



DEUTZ Power Solutions GenSets and Hybrid



Nlle Ste MAGIDEUTZ S.A., 03/2021

Deutz Hybrid System

MagiDeutz Hybrid System in a single block



Deutz Hybrid System

MagiDeutz Hybrid System in a single block – 15 and 30 kVA



► DPS HYBRID SYSTEM

Hybrid type		Hyb15-1	Hyb15-2	Hyb20-1	Hyb20-2	Hyb30-1	Hyb30-2
Load range DC	KW	3	4	5	6	7	8
Power GE	KVA	15	15	20	20	30	30
Voltage GE	Volts	230	230	230	230	230	230
Permanent power 230V/50Hz	KW	6	8	10	12	14	16
Operation GE/Batt	h	6/18	10/14	11/13	12/12	6/18	7/17
Engine							
Brand		DEUTZ		DEUTZ		DEUTZ	
Engine type		F2M 2011		F3M2011		F4M2011	
Gross power LTP	kW	13		21,4		30,9	
Cooling		Huile		Huile		Huile	
Starting system		Remote Start/Stop		Remote Start/Stop		Remote Start/Stop	
Fuel consumption	l/h	1,7	2,1	3	4	3,9	4,6
Alternator							
Brand		Mecc Alte		Mecc Alte		Mecc Alte	
Type		ECP3-3L		ECP28 M4 C		ECP28 VL4 C	
Efficiency at 100% load	%	86,3		89,4		87,6	
frequency	Hz	50		50		50	
Battery							
Brand		PowerSafe OPzV		PowerSafe OPzV		PowerSafe OPzV	
Capacity C10	Ah	705	838	1177	1410	1600	2110
Type		OPzV600	OPzV875	OPzV1000	OPzV1200	OPzV1500	OPzV2000
Weather conditions	°C	-15°C à +40°C		-15°C à +40°C		-15°C à +40°C	
DoD %	%	80%		80%		80%	
Rectifier							
Type		SI 8.0H		SI 8.0H		SI 8.0H	
Number of modules		1		1	2	3	
Redundancy		non		non	oui	oui	
Maximum charging current DC	A	140		140	280	420	
Power assigned to 25°C	KW	6		6	12	18	
Rated output currentAC	A	26		26	26*2	26*3	
Solar extension (option)							
Monoperc photovoltaic panel	Wc	450 Wc		450 Wc		450 Wc	
inverter SMA		Sunny Boy 5.0		Sunny Boy 5.0		Sunny Tripower 8.0	
Output power	VA	5 000		5 000	2*4 000	8 000	
Output current AC	A	22		22	2*22	3*12,1	
Operation PV/GE/Batt	h	6/4/14	6/7/11	6/8/10	6/9/9	6/4/14	6/4/14



Comparaison between Magideutz hybrid and Ascot

Without solar panels



- The values of Magideutz hybrid system is by using lead Acid Batteries
- With Lithium-Ion Batteries we will achieve up to 60% more efficiency

LOAD Kw	MAGIDEUTZ					ASCOT				
	Batterie Capacity (AH)	Type GE	Batterie Autonomy (h)	Run Hours GE	Diesel Consumption	Batterie Capacity (AH)	Type GE	Batterie Autonomy (h)	Run Hours GE	Diesel Consumption
3	OPzV 705	F2M 2011	18	6	10,2	Lithium Ion 924 AH	F4M 2011	20	4	24,9
4	OPzV 838		14	10	21			19	5	33
5	OPzV 1177	F3M 2011	13	11	33			17,9	6,1	42
6	OPzV 1410		12	12	48			16,8	7,2	50,3
7	OPzV 1600	F4M 2011	18	6	23,4			15,7	8,3	58
8	OPzV 2110		17	7	32,2			14,6	9,4	66,2

