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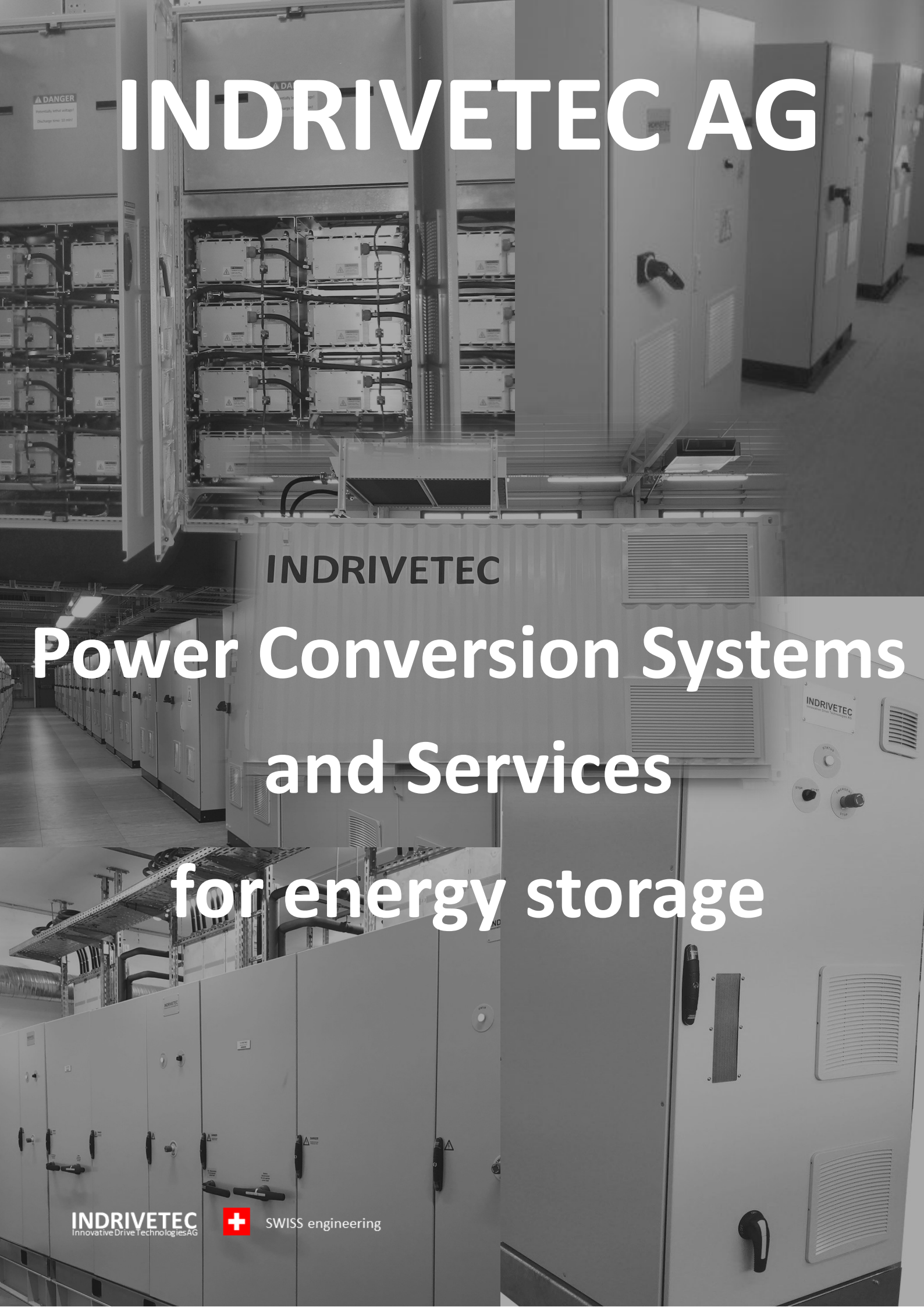

Power Conversion Systems and Services for energy storage

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Services for product life cycle

Indrivetec offers its customers the entire range of the product life cycle, consulting - business development - project development - project management- commissioning - maintenance and after sales service of energy storage and renewable energy systems.

