

INDRIVETEC
Innovative Drive Technologies AG

INDRIVETEC AG

"bricks up" flexible energy storage systems

25 Years experience in power electronics

650 Megawatt worldwide experience and installations

105 Members in Switzerland, Bulgaria and Germany

325 Projects confirm the international standards for quality

INDRIVETEC AG

Power Conversion System

FlexConvert-PCS-1100

Battery Inverter In-/Outdoor up to 1100 VDC - 3300 kVA

FlexConvert-PCS-1500

Battery Inverter In-/Outdoor up to 1500 VDC – 4990 kVA

FlexConvert-PCSU

Power Conversion System Unit
Containerized Battery Inverter + EMS + HVAC

FlexConvert-PCS-1100

Battery Inverter In-/Outdoor with 1100 VDC

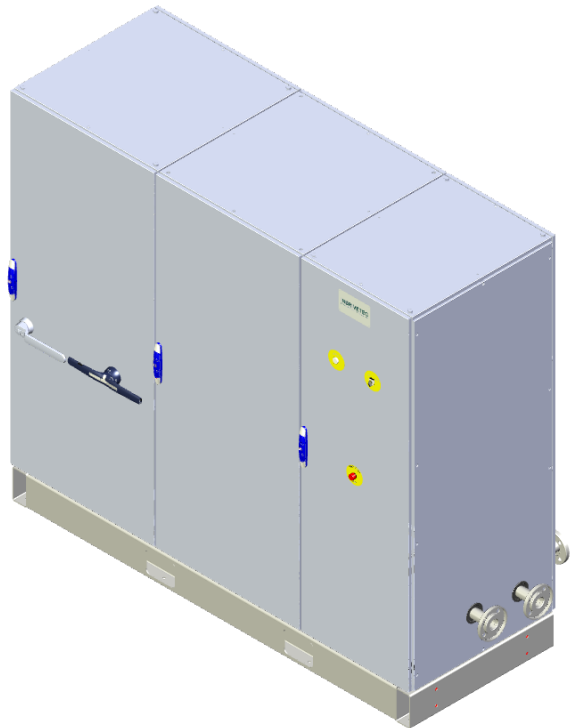
Power capability table

Nom. AC voltage VAC	Min. DC voltage VDC	Max. DC voltage VDC	Rated active power at cos phi: 0,9					
			FC320	FC500	FC750	FC1000	FC1500	FC2000
180	300	1100	120	200	300	400	600	800
330	540	1100	220	350	525	700	1050	1400
400	650	1100	270	450	675	900	1350	1800
480	780	1100	320	500	750	1000	1500	2000
600	980	1100	400	650	950	1300	1950	2600
690	1100	1100	460	750	1075	1500	2250	3000

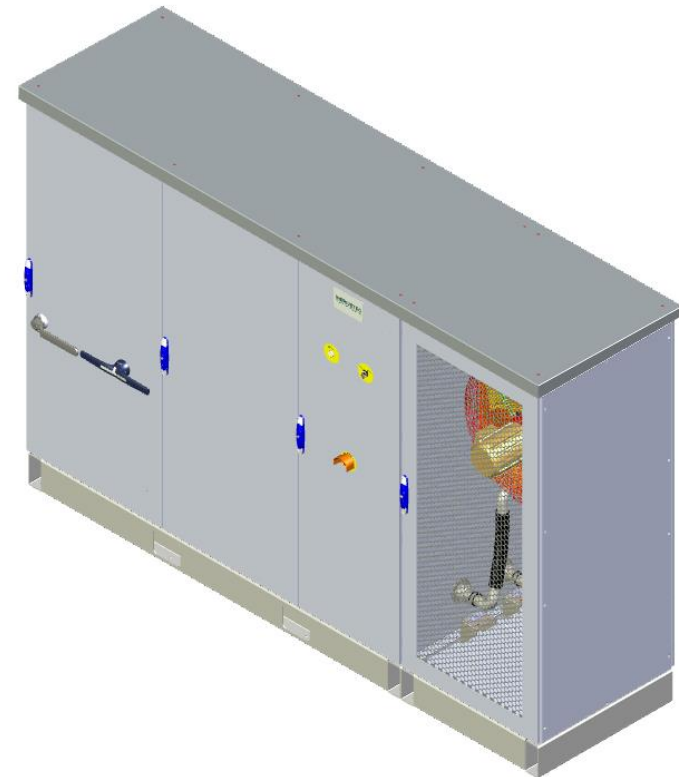
FlexConvert-PCS-1100

Battery Inverter In-/Outdoor

PCS-Indoor



PCS-Outdoor



FlexConvert-PCS-1500

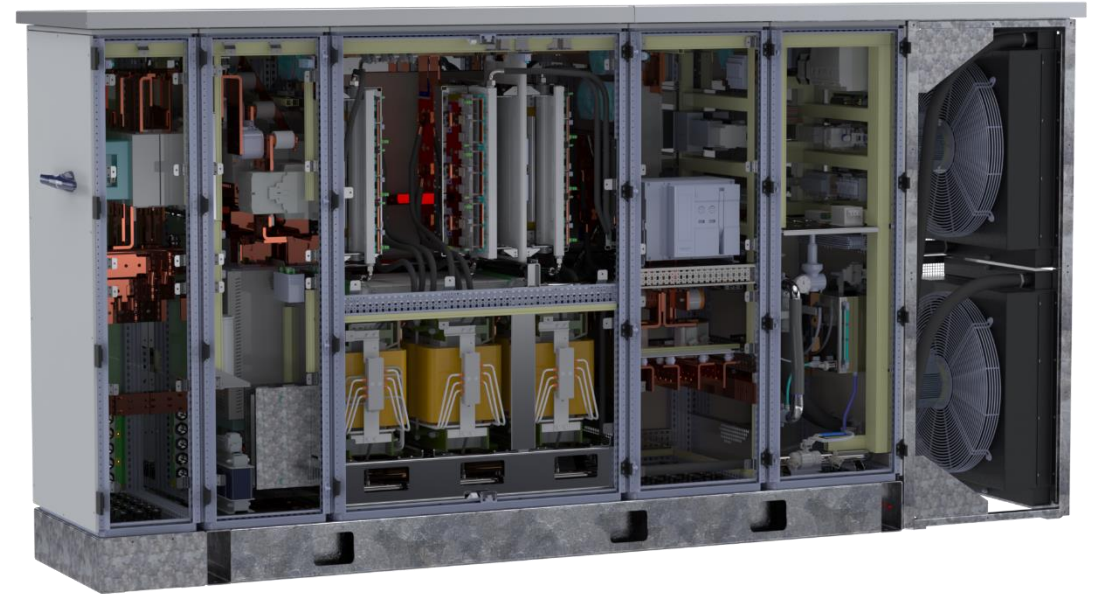
Battery Inverter In-/Outdoor with 1500 VDC