Comparaison between Magideutz hybrid and Ascot

With solar panels

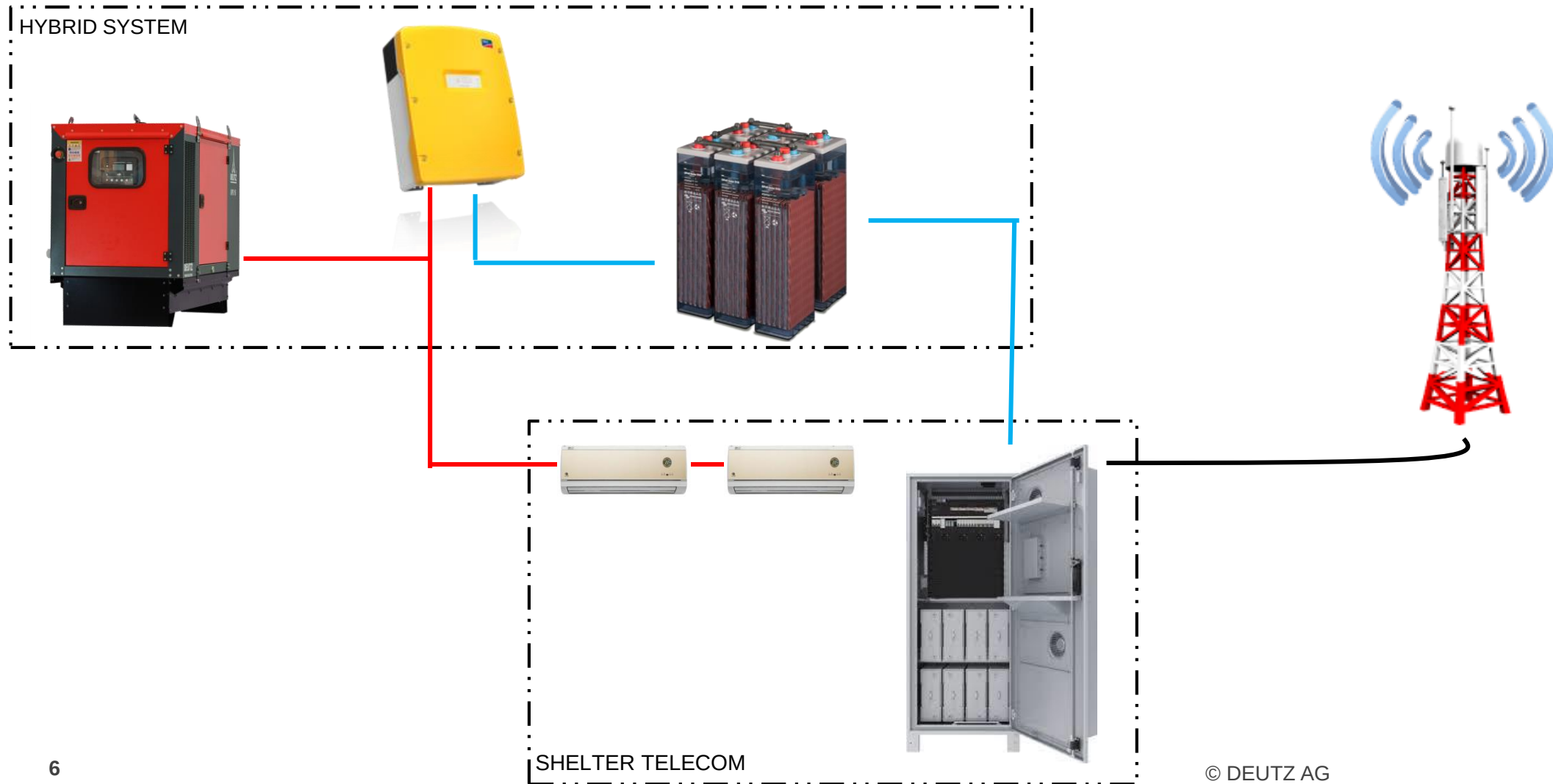


- The values of Magideutz hybrid system is by using lead Acid Batteries
- With Lithium-Ion Batteries we will achieve up to 60% more efficiency
- Looking at the fuel consumption, the Magideutz hybrid provide more efficiency and fuel saving.