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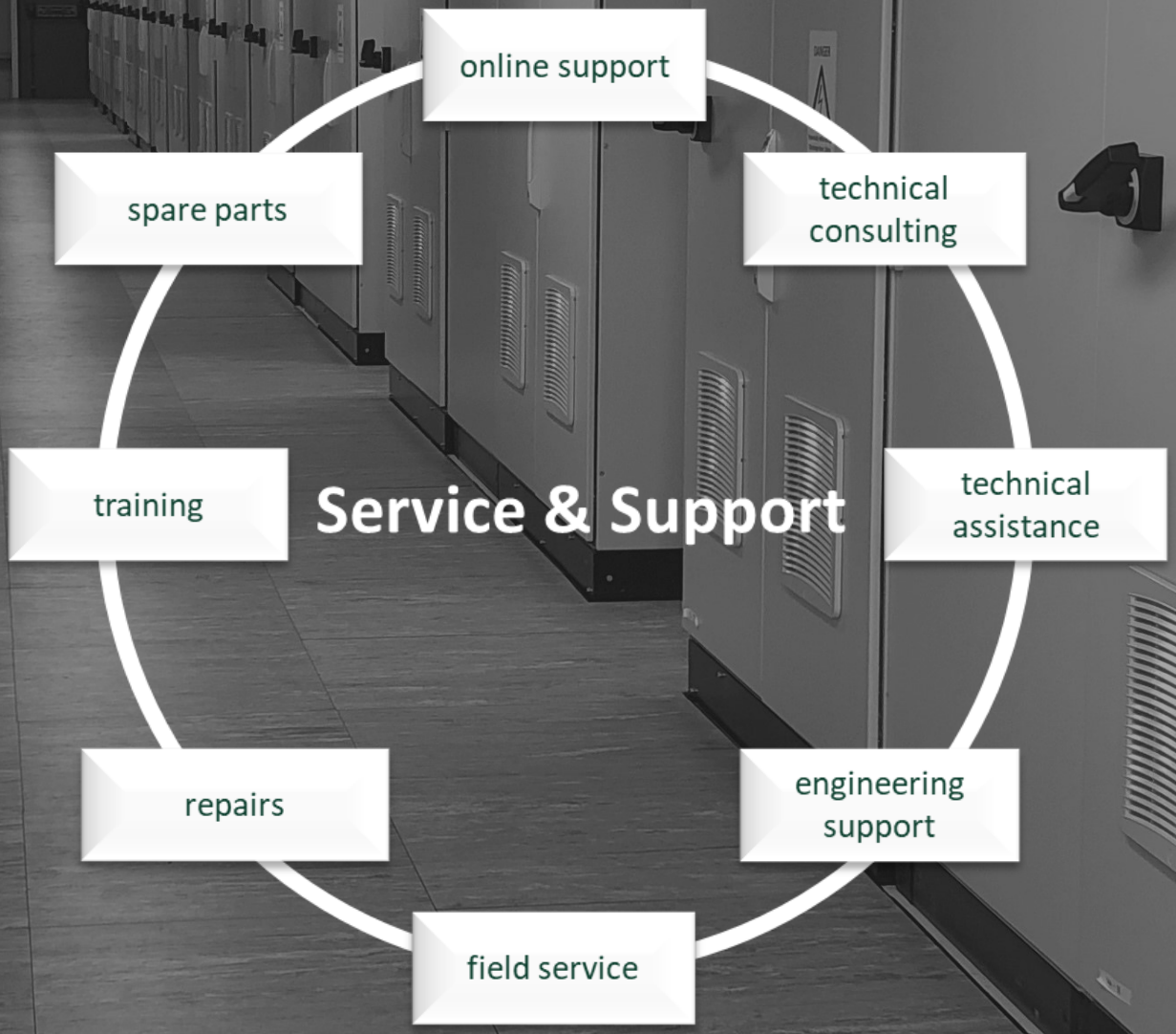
Service, commissioning and maintenance

Indrivetec offers its customers an interesting range of servicing and repair work. We keep devices, installations and systems in good shape thanks to preventive maintenance and servicing and ensure rapid repair.