Power capability table

Nom. AC voltage VAC	Min. DC voltage VDC	Max. DC voltage VDC	Rated apparent power				
			FC1440-ML	FC2160-ML	FC2880-ML	FC3600-ML	FC4320-ML
400 VAC	650 VDC	1500 VDC	840 kVA	1260 kVA	1680 kVA	2100 kVA	2520 kVA
500 VAC	820 VDC	1500 VDC	1040 kVA	1560 kVA	2080 kVA	2600 kVA	3120 kVA
550 VAC	900 VDC	1500 VDC	1150 kVA	1725 kVA	2300 kVA	2875 kVA	3450 kVA
600 VAC	975 VDC	1500 VDC	1250 kVA	1875 kVA	2500 kVA	3125 kVA	3750 kVA
660 VAC	1075 VDC	1500 VDC	1380 kVA	2070 kVA	2760 kW	3450 kVA	4140 kVA
690 VAC	1120 VDC	1500 VDC	1440 kVA	2160 kVA	2880 kVA	3600 kW	4320 kVA
730 VAC	1190 VDC	1500 VDC	1520 kVA	2275 kVA	3035 kVA	3795 kVA	4550 kVA
800 VAC	1245 VDC	1500 VDC	1660 kVA	2495 kVA	3325 kVA	4160 kVA	4990 kVA

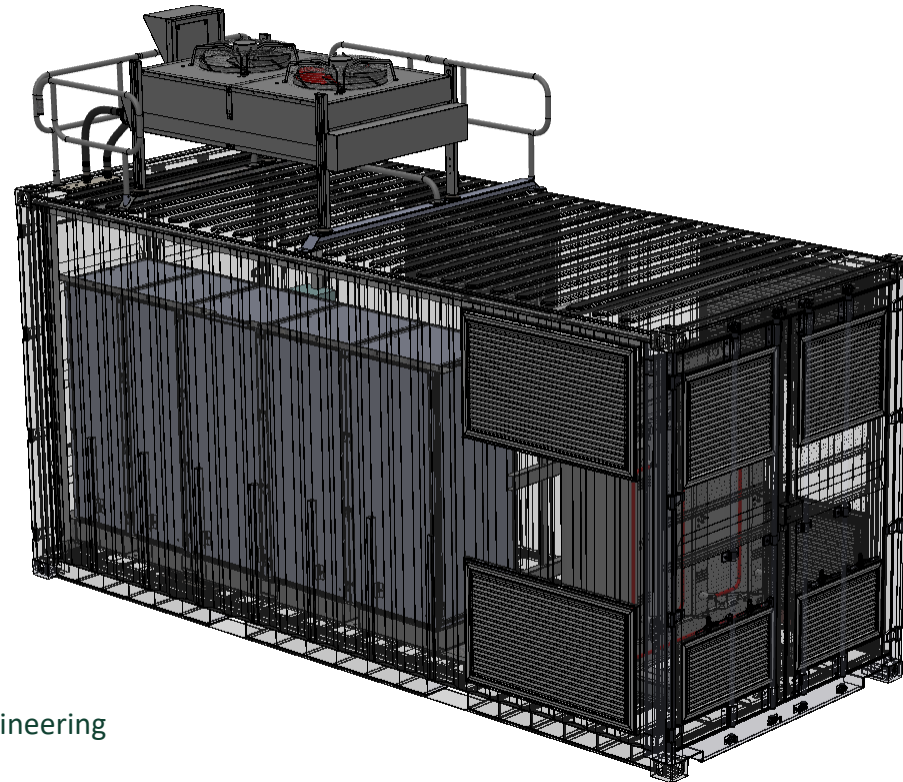
FlexConvert-PCS-1500

Battery Inverter In-/Outdoor with 1500 VDC



FlexConvert-PCSU Containerized Battery Inverter + EMS + HVAC

FC-PCSU-2000-MV



INDRIVETEC AG

Energy Storage Systems

FlexConvert-BESS-Single

One container energy storage system

FlexConvert-BESS-Dual

Two container energy storage system PCSU + Battery

FlexConvert-BESS-Triple

Stand-alone Outdoor PCS + Battery + EMS

FlexConvert-BESS

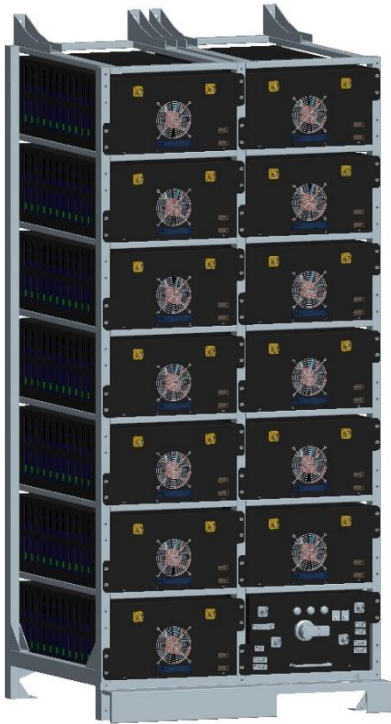
Battery Rack In-/Outdoor

Battery System Parameter	150 kWh Standard Rack Indoor	279.5 kWh Outdoor Rack	372.7 kWh Outdoor Rack
Nominal capacity	150 Ah		280 Ah
C-rate	up to 1 C	up to 0.5 C	
Series and parallel	1P312S LFP cells		1P416S LFP cells
Battery performance	4000 cycles 90%DoD	6000 cycles 90%DoD	
Nominal voltage	998.4 VDC		1331.2 VDC
Work voltage range	873.6 VDC – 1092 VDC		1164.8 VDC – 1476.8 VDC
Nominal energy	149.76 kWh	279.5 kWh	372.7 kWh
Rated current	150 A	75 A	140 A
Maximum current	160 A	80 A	160 A
Dimension D x W x H	835 x 930 x 2057 mm		1300 x 1360 x 2400 mm
Weight	1.6 tons	3.2 t	4 t

