

INDRIVETEC
Innovative Drive Technologies AG

INDRIVETEC AG

"bricks up" flexible energy storage systems

25 Years experience in power electronics

515 Megawatt worldwide experience and installations

95 Members in Switzerland, Bulgaria and Germany

218 Projects confirms the international standards for quality



INDRIVETEC AG

WELL-ESTABLISHED SYSTEMS

FlexConvert-PCS

Battery Inverter in-/outdoor

FlexConvert-BESS-Single

One container energy storage system

FlexConvert-BESS-Dual

Two container energy storage system

FlexConvert-SCES

SuperCap Energy Storage Systems

FlexConvert-PCS

Battery Inverter in-/outdoor

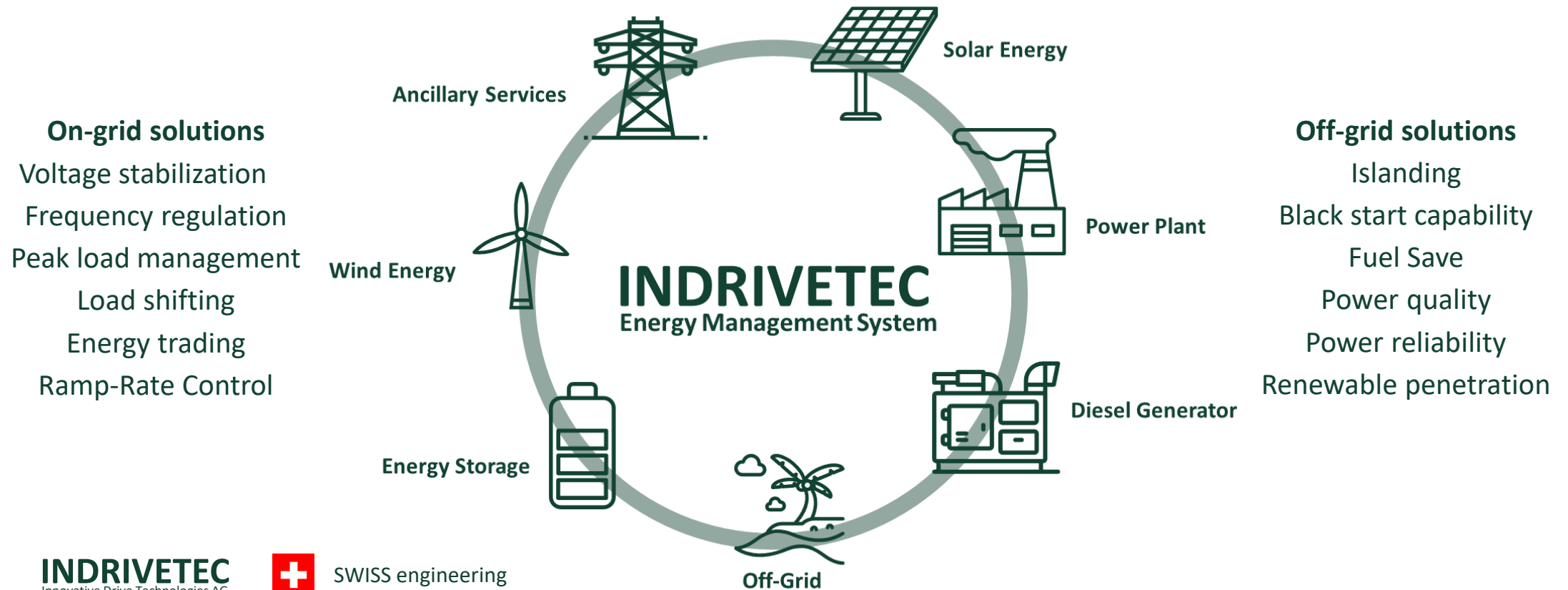
Power capability table

Nom. AC voltage VAC	Min. DC voltage VDC	Max. DC voltage VDC	Rated active power at cos phi: 0,9						
			FC250	FC320	FC500	FC750	FC1000	FC1500	FC2000
180	300	1100	100	120	200	300	400	600	800
330	540	1100	175	220	350	525	700	1050	1400
400	650	1100	200	270	450	675	900	1350	1800
480	780	1100	250	320	500	750	1000	1500	2000
600	980	1100	300	400	650	950	1300	1950	2600
690	1100	1100	350	460	750	1075	1500	2250	3000