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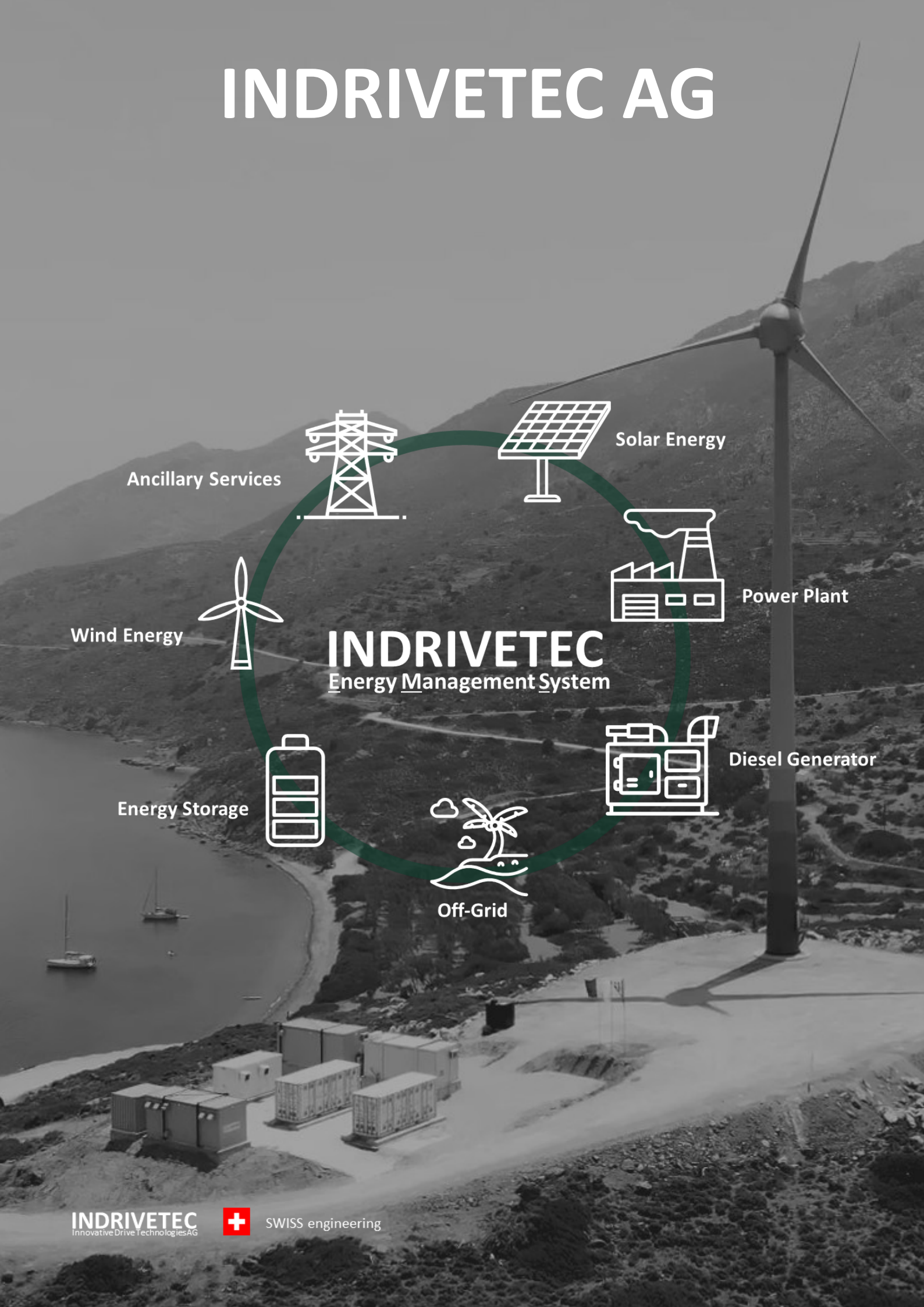