FlexConvert-BESS

Battery Rack In-/Outdoor

150 kWh Rack Indoor - 1100 VDC



279.5 kWh Rack Outdoor - 1100 VDC



372.7 kWh Rack Outdoor – 1500 VDC



FlexConvert-BESS

LFP liquid-cooled 20HC containers



Battery System Parameter	3440 kWh 20HC CON	5015 kWh 20HC CON
Nominal capacity	280 Ah	314 Ah
C-rate	up to 0.5 C	
Battery racks	10 x 344.064 kWh	12 x 417.996 kWh
Battery performance	7300 cycles 100%DoD, 0.5C	
Nominal voltage	1228.8 VDC	1331.2 VDC
Work voltage range	1075 VDC — 1363 VDC	1165 VDC – 1477 VDC
Nominal energy	3.440 kWh	5015 kWh
Rated current	1400 A	1884 A
Maximum current	1730 A <small>(25±5 °C 5min)</small>	2316 A <small>(25±5 °C 5min)</small>
Dimension D x W x H	6058 x 2438 x 2896 mm	
Weight	36 tons	43 tons

PCS-Battery-combinations

Lithium iron phosphate

	150 kWh Indoor	279.5 kWh Outdoor	372.7 kWh Outdoor	3440 kWh 20HC CON	5015 kWh 20HC CON
FC1440-ML	up to c-rate 1	up to c-rate 1	up to c-rate 1	up to c-rate 0.5	up to c-rate 0.5
FC2160-ML	up to c-rate 1	up to c-rate 1	up to c-rate 1	up to c-rate 0.5	up to c-rate 0.5
FC2880-ML	up to c-rate 1	up to c-rate 1	up to c-rate 1	up to c-rate 0.5	up to c-rate 0.5
FC3600-ML	up to c-rate 1	up to c-rate 1	up to c-rate 1	up to c-rate 0.5	up to c-rate 0.5
FC4320-ML	up to c-rate 1	up to c-rate 1	up to c-rate 1	up to c-rate 0.5	up to c-rate 0.5
FC320	up to c-rate 1	up to c-rate 1	-	-	-
FC500	up to c-rate 1	up to c-rate 1	-	-	-
FC750	up to c-rate 1	up to c-rate 1	-	-	-
FC1000	up to c-rate 1	up to c-rate 1	-	-	-
FC1500	up to c-rate 1	up to c-rate 1	-	-	-
FC2000	up to c-rate 1	up to c-rate 1	-	-	-

single or multiple indoor and outdoor battery racks can be connected per PCS

FlexConvert-BESS-Single

One container energy storage system

One container energy storage system solution including:
Enclosure, Inverter, battery racks, HVAC, EMS and Control

FC-BESS-320 Container, up to 600 kWh and inverter FC320

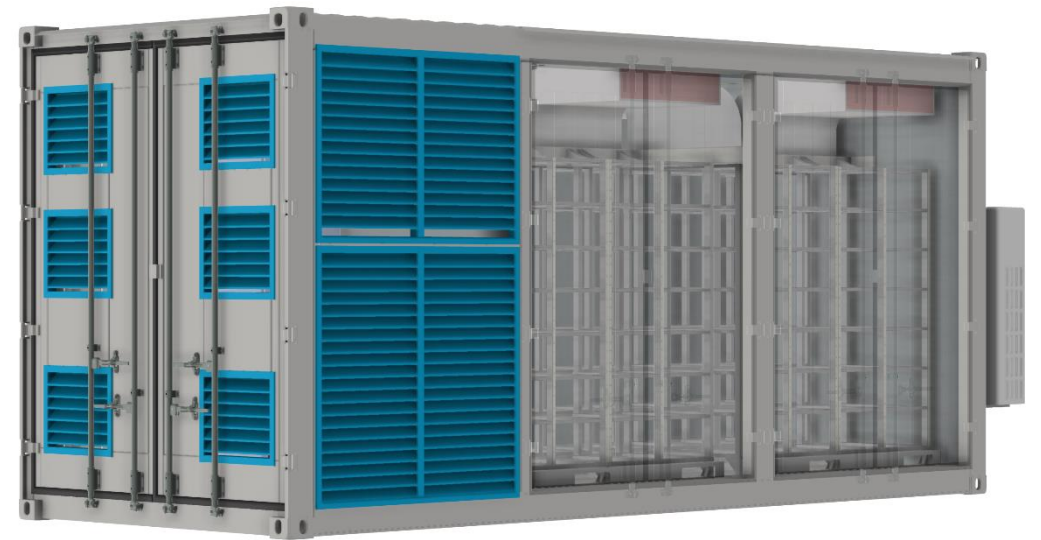
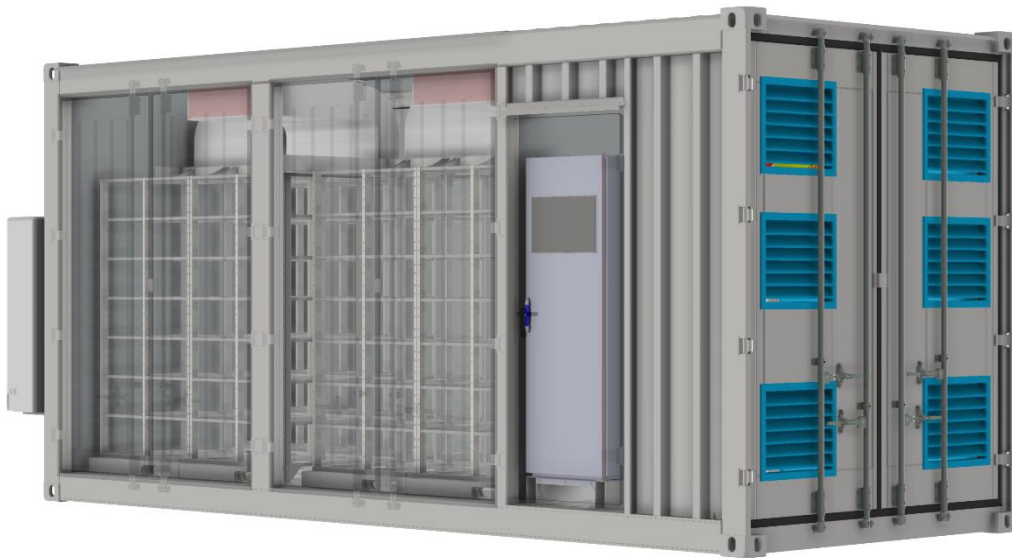
FC-BESS-1000 20 ft. Container, up to 1200 kWh and
one Inverter FC320, FC500, FC750 or FC1000