LOAD Kw	MAGIDEUTZ					ASCOT				
	Batterie Capacity (AH)	PV System	Batterie Autonomy (h)	Run Hours GE	Diesel Consumption	Batterie Capacity (AH)	PV System	Batterie Autonomy (h)	Run Hours GE	Diesel Consumption
3	OPzV 705	5 KWp	20	4	6,8	Lithium Ion 924 AH	5 KWp	21	3	18,7
4	OPzV 838		17	7	14,7			19,8	4,2	26
5	OPzV 1177		16	8	24			18,8	5,2	34,4
6	OPzV 1410	2*4 KWp	15	9	36		10 KWp	18,7	5,3	35,4
7	OPzV 1600	8 KWp	20	4	15,6			17,6	6,4	44,6
8	OPzV 2110		20	4	18,4			16,4	7,6	52,9

Deutz Hybrid System

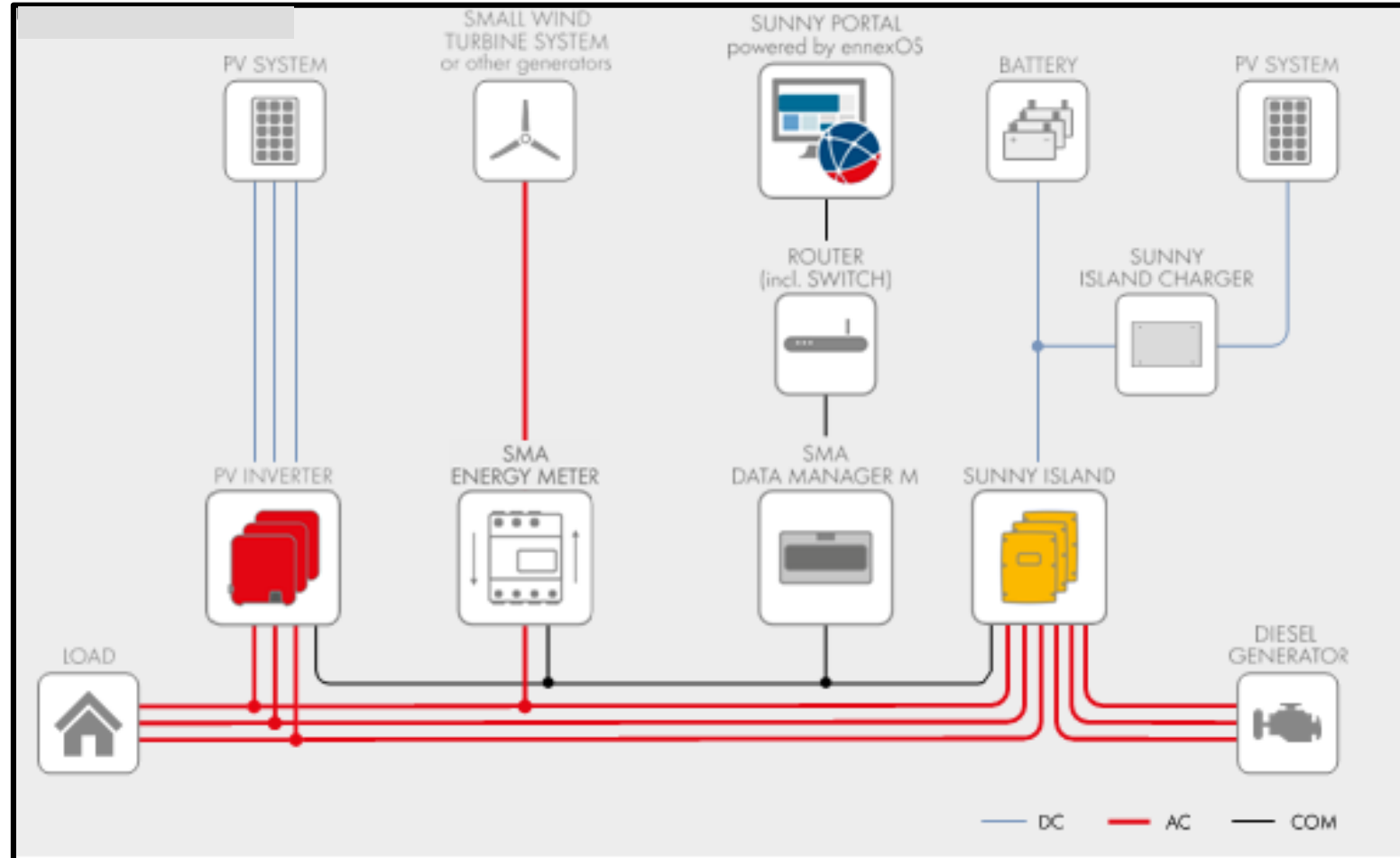
Synoptic diagram



Description of system components

Inverter

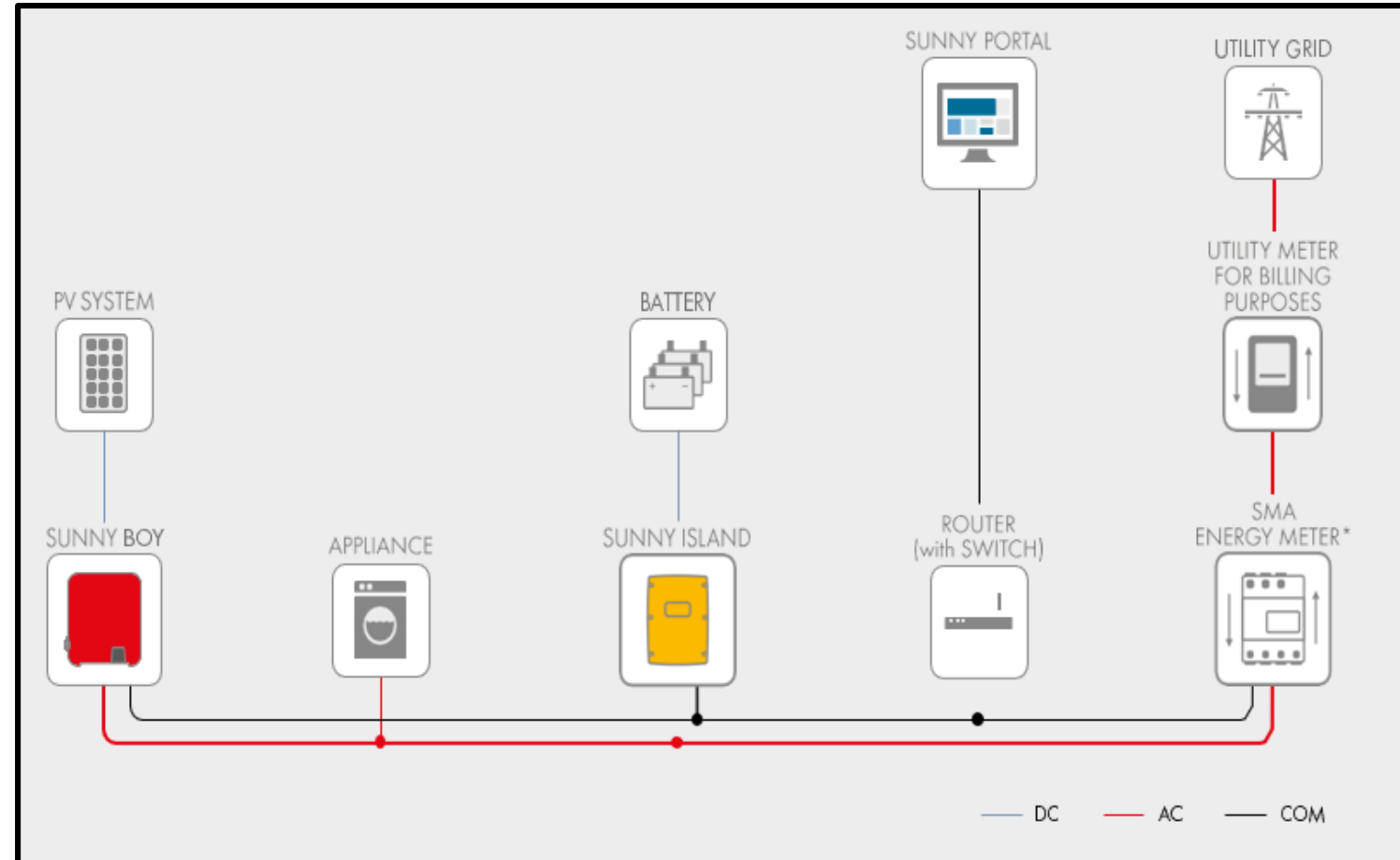
Three-phase off-grid system



Description of system components

Inverter

Single-phase on-grid system



Description of system components

Inverter



Technical data



Technical data	Sunny Island 4.4M	Sunny Island 6.0H	Sunny Island 8.0H
Operation on the utility grid or generator			
Rated grid voltage / AC voltage range	231 V / 172.5 V to 264.5 V		
Rated grid frequency / permitted frequency range	50 Hz / 40 Hz to 70 Hz		
Maximum AC current for increased self-consumption (grid operation)	14.5 A	20 A	26 A6)