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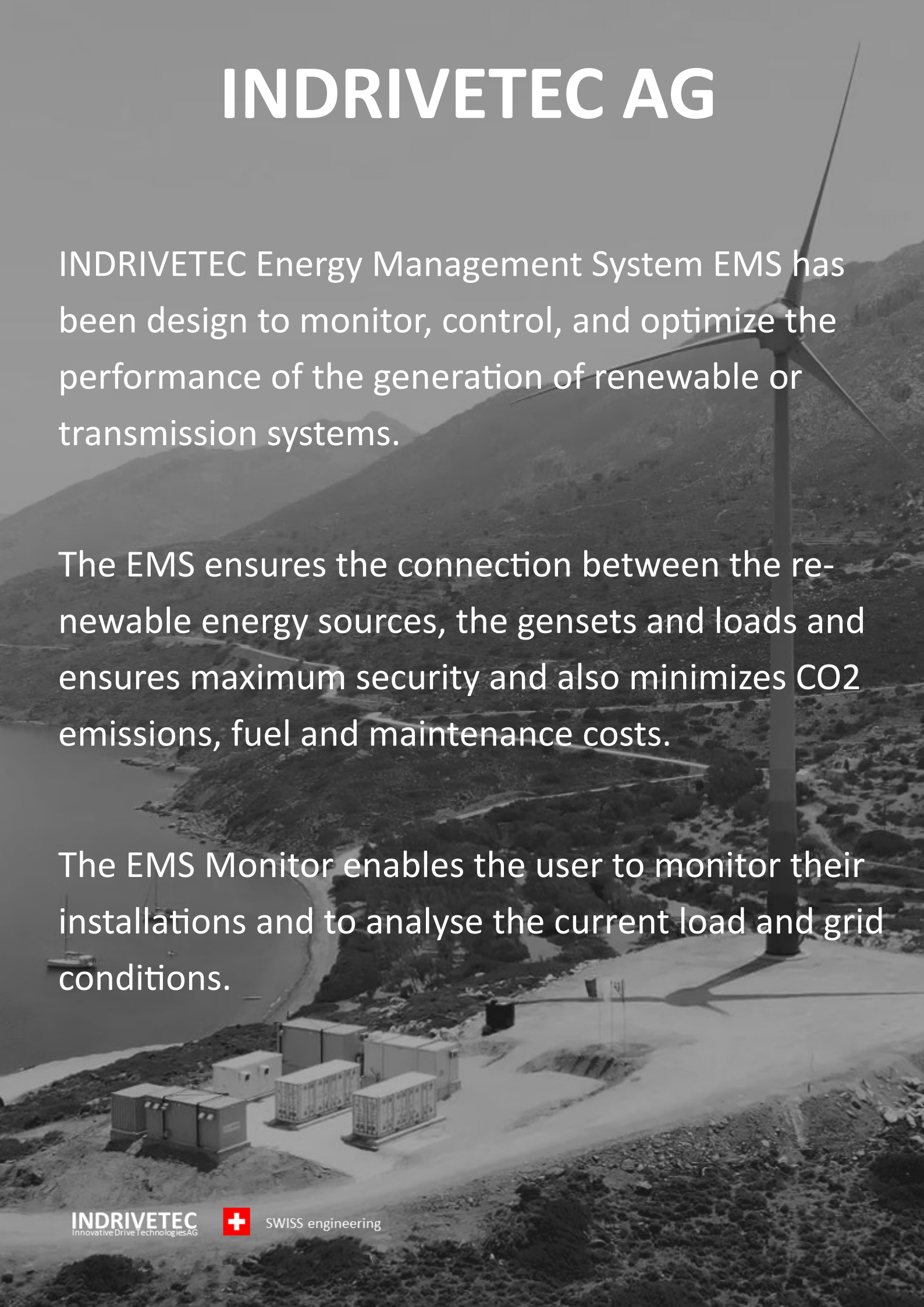
INDRIVETEC Energy Management System EMS has been design to monitor, control, and optimize the performance of the generation of renewable or transmission systems.

The EMS ensures the connection between the renewable energy sources, the gensets and loads and ensures maximum security and also minimizes CO2 emissions, fuel and maintenance costs.

The EMS Monitor enables the user to monitor their installations and to analyse the current load and grid conditions.



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FlexConvert PCS

the flexible and versatile bi-directional power conversion system

Flexible building block

Innovative cooling concept

Reactive power compensation

Grid/Island mode operation

AC-DC Converter	FC50	FC100	FC150
Nominal AC Power	50 kW	100 kW	150 kW
Rated apparent power	70 kVA	140 kVA	210 kVA
Power factor cos (φ)	± 0 - 1.0 (four-quadrant operation)		
AC nominal voltage	400 V		
Minimum AC voltage	270 V		
Maximal AC voltage	550 V		
AC operating current	75 A	150 A	225 A
Maximal AC current	105 A	210 A	315 A
Grid frequency	50 Hz/60 Hz		
Max. efficiency	97.1 %		
DC-DC Converter			
Battery inputs	1	1	1
Max. DC current	150 A	300 A	450 A
DC voltage-range	200 VDC — 900 VDC		
General data			
Dimensions (W/D/H)	600/800/600mm per 50 kW unit		
Weight	190 kg	380 kg	570 kg
Cooling	Air cooled (liquid cooling on request)		
Operation temperature	-25… +50°C (extended range upon request)		

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FlexConvert PCS

the flexible and versatile power conversion system for energy storage

Fully integrated unit

Innovative cooling concept

VDE-AR-N 4110 certification

Integrated grid services

AC-Connection	FC250	FC320	FC500	FC750
Nominal AC Power	250 kW	320 kW	500 kW	750 kW
Rated apparent power	275 kVA	350 kVA	550 kVA	825 kVA
Fault Ride Through	BDEW	ARN 4110 and BDEW, other upon request		
Power factor cos (φ)	± 0 - 1.0 (four-quadrant operation)			
AC nominal voltage	480 V			
Minimum AC voltage	180 V (see power capability table)			
Maximal AC voltage	550 V (690 VAC; see power capability table)			
AC operating current	300 A	385 A	630 A	900 A
Maximal AC current	330 A	420 A	700 A	990 A
Grid frequency	50 Hz/60 Hz			
Max. efficiency	98.4 %			
DC-Connection				
Battery inputs	1	1	1	1
Max. DC current	350 A	420 A	650 A	1000 A
DC voltage-range	400 VDC —1100 VDC			
General data				
Dimensions (W/D/H)	800/800/2000 mm		1400/800/2000 mm	1200/800/2000 mm
Weight	520 kg	600 kg	1300 kg	1350 kg
Operation temperature	-25… +50°C (extended range upon request)			