FlexConvert-BESS Battery Rack

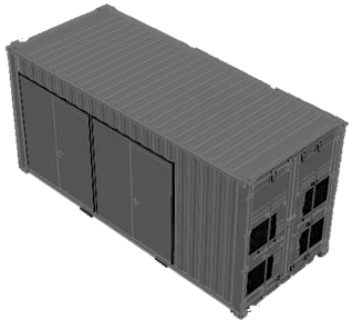
Battery System Parameter	150 kWh LFP Standard Rack	
Nominal capacity	150 Ah	
C-rate	1 C	0.5 C
Series and parallel	1P312S	
Battery performance	4000 cycles 90%DoD	6000 cycles 90%DoD
Nominal voltage	998.4 VDC	
Work voltage range	873.6 VDC – 1092 VDC	
Nominal energy	149.76 kWh	
Rated charging / discharge current	150 A	75 A
Maximum charge / discharge current	160 A	80 A
Dimension D x W x H	835 x 930 x 2057 mm	
Weight	1.6 tons	

IDT-Energy Management System



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-1000 20 ft. Container, up to 8 x 150 kWh racks and
one Inverter FC250, FC320, FC500, FC750 or FC1000

FC-BESS-2000 40 ft. Container, up to 16 x 150 kWh racks and
one Inverter FC320, FC500, FC750, FC1000, FC1500 or FC2000

FlexConvert BESS-Single

FC-BESS-1000 Single Configuration

FC-BESS-1000 configurations at cos phi: 0,9			
250 kW – 300 kWh	250 kW – 600 kWh	250 kW – 900 kWh	250 kW – 1200 kWh
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 – 1050 kWh	1000 kW – 1200 kWh
			1200 kW – 1200 kWh
Battery performance	6000 cycles 90%DoD, 0.5C and 4000 cycles 90%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	-25... +50°C (extended range upon request)		

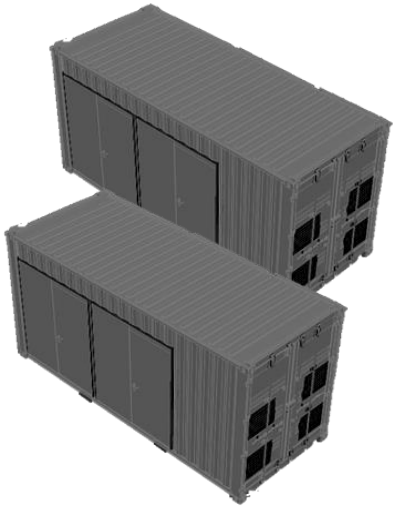
FlexConvert BESS-Single

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 – 2100 kWh	2250 kW – 2400 kWh
Battery performance	6000 cycles 90%DoD, 0.5C and 4000 cycles 90%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	-25... +50°C (extended range upon request)		

FlexConvert BESS-Dual

Two container energy storage system



Two container energy storage system solution including:
PCSU container, battery container, HVAC, EMS and Control
FC-PCSU + IDT BESS or NAS[®] Battery

FC-PCSU-1260 20 ft. Container, up to 1150 kW, EMS and Control

FC-PCSU-2500 20 ft. Container, up to 2250 kW, EMS and Control

FC-PCSU-6300 40 ft. Container, up to 5675 kW, EMS and Control

Battery container IDT BESS-1200, IDT BESS-3000 or NAS[®] Battery

FlexConvert-SCES

SuperCap Energy Storage Systems

DC connection	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 nominal voltage range	900 VDC – 1100 VDC		
Minimum DC voltage	500 VDC		
Electrical isolation	no		
Useable energy	2,5 MJ	5 MJ	7,5 MJ
Dimensions (W x D x H)	1600 x 1000 x 2500 mm	2600 x 1000 x 2500 mm	3600 x 1000 x 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 according EN60529	IP40 indoor		
Cooling	air-cooled		
Standards	EN61000-62, EN61000-6-4, EN62477-1, IEC62103		
FlexConvert for AC-connection	FC500	FC1000	FC1500



INDRIVETEC AG

INNOVATIONS 2022 - 2023

FlexConvert-PCS-ISC

Battery inverter with inertia and short circuit control

FlexConvert-BESS-PPS

Power Protection System (UPS) with integrated ESS

FlexConvert-PCS-1500

Battery inverter with 1500 VDC

FlexConvert-DC-PV-1500

DC-DC Converter with 1500 VDC MPPT

FlexConvert-PCS-ISC

Inertia and Short Circuit control

Inertia control: provides stability against dynamic losses of load and generation. Acts faster than Enhanced Frequency Response.