FC-BESS-2000 40 ft. Container, up to 2400 kWh and
one Inverter FC320, FC500, FC750, FC1000, FC1500 or FC2000

FlexConvert-BESS-Single

One container energy storage system

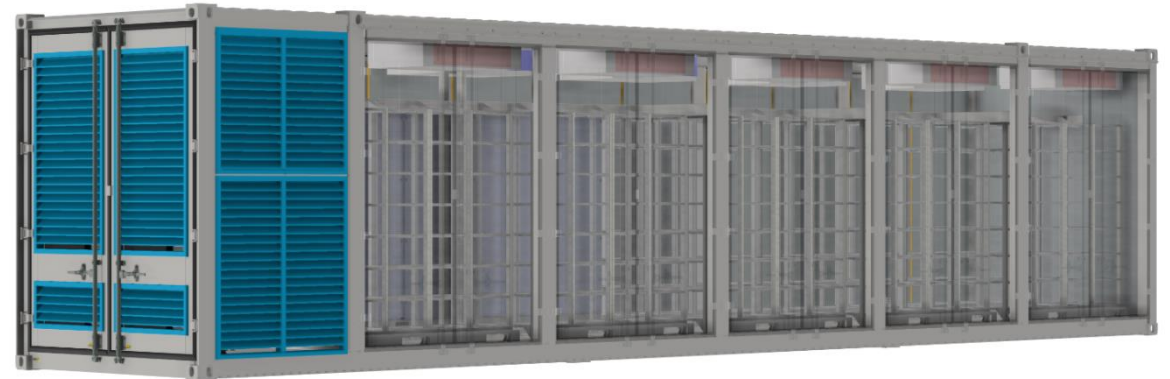
FC-BESS-1000



FlexConvert-BESS-Single

One container energy storage system

FC-BESS-2000



FlexConvert-BESS-Single

FC-BESS-1000 Single Configuration

FC-BESS-1000 configurations at cos phi: 0,9			
320 kW – 600 kWh	320 kW – 750 kWh	320 kW – 900 kWh	320 kW – 1200 kWh
500 kW – 600 kWh	500 kW – 750 kWh	500 kW – 900 kWh	500 kW – 1200 kWh
	750 kW – 750 kWh	750 kW – 900 kWh	750 kW – 1200 kWh
			1000 kW – 1200 kWh
320 kW – 1050 kWh	500 kW – 1050 kWh	750 kW – 1050 kWh	1000 kW – 1050 kWh
Battery performance	7000 cycles 93%DoD, 0.5C and 5600 cycles 93%DoD, 1C		
System efficiency (round-trip)	> 88%		
Cell Chemistry	Lithium Iron Phosphate LiFePO4		
General data			
Dimensions (L x W x H)	20 ft. 6100x2500x2900 mm		
Ambient temperature	-20... +45°C (extended range upon request)		

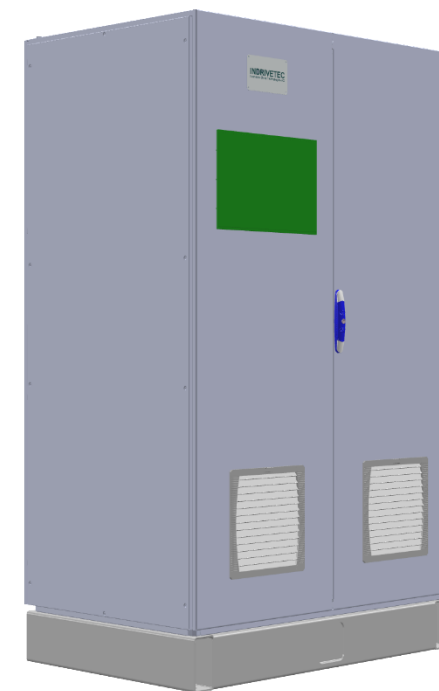
FlexConvert-BESS-Single

FC-BESS-2000 Single Configuration

FC-BESS-2000 configurations at cos phi: 0,9			
320 kW – 1500 kWh	320 kW – 1800 kWh	320 kW – 2100 kWh	320 kW – 2400 kWh
500 kW – 1500 kWh	500 kW – 1800 kWh	500 kW – 2100 kWh	500 kW – 2400 kWh
750 kW – 1500 kWh	750 kW – 1800 kWh	750 kW – 2100 kWh	750 kW – 2400 kWh
1000 kW – 1500 kWh	1000 kW – 1800 kWh	1000 kW – 2100 kWh	1000 kW – 2400 kWh
1500 kW – 1500 kWh	1500 kW – 1800 kWh	1500 kW – 2100 kWh	1500 kW – 2400 kWh
			2250 kW – 2400 kWh
Battery performance	7000 cycles 93%DoD, 0.5C and 5600 cycles 93%DoD, 1C		
System efficiency (round-trip)	> 88%		
Cell Chemistry	Lithium Iron Phosphate LiFePO4		
General data			
Dimensions (L x W x H)	40 ft. 12200x2500x2900 mm		
Ambient temperature	-20... +45°C (extended range upon request)		