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FlexConvert PCS

the flexible and versatile power conversion system for energy storage

Fully integrated unit

Innovative cooling concept

VDE-AR-N 4110 certification

Integrated grid services

AC-Connection	FC1000	FC1500	FC2000
Nominal AC Power	1000 kW	1500 kW	2000 kW
Rated apparent power	1100 kVA	1650 kVA	2200kVA
Fault Ride Through	ARN 4110 and BDEW, other upon request		
Power factor cos (φ)	± 0 - 1.0 (four-quadrant operation)		
AC nominal voltage	480 V		
Minimum AC voltage	180 V (see power capability table)		
Maximal AC voltage	550 V (690 VAC; see power capability table)		
AC operating current	1260 A	1890 A	2520 A
Maximal AC current	1400 A	2100 A	2800A
Grid frequency	50 Hz/60 Hz		
Max. efficiency	98.4 %		
DC-Connection			
Battery inputs	1	2	2
Max. DC current	1350 A	1950 A	2600 A
DC voltage-range	400 VDC —1100 VDC		
General data			
Dimensions (W/D/H)	2200/800/2000 mm	3000/800/2000 mm	3600/800/2000 mm
Weight	2100 kg	2800 kg	3300 kg
Operation temperature	-25… +50°C (extended range upon request)		

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FlexConvert PCS-Outdoor

the flexible and versatile power conversion system for energy storage

Fully integrated unit

Innovative cooling concept

VDE-AR-N 4110 certification

Integrated grid services

AC-Connection	FC1000	FC1500	FC2000
Nominal AC Power	1000 kW	1500 kW	2000 kW
Rated apparent power	1100 kVA	1650 kVA	2200kVA
Fault Ride Through	ARN 4110 and BDEW, other upon request		
Power factor cos (φ)	± 0 - 1.0 (four-quadrant operation)		
AC nominal voltage	480 V		
Minimum AC voltage	180 V (see power capability table)		
Maximal AC voltage	550 V (690 VAC; see power capability table)		
AC operating current	1260 A	1890 A	2520 A
Maximal AC current	1400 A	2100 A	2800A
Grid frequency	50 Hz/60 Hz		
Max. efficiency	98.4 %		
DC-Connection			
Battery inputs	1	2	2
Max. DC current	1350 A	1950 A	2600 A
DC voltage-range	400 VDC —1100 VDC		
General data			
Dimensions (W/D/H)	3000/800/2050 mm	4000/800/2050 mm	4800/800/2050 mm
Weight	2750 kg	3600 kg	4300 kg
Operation temperature	-25… +50°C (extended range upon request)		

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FlexConvert PCSU

the flexible containerized power conversion system unit

Fully integrated container unit

Innovative cooling concept

Compatible storages

Integrated grid services

AC-Connection	FC-PCSU-1000	FC-PCSU-2000	FC-PCSU-3000
Nominal AC Power	1000 kW	2000 kW	3000 kW
Rated apparent power	1100 kVA	2200 kVA	3300 kVA
Fault Ride Through	ARN 4110 and BDEW, other upon request		
Power factor cos (φ)	± 0 - 1.0 (four-quadrant operation)		
Grid voltage (LV-option)	170 V - 690 V		
Grid voltage (MV-option)	6 kV – 33 kV		
AC operating current	1260 A	2520 A	3780 A
Maximal AC current	1400 A	2800 A	4200 A
Grid frequency	50 Hz/60 Hz		
Max. efficiency	98.4 %		
DC-Connection			
Compatible storage	Lithium-Ion, NAS, Redox-Flow, Lead Acid, SoNiCl, fuel cells		
Renewables	Solar, Wind, Bio-energy, Ground heat		
Max. DC current	1350 A	2600 A	4200 A
DC voltage-range	270 VDC —1150 VDC		
General data			
Container size	20ft. Container		40 ft. Container
Weight	10 t	12 t	20 t
Operation temperature	-25… +50°C (extended range upon request)		