Short circuit power control: Enables protection devices in the grid to operate as designed in the case of a grid fault. Protects the unaffected portions of the grid ("selectivity")

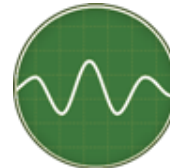
FlexConvert-BESS-PPS Power Protection System (UPS)

FlexConvert BESS-PPS corrects all nine IEEE defined power problems

Power Failure



Power Surge



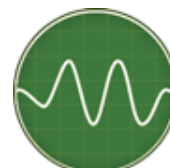
Power Sag



Under Voltage



Over Voltage



Electrical Line Noise



Frequency Variation



Switching Transient



Harmonic Distortion



FlexConvert-BESS-PPS

Power Protection System (UPS)

Output	FC-PCS-580	FC-PCS-1160	FC-PCS-1740	FC-PCS-2320
Rated Power	580 kVA	1160 kVA	1740 kVA	2320 kVA
Rated apparent power	464 kW	928 kW	1392 kW	1856 kW
Maximum current	700 A	1400 A	2100 A	2800 A
Rated voltage	480 V			
Frequency	50 Hz / 60 Hz			
Power factor	0.8			
Input				
Rated voltage	480 V			
Frequency	50 Hz / 60 Hz			
Power factor	0.99			

FlexConvert-PCS-1500

Battery inverter with 1500 VDC

Power capability table

			Rated active power at cos phi: 0,9			
Nom. AC voltage VAC	Min. DC voltage VDC	Max. DC voltage VDC	FC720-ML	FC1440-ML	FC2160-ML	FC2880-ML
600	975	1500	575 kW	1150 kW	1725 kW	2300 kW
630	1025	1500	600 kW	1200 kW	1800 kW	2400 kW
660	1075	1500	630 kW	1260 kW	1890 kW	2520 kW
690	1120	1500	650 kW	1300 kW	1950 kW	2600 kW
750	1220	1500	720 kW	1440 kW	2160 kW	2880 kW
800	1300	1500	760 kW	1520 kW	2280 kW	3040 kW

FlexConvert-DC-PV-1500

DC-DC Converter with 1500 VDC MPPT

Input - PV	FC-DC500-PV	FC-DC1000-PV
Maximum PV Power	500 kWp @ 1000 VDC DC Bus	1000 kWp @ U > 1000 VDC
Maximum PV voltage	1500 VDC	1500 VDC
Maximum current	500 A	1000 A
Maximum efficiency	98,6 %	
MPP(T) voltage range	700 VDC – 1500 VDC	
Output – DC-Bus/ESS		
DC-Bus-voltage range	400 VDC – 1500 VDC	
General data		
Dimensions (L x W x H)	1200 x 800 x 2000 mm	1800 x 800 x 2000 mm
Weight	650 kg	1150 kg
Ambient temperature	-20... +45°C (extended range upon request)	

Production

ISO 9001 certified production in Bulgaria and Switzerland,
serial production for high volume orders