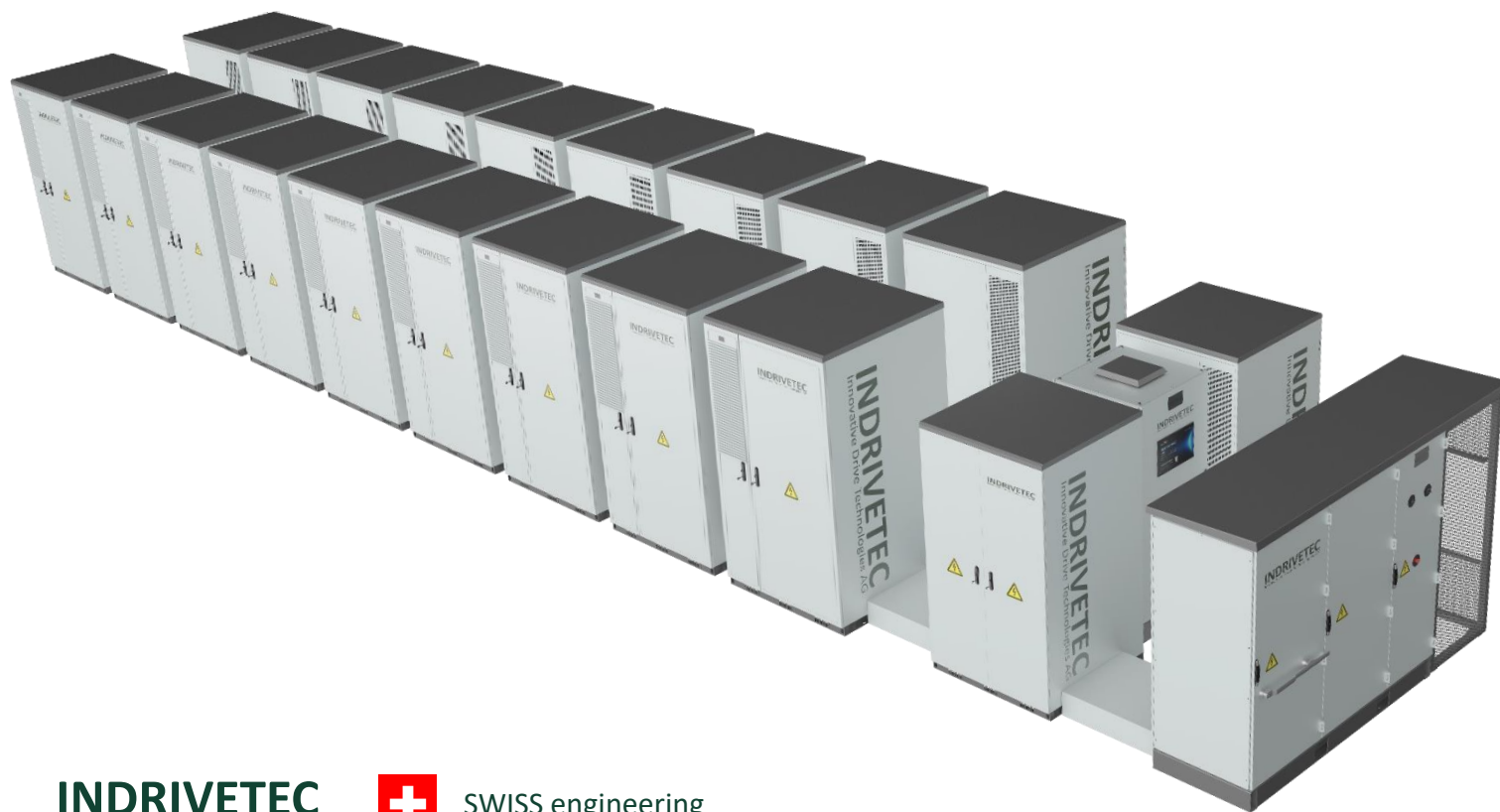
FlexConvert-BESS-Triple

PCS-Outdoor + Battery Rack Outdoor + Outdoor EMS



FlexConvert-BESS-Triple

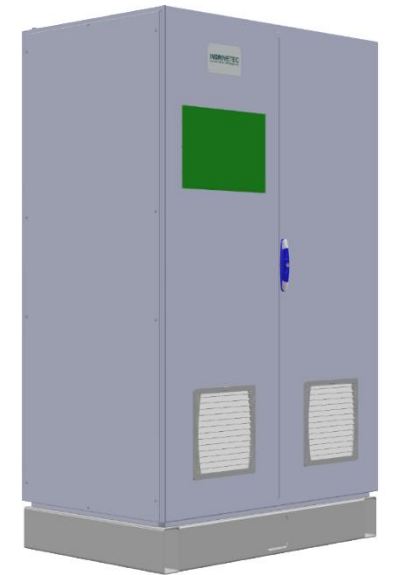
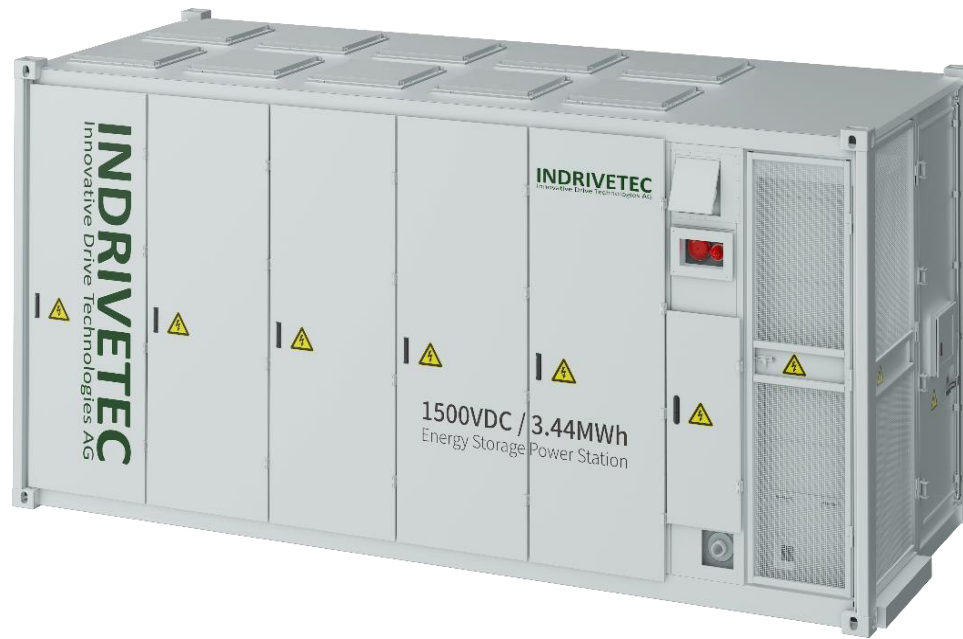
PCS-Outdoor + Battery Rack Outdoor + Outdoor EMS



example FC-BESS-Triple configurations at cos phi: 0.9
1300 kW – 2980 kWh
1950 kW – 4470 kWh
2600 kW – 5960 kWh
3250 kW – 7450 kWh
3900 kW – 8940 kWh

FlexConvert-BESS-Triple-CON

PCS-1500 + 3.4 / 5.1 MWh CON + Outdoor EMS



FlexConvert-BESS-Triple-CON

PCS-1500 + 3.4 / 5.1 MWh CON + Outdoor EMS



example FC-BESS-Triple-CON configurations at cos phi: 0.9

1300 kW – 3440 kWh

3250 kW – 6880 kWh

2600 kW – 10320 kWh

3250 kW – 13760 kWh

3900 kW – 13760 kWh

3900 kW – 15045 kWh

3900 kW – 20060 kWh

FlexConvert-BESS-Dual NAS[®] Battery container energy storage

Energy storage system solution for **NAS[®] Battery container**
PCSU container, PCS-Outdoor, EMS, Transformer and Control