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SuperCap Energy Storage SCES

the flexible and versatile product family for short-time energy storage

Bidirectional DC-DC converter

High efficient control algorithm

Fully operational control

Integrated functionalities

DC-applikation	SCES300-DC	SCES600-DC	SCES900-DC
Nominal DC power	300 kW	600 kW	900 kW
Maximum DC power	600 kW	1200 kW	1800 kW
DC voltage range	900 VDC– 1100 VDC		
Minimum DC voltage	500 VDC		
Electrical isolation	no		
Useable energy	2.5 MJ	5 MJ	7.5 MJ
Control mode	current-, voltage-, power control and droop mode		
Auxiliary power supply	1 x 230 VAC, other upon request		
Dimensions (W/D/H)	1600/1000/2500 mm	2600/1000/2500 mm	3600/1000/2500 mm
Weight	2300 kg	3000 kg	3800 kg
Operation temperature	+5… +35°C (extended range upon request)		
Storage temperature	-15… +45°C (extended range upon request)		
Enclosure type	IP40 indoor		
Cooling	air-cooled		
Certification	CE, UL/UR, CSA, other upon request		
Standards	EN61000-62, EN61000-6-4, EN62477-1, IEC62103		
FlexConvert	FC500	FC1000	FC1500

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FlexConvert DC-DC Converter

the flexible and versatile product family for DC-coupling

Bidirectional DC-DC converter

DC-coupling from renewables

High efficient controlling

Integrated functionalities

Input DC	FC-DC450-PV	FC-DC450-ESS
Maximum DC power	500 kWp	500 kW
Maximum DC voltage	1200 V DC	1100 V DC
Minimum DC voltage	400 VDC (start)	0 VDC
MPP(T) voltage range	450 VDC—1000 VDC	-
Maximum DC current	1050 A	
Output DC		
Maximum DC voltage	1100 VDC	
Minimum DC voltage	500 VDC	
Maximum DC current	1000 A	
Maximum efficiency	98,5 %	
General data		
Auxiliary power supply	1 x 230 VAC, other upon request	
Protection	Disconnector, Fuses, Overvoltage, Overcurrent	
Dimensions (L x W x H)	800 x 800 x 2000 mm	
Weight	650 kg	
Operation temperature	-25… +50°C (extended range upon request)	
Enclosure type	IP54 indoor, IP55 outdoor	
Cooling	air-cooled	
Communication interface	Profibus, CAN, Modbus TCP, Profinet, other upon request	