Maximum apparent AC power for increased self-consumption (grid operation)	3.3 kVA	4.6 kVA	6 kVA6)
Maximum AC input current	50 A	50 A	50 A
Maximum AC input power	11500 W	11500 W	11500 W
Adjustable displacement power factor	0.8 overexcited to 0.8 underexcited		
Stand-alone or emergency power operation			
Rated grid voltage / AC voltage range	231 V / 202 V to 253 V		
Rated frequency / frequency range (adjustable)	51 Hz / 45 Hz to 65 Hz		
Rated power (at Unom, fnom / 25°C / cos φ = 1)	3300 W	4600 W	6000 W
AC power at 25 °C for 30 min / 5 min / 3 sec	4400 W / 4600 W / 5500 W	6000 W / 6800 W / 11000 W	8000 W / 9100 W / 11000 W
AC power at 45°C continuously	3000 W	3700 W	5430 W
Rated current / maximum output current (peak)	14.5 A / 60 A	20 A / 120 A	26 A / 120 A
Total harmonic distortion output voltage / power factor at rated power	< 5% / −1 to +1	< 1.5% / −1 to +1	< 1.5% / −1 to +1
Battery DC input			
Rated input voltage / DC voltage range	48 V / 41 V to 63 V	48 V / 41 V to 63 V	48 V / 41 V to 63 V
Maximum battery charging current / rated DC charging current / DC discharging current	75 A / 63 A / 75 A	110 A / 90 A / 103 A	140 A / 115 A / 130 A
Battery type / battery capacity (range)	Li-Ion1), FLA, VRLA /100 Ah to 10000 Ah (lead-acid) 50 Ah to 10000 Ah (li-Ion)		
Charge control	IUoU charge procedure with automatic full charge and equalization charge		
Efficiency / self-consumption of the device			
Maximum efficiency	0,955	0,958	0,958
No-load consumption / standby	18 W / 6.8 W	25.8 W / 6.5 W	25.8 W / 6.5 W
Protective devices (equipment)			
AC short-circuit / AC overload	● / ●		
DC reverse polarity protection / DC fuse	– / –		
Overtemperature / battery deep discharge	● / ●		
Overvoltage category as per IEC 60664-1	III		

Description of system components

Battery



The HOPPECKE sun | power VR L is a sealed lead-acid battery for cyclical applications. The innovative gel technology makes it virtually maintenance-free – replenishment with water is not necessary. Use of a proven tubular plate design ensures excellent cycle stability during operation with partial discharge (partial state of charge), as in village power supplies, for example. The use of HOPPECKE system connectors results in it providing increased short-circuit protection even during installation.