FC-PCSU-250 20 ft. Container, for 275 kVA – 1450 kWh NAS[®] Battery

FC-PCSU-500 20 ft. Container, for 550 KVA – 2900 kWh NAS[®] Battery

FC-PCSU-750 20 ft. Container, for 825 kVA – 4350 kWh NAS[®] Battery

FC-PCSU-1000 20 ft. Container, for 1100 kW – 5800 kWh NAS[®] Battery

FC2000-Outdoor for 2000 kVA – 11600 kWh NAS[®] Battery

FlexConvert-BESS-Dual

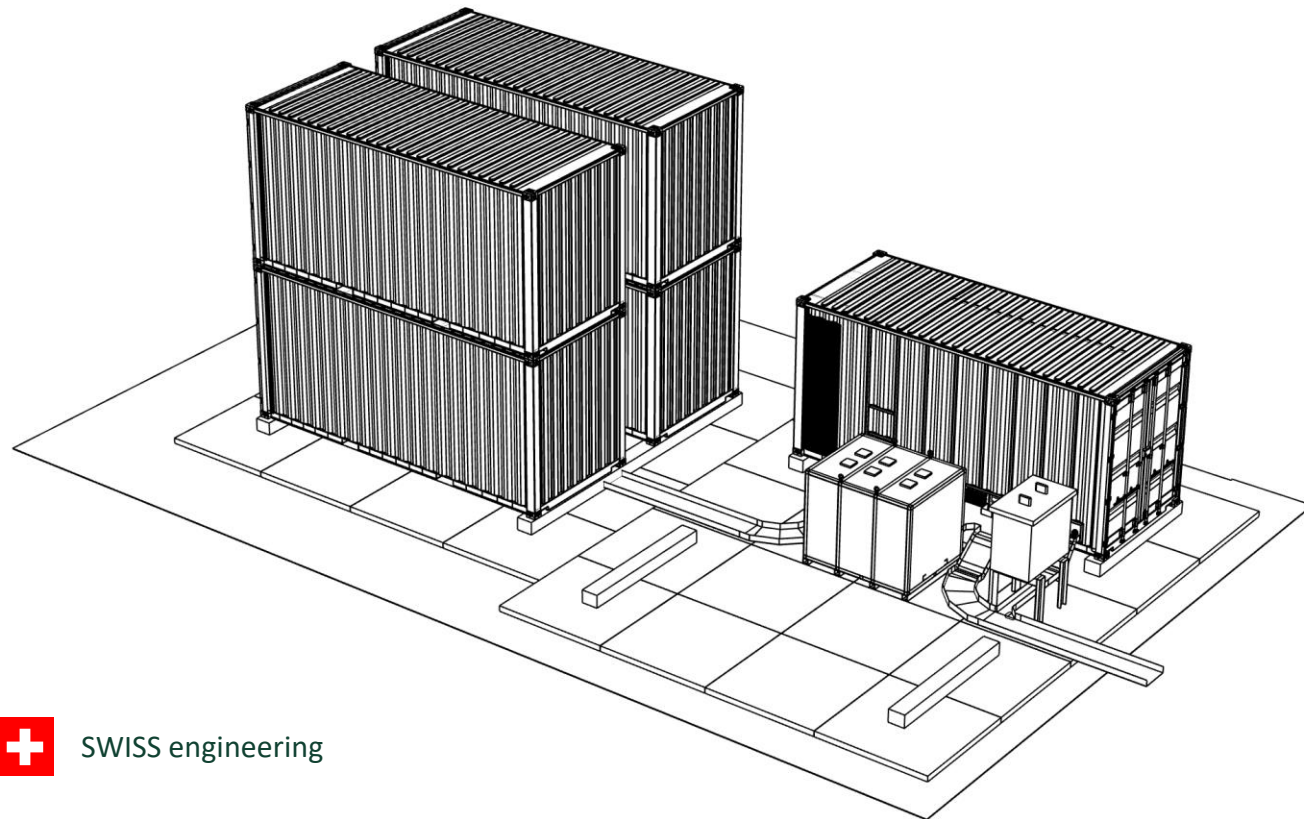
NAS[®] Battery container energy storage



DC-Connection	250 kW System	500 kW System	750 kW System	1000 kW System
Max. discharge power	250 kW	500 kW	750 kW	1000 kW
Max. charge power	250 kW	500 kW	750 kW	1000 kW
Dischargeable Energy	1450 kWh	2900 kWh	4350 kWh	5800 kWh
DC voltage range	139 - 228 VDC	278 - 456 VDC	416 - 684 VDC	556 - 912 VDC
Max. charging current	1200 A			
Max. discharging current	1500 A			
Battery life	20 years, 7300 equivalent cycles * with DOD 100 %			
General data				
Container size	ISO 20ft. Container			
Numbers of Containers	1	2	3	4
Weight	21 t	42 t	63 t	84 t
Operation temperature	-20... +45°C (extended range upon request)			

FlexConvert-BESS-Dual NAS[®] Battery container energy storage

FC-PCSU-1000 + 5800 kWh NAS[®] Battery + EMS



FlexConvert-BESS-Dual SMC Batterie container energy storage

Energy storage system solution for **SMC Battery container**
PCSU container, PCS-Outdoor, EMS, Transformer and Control

FC320 for 150 kVA – 540 kWh and 200 kVA – 720 kWh SMC Battery

FC500 for 400 KVA – 1400 kWh SMC Battery

FC750 for 600 kVA – 2160 SMC Battery

FC1000 for 800 kVA – 2800 kWh SMC Battery

FlexConvert-BESS-Dual SMC Batterie container energy storage



DC-Connection	Multi-container solution		
Cell Chemistry	SMC (Sodium-Metal-Chloride)		
Power	up to 400 kVA	up to 565 kVA	up to 800 kVA
Rated energy	1400 kWh	2160 kWh	2800 kWh
Nominal DC-voltage	620 VDC		
DC-voltage	520 — 700 VDC		
Communication	CAN Open between the BMS and the ST523 Gateway		
Battery performance	90% (at 6.25 kW per module Discharge/Charge power; 80% DOD)		
Battery container	20' high cube	40' high cube	2 x 20' high cube
FlexConvert	FC500	FC750	FC1000