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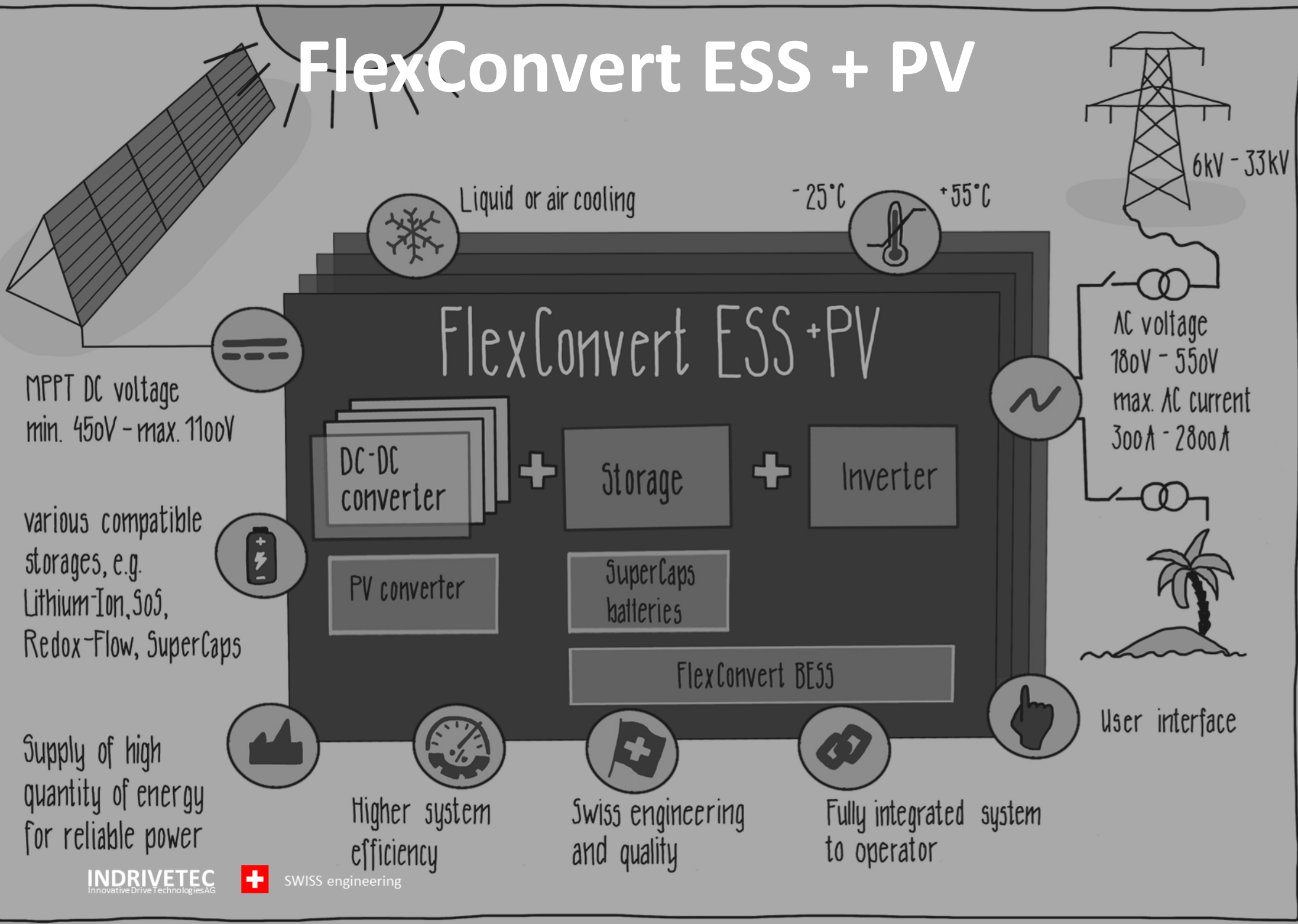
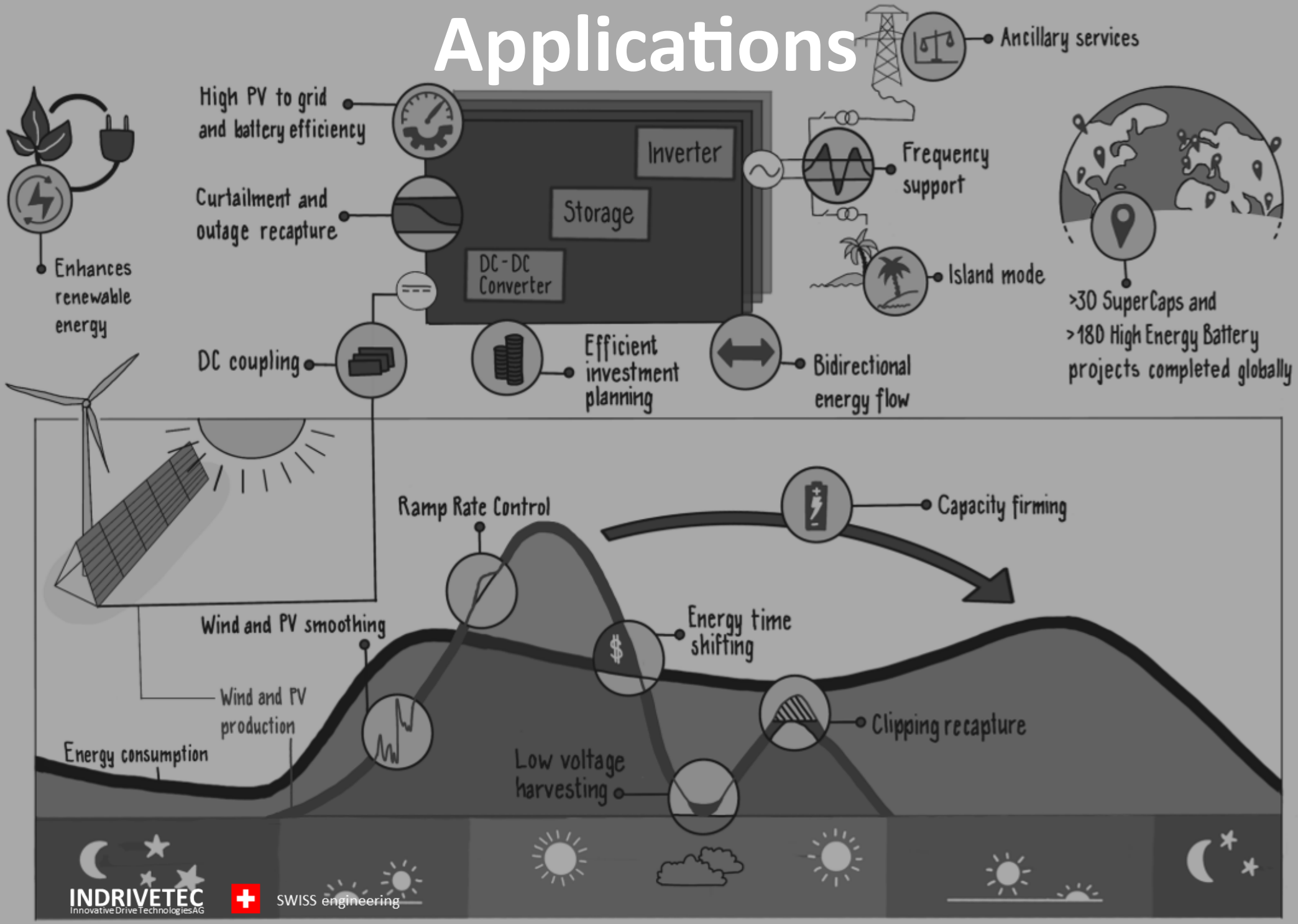
FlexConvert ESS + PV