Description of system components

Battery Monitor

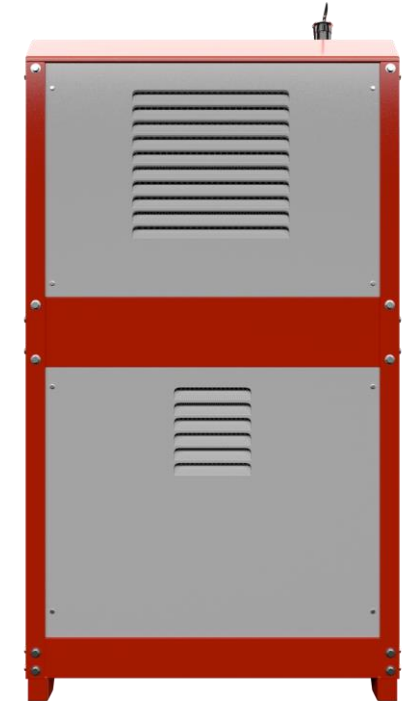
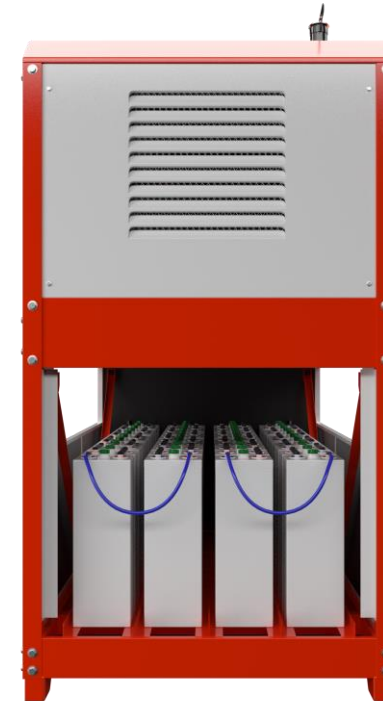
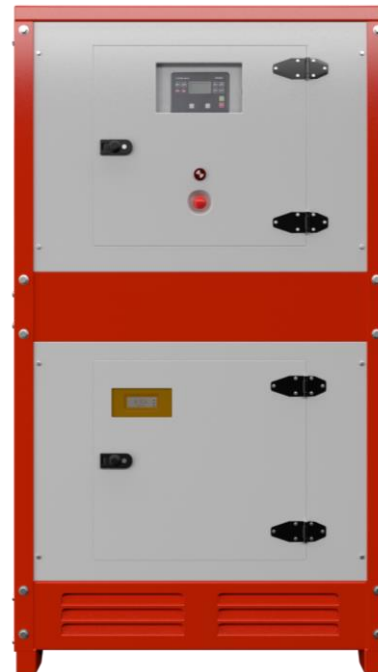


The BMV-700 is a high precision battery monitor. The essential function of a battery monitor is to calculate the ampere-hour consumption and the charge level of the battery. The consumption in ampere-hours is calculated by integrating the flow of current entering or leaving the battery. Contains a relay which takes care of starting and stopping the generating set according to the settings of the battery charge / discharge thresholds.

Battery Monitor	BMV-700	BMV-702 BMV-702 BLACK	BMV-700H
Supply voltage range	6,5 - 95 VDC	6,5 - 95 VDC	60 – 385 VDC
Current draw, back light off	< 4mA	< 4mA	< 4mA
Input voltage range, auxiliary battery	n. a.	6,5 - 95 VDC	n. a.
Battery capacity (Ah)	1 - 9999 Ah		
Operating temperature range	-40 +50°C (-40 - 120°F)		
Measures voltage of second battery, or temperature, or midpoint	No	Yes	No
Temperature measurement range	-20 +50°C		n. a.
VE.Direct communication port	Yes	Yes	Yes
Relay	60V / 1A normally open (function can be inverted)		