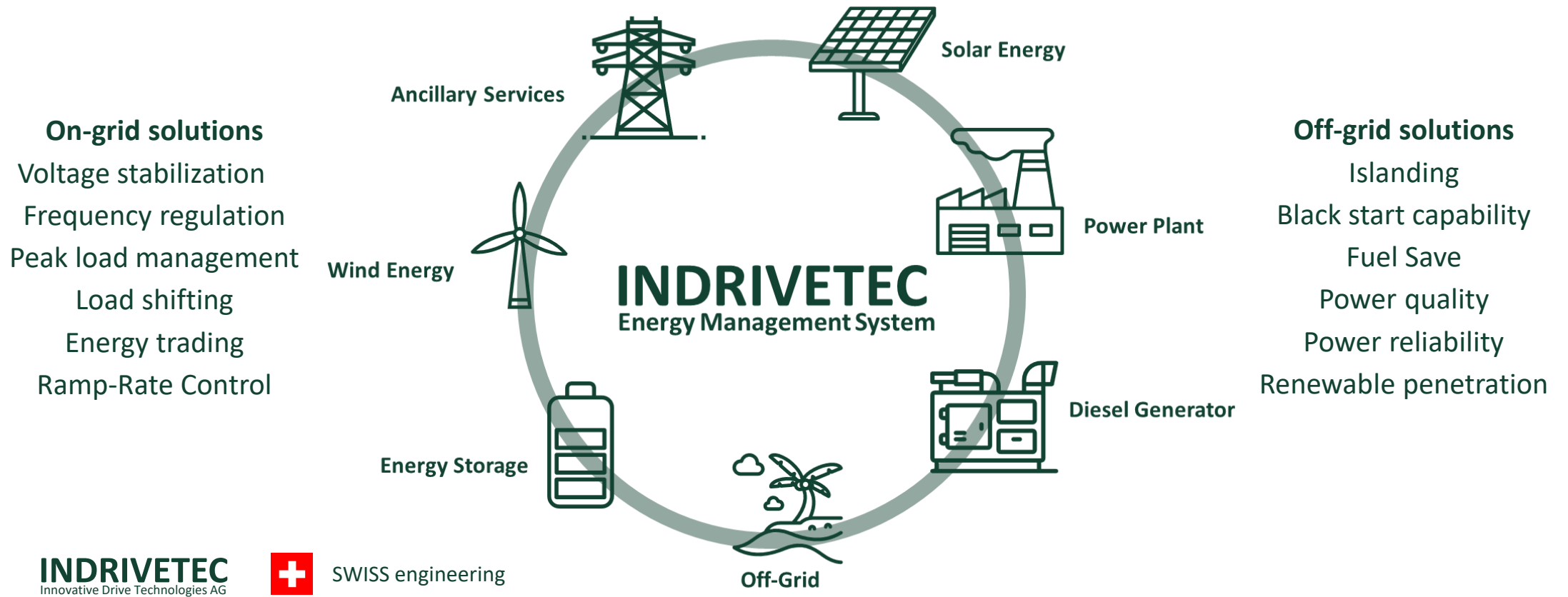
PCS-Battery-combinations

Sodium Sulfur

Sodium Nickel

	275 kVA 1450 kWh	550 kVA 2900 kWh	825 kVA 4350 kWh	1100 kVA 5800 kWh	2000 kVA 11600 kWh
FC-PCSU-250	up to c-rate 0.17	-	-	-	-
FC-PCSU-500	-	up to c-rate 0.17	-	-	-
FC-PCSU-750	-	-	up to c-rate 0.17	-	-
FC-PCSU-1000	-	-	-	up to c-rate 0.17	-
FC1500-Outdoor	-	up to c-rate 0.17	up to c-rate 0.17	up to c-rate 0.17	-
FC2000-Outdoor	-	-	-	-	up to c-rate 0.17
	150 kVA 540 kWh	200 kVA 720 kWh	400 kVA 1400 kWh	600 kVA 2160 kWh	800 kVA 2800 kWh
FC320	up to c-rate 0.27	up to c-rate 0.27	-	-	-
F500	-	-	up to c-rate 0.28	-	-
FC500-Outdoor	-	-	up to c-rate 0.28	-	-
FC750	-	-	-	up to c-rate 0.25	-
FC1000	-	-	-	-	up to c-rate 0.28
FC1000-Outdoor	-	-	-	-	up to c-rate 0.28

IDT-Energy Management System



IDT-Energy Management System

Start Page
P Control
Q Control
Events
BMS
EMS
PCSU
Scholt

INDRIVETEC
Innovative Drive Technologies AG

P Control	Q Control	EMS	PCC
Setpoint: -200.0 kW	Mode: Q	P cap dis: 380.0 kW	P: -200.0 kW
SOC min: 0.0 %	Resulting SP: 0.0 kVAr	Q cap exp: 380.0 kVAr	Q: -0.1 kVAr
SOC max: 100.0 %	State: ON	P cap chg: -380.0 kW	S: 200.0 kVA
FCR: OFF			f: 50.032 Hz
Source: HMI			PF: 1.000
		RUNNING	U L1-L2: 407.8 V
		NO ERROR NO WARNING	I L1: 280.8 A
			U L2-L3: 410.8 V
			I L2: 281.5 A
			U L3-L1: 411.1 V
			I L3: 282.9 A

Grid Meter

P	94.8 kW
Q	-44.9 kVAr

SUPPLY TO GRID

PCSU

P setpoint	-200.8 kW
Q setpoint	11.7 kVAr

P measured	-200.5 kW
Q measured	11.5 kVAr
Voltage	531.6 V
Current	218.1 A
Frequency	50.03 Hz

RUN_PQ

NO WARNING **NO LIMITATION**

Batteries

SOC	5.2 %
Current	-189 A
Pmax chg	-552.9 kW
Pmax dis	552.9 kW
Temp avg	25.5 °C

BATTERY CHARGING

NO ERROR

NO WARNING

CHG&DIS ALLOWED

NO LIMITATION

PV + Load	PCC	AC Grid	DC Battery