Applications



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Power capability table FlexConvert

Nominal AC Power

Nominal AC Voltage

	200 kVA	250 kVA	320 kVA	400 kVA	500 kVA	750 kVA	1000 kVA	1250 kVA	1500 kVA	1750 kW	2000 kVA	2500 kVA	3000 kVA
300 VAC	FC320	FC500	FC500	FC750	FC750	FC1500	FC1500	FC2000	FC2000				
350 VAC	FC250	FC320	FC500	FC500	FC750	FC1000	FC1500	FC1500	FC2000				
400 VAC	FC250	FC320	FC500	FC500	FC750	FC1000	FC1500	FC1500	FC2000	FC2000	FC2000		
440 VAC	FC250	FC250	FC320	FC500	FC500	FC750	FC1000	FC1500	FC1500	FC2000	FC2000		
480 VAC	FC250	FC250	FC320	FC500	FC500	FC750	FC1000	FC1500	FC1500	FC1500	FC2000		
520 VAC	FC250	FC250	FC320	FC500	FC500	FC750	FC1000	FC1000	FC1500	FC1500	FC2000	FC2000	
600 VAC	FC250	FC250	FC250	FC320	FC500	FC750	FC750	FC1000	FC1500	FC1500	FC2000	FC2000	FC2000
690 VAC	FC250	FC250	FC250	FC320	FC320	FC500	FC750	FC750	FC1000	FC1500	FC1500	FC1500	FC2000

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Power capability table FlexConvert

Nominal AC Power

Minimum DC Voltage

	200 KW	250 KW	320 KW	400 kW	500 kW	750 kW	1000 kW	1250 kW	1500 kW	1750 kW	2000 kW	2500 kW	2750 kW
400 VDC	FC500	FC500	FC750	FC750	FC1000	FC1500	FC2000						
450 VDC	FC500	FC500	FC750	FC750	FC1000	FC1500	FC2000						
500 VDC	FC320	FC500	FC500	FC750	FC750	FC1500	FC2000	FC2000					
550 VDC	FC320	FC500	FC500	FC750	FC750	FC1500	FC1500	FC2000					
600 VDC	FC250	FC320	FC500	FC750	FC750	FC1000	FC1500	FC2000	FC2000				
650 VDC	FC250	FC320	FC500	FC500	FC750	FC1000	FC1500	FC1500	FC2000				
700 VDC	FC250	FC320	FC500	FC500	FC750	FC1000	FC1500	FC1500	FC2000	FC2000			
750 VDC	FC250	FC250	FC500	FC500	FC750	FC750	FC1000	FC1500	FC2000	FC2000			
800 VDC	FC250	FC250	FC320	FC500	FC500	FC750	FC1000	FC1500	FC1500	FC2000	FC2000		
850 VDC	FC250	FC250	FC320	FC500	FC500	FC750	FC1000	FC1500	FC1500	FC2000	FC2000		
900 VDC	FC250	FC250	FC320	FC500	FC500	FC750	FC1000	FC1500	FC1500	FC1500	FC2000		
950 VDC	FC250	FC250	FC250	FC320	FC500	FC750	FC1000	FC1000	FC1500	FC1500	FC2000	FC2000	
1000 VDC	FC250	FC250	FC250	FC320	FC500	FC750	FC750	FC1000	FC1500	FC1500	FC2000	FC2000	
1100 VDC	FC250	FC250	FC250	FC320	FC500	FC750	FC750	FC1000	FC1500	FC1500	FC1500	FC2000	FC2000

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