Prototype assembling, functional and type testing,
customer acceptance / FAT

Test Infrastructure

3 MW test bay for active power testing, 6 MVA test bay for reactive power testing

High voltage testing, heat chamber up to 60°, customized testing

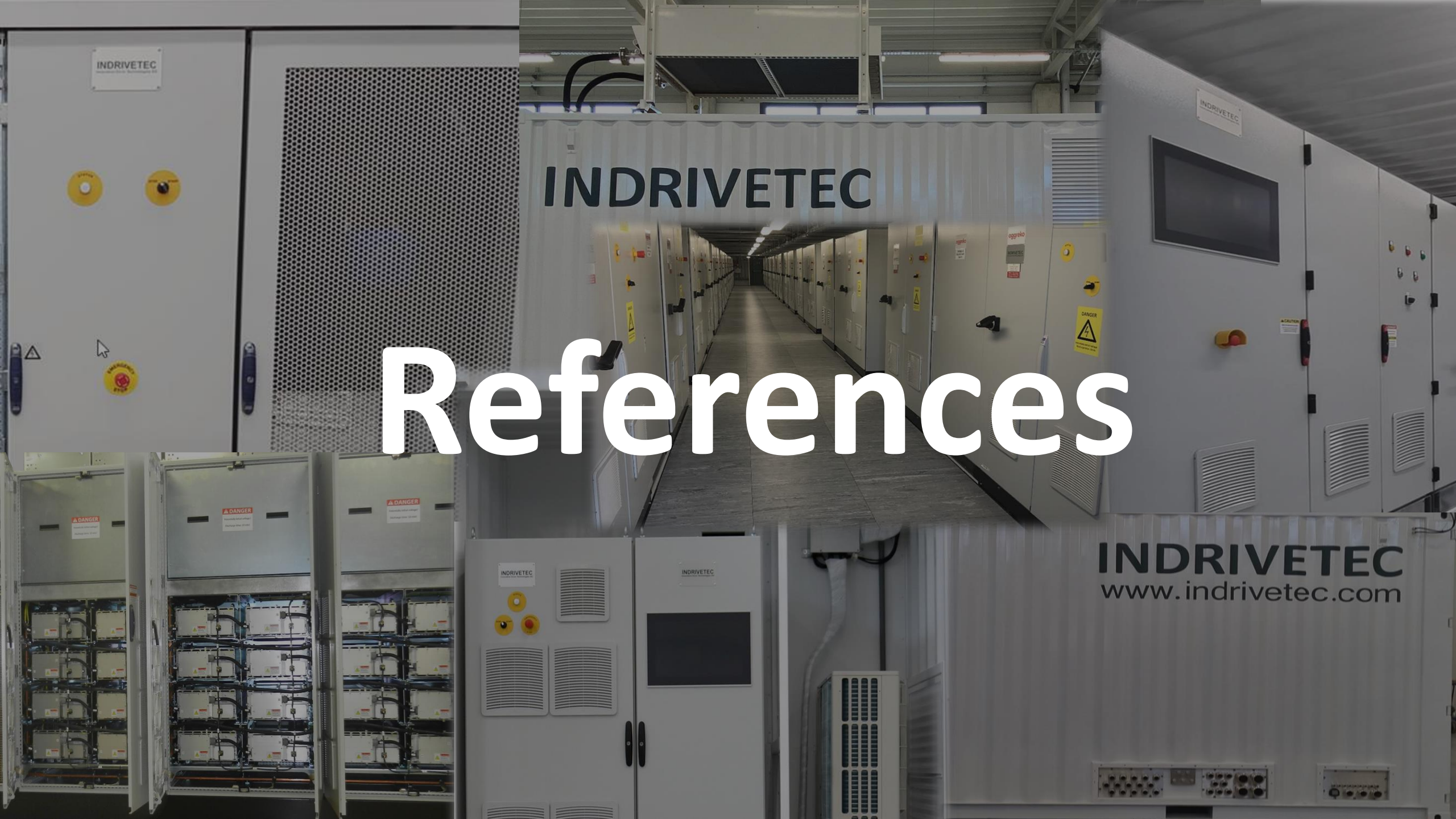
Service Program

Servicelevel	Basic Legal warranty	Basic + Extended warranty	Comfort	Premium
Inspection	-	inclusive	inclusive	inclusive
Maintenance	-	-	inclusive	inclusive
Spare parts	-	-	-	inclusive
Transport cost	-	-	-	-
Availability on site	in consultation	in consultation	< 168 hours	< 72 hours
24 / 7 Hotline	-	-	inclusive	inclusive
Yearly status report	-	-	inclusive	inclusive
Life-Cycle Management	-	-	-	inclusive

Training Program

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

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



INDRIVETEC

References

INDRIVETEC
www.indrivetec.com

WEMAG (DE)

15 MW

primary control reserve power plant
10 x Solo S and 8 x FC750 (battery inverter)



Rosecote (UK)

49 MW

primary battery storage facilities

63 x FC750 (battery inverter)

WEMAG WBS (DE)

23 MW

ancillary services and island operation

3 x FC750 (battery inverter)

3 x FC250 (battery inverter)

10 x FC2000 (battery inverter)

TWL (DE)

9 MW

controlled power plant battery + gas turbine

9 x FC1000 (battery inverter)

Tilos (GR)

800 kW

island operation PV + Wind + ESS

2 x FC750 (battery inverter)

Drogenbos (BE)

3 MW

frequency regulation service for batteries

12 x FC250 (battery inverter)

Peterhead (UK)