P: 294.8 kW	P: -200.0 kW	P measured: -200.5 kW	Voltage: 1040.8 V
Q: -44.9 kVAr	Q: -0.1 kVAr	Q measured: 11.5 kVAr	Current: -187.3 A
	U: 410.0 V	Voltage: 531.6 V	Power: -194.9 kW
	I: 281.6 A	Current: 218.1 A	
	f: 50.032 Hz	Frequency: 50.03 Hz	
SUPPLYING	CONSUMING	RUN_PQ	
		NO WARNING NO LIMITATION	

Batteries	Status
SOC: 5.2 %	BMS: ●
I: -189 A	PCSU: ●
U: 1036.7 V	EMS: ●

P Control	Q Control
SP: -200.0 kW	SP: 0.0 kVAr
Source: HMI	Mode: Q

Limitation: Battery Grid

State: ON RUN

Fault Reset

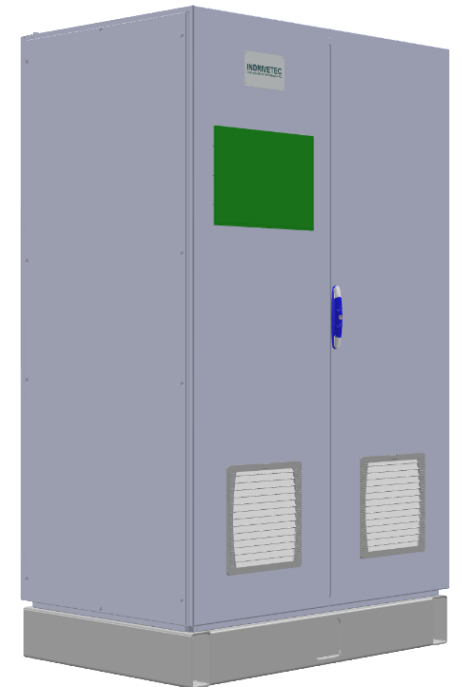
Control Token

Available: ● Received: ●

Request

Release

2022-08-12 11:42:05 IDT EMS V1.10a



IDT-Energy Management System

IDT Power Plant Controller

Power Supply with UPS Option

Robust Industrial Controller

Fire and Intrusion detection

HVAC control

Flexible I/O Configuration

Safe IT setup for Critical Infrastructure

Optional Enclosure with Transparent
or Stainless Door



Trading interface

Customer Interface

Service Interface

Certified Power Plant Controller

Multiple Unit Controllers

Highspeed Interface to IDT Grid Measurement
Box and IDT Power Unit Controller

ISO 9001 manufacturing plant



switch cabinet construction

container assembly and wiring

test infrastructure

INDRIVETEC
Innovative Drive Technologies AG



SWISS engineering

 **electroinvent**



Bulgarian production

logistics sector



training



maintenance



service program

monitoring



inspection



support



repairs





training program

Level 1 – “basic knowledge”, safety functions of PCS, coolant system, visual checks and low-level maintenance

Level 2 - “authorized service partner”, cold commissioning, hot commissioning, alarm handling, high-level maintenance, troubleshooting with IDT support hotline

PCS references



FC-BESS references



FC-BESS references