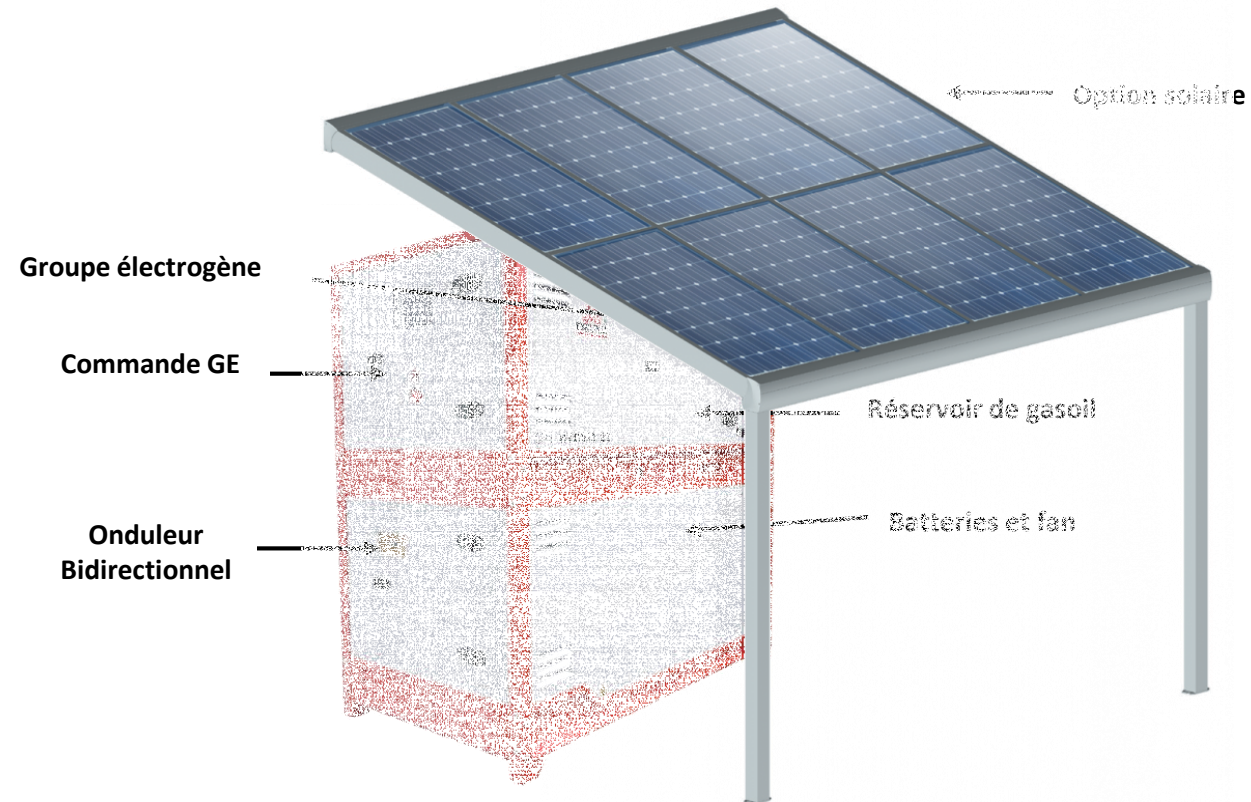
Description of system components

Canopy design



Description of system components

Hybrid System + Solar



Example of an existing hybrid systems

Photovoltaic installation at 28 sites of Maroc Telecom in Morocco

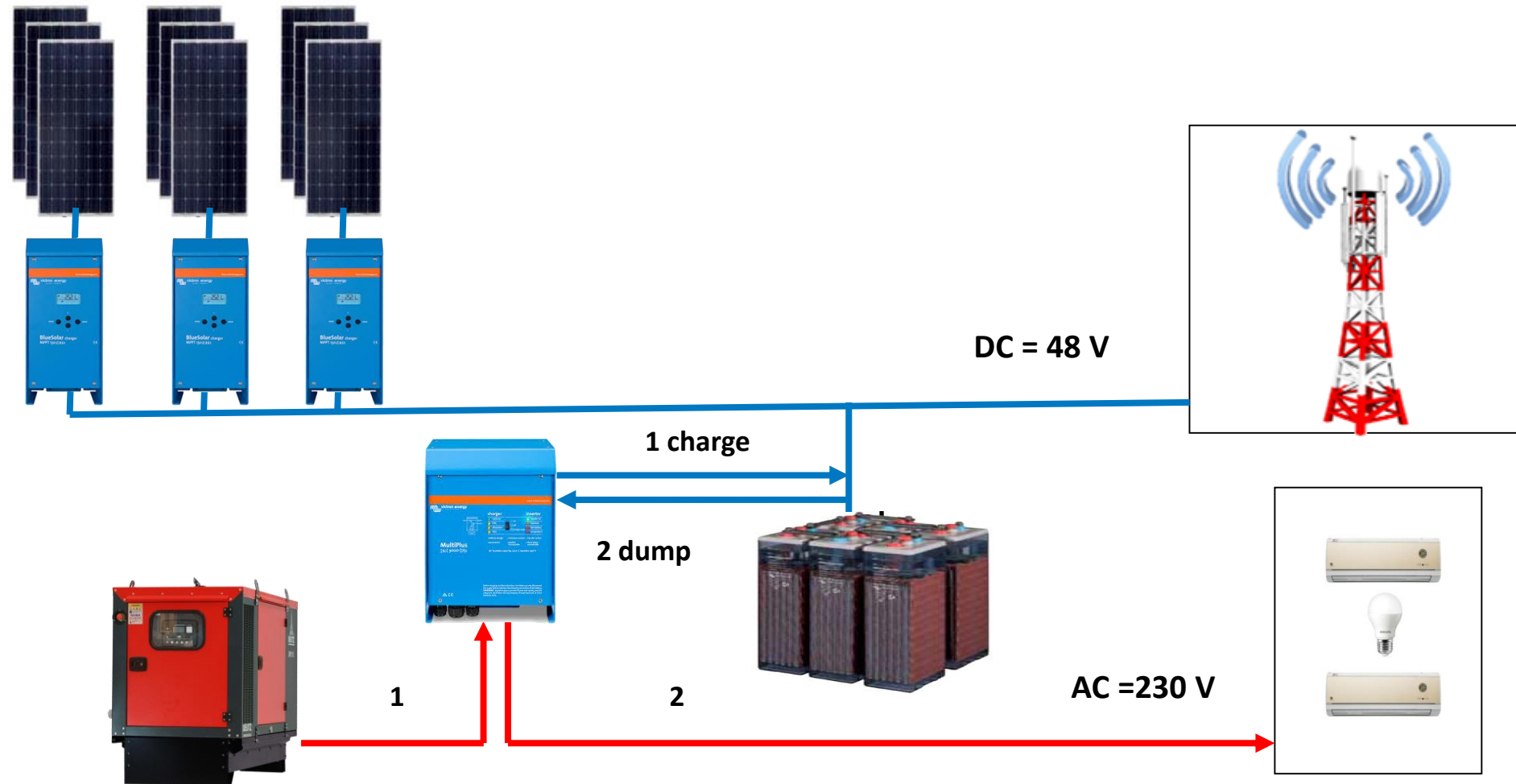


- 28 sites of Maroc Telecom in Morocco
- 30 KvAGensets
- 96 x photovoltaic 325wattes-panels
- 96 x 2000 Ah-Batteries
- 8x 85A-Chargers

**depending on the sun the site can permanently work
without genset involvement**

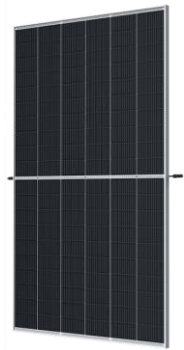
Description of system components

The synoptic diagram of the MagiDeutz Hybrid System



Description of system components

The Equipment supplier





Thank you!

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