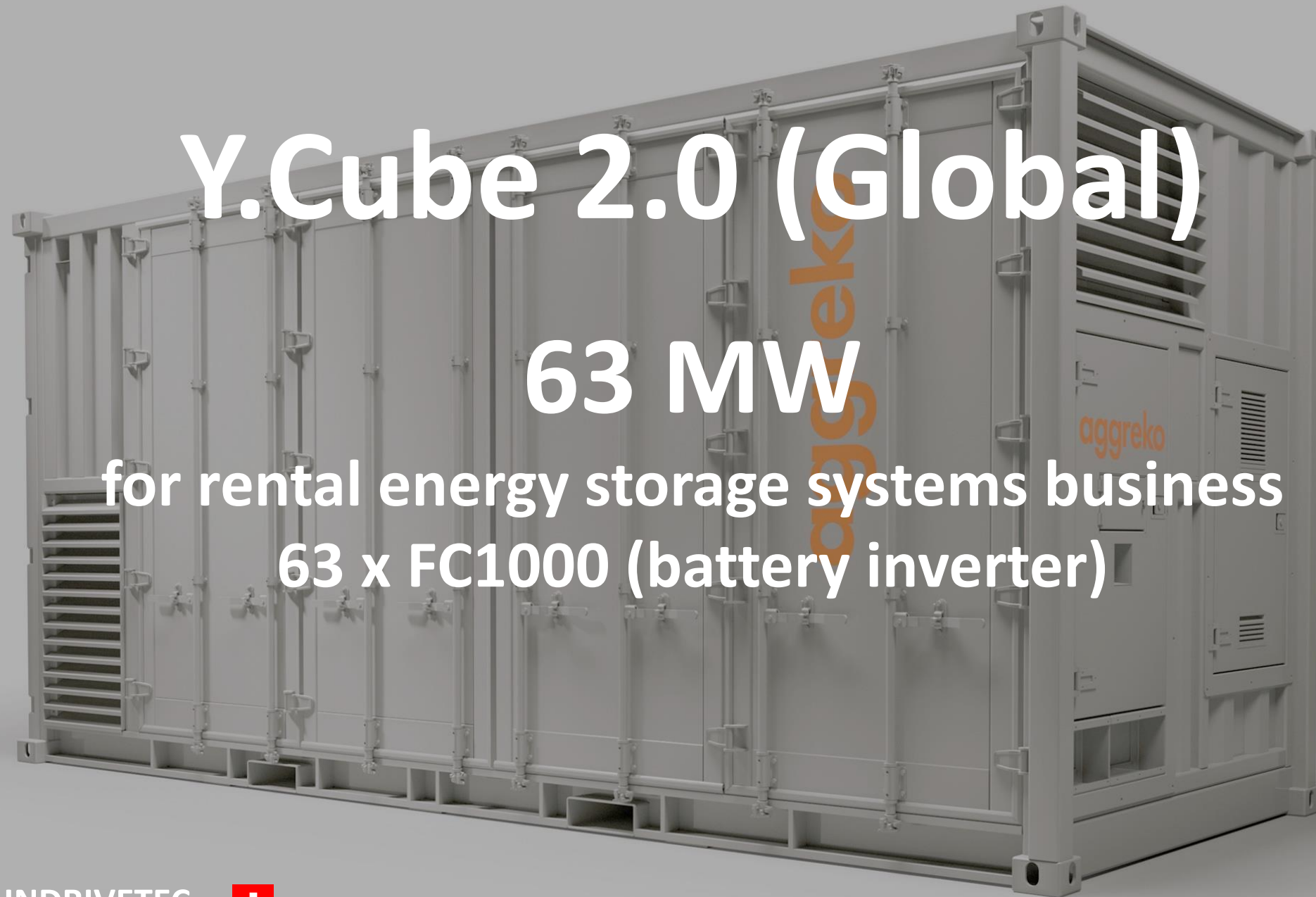
1000 kW

World's first battery for offshore wind
4 x FC250 (battery inverter)

Terna (IT)

2 x 1000 kW

part of Storage Lab, globally unique in terms of
the variety of energy storage
4 x Solo S (battery inverter)



Y.Cube 2.0 (Global)

63 MW

for rental energy storage systems business

63 x FC1000 (battery inverter)

FC-PCSU-2000 (CH)

INDRIVETEC

2 MW

to optimize the local use of the region's
abundant solar production

1 x FC2000 (battery inverter) + MV-transformer



FC320 (CH)

220 kW

reduction of the facility's electricity
consumption with saltbattery storage system

FC320 (battery inverter)

FC-PCSU-1000 (BE)

INDRIVETEC
www.indrivetec.com

950 kW

5.8 MWh NAS[®] battery storage system
long-term energy storage use cases

FC-BESS-1000 (NL)

2680 kW

frequency control reserve + energy trading
5 x FC-BESS-1000 with 5.89 MWh LFP battery
storage system