisl:

- 15 years on 75% of capacity at operating temp. 25° C and in short intervals up to 50° C
- KFW-eligible time compensation warranty 10 years on 80%

Hot Regions Warranty Sony/Murata through Elektro-Mechanik Meisl:

- 15 years on 65% of capacity at operating temp. 35° C and in short intervals up to 60° C

Time distribution according to cell temperature [in % and hours]						
Cell temperature [°C]	60 ≧ T>50	55 ≧ T>50	50 ≧ T>45	45 ≧ T>40	40 ≧ T>35	35 ≧ T
Time [%]	≦ 0.8	≦ 1.1	≦ 1.5	≦ 1.9	≦ 17,4	≦77.2

3 Legal provisions

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The retailer, installer or end customer purchasing this ENERFLEX system has to ensure that all relevant standards, laws and guidelines are met. Especially state-of-the-art technology, as well as specifications and regulations of the particular grid operator are to be followed during installation and operation.

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Subject to technical changes

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