SMA Sunbelt Energy GmbH

Questionnaire Battery Energy Storage Systems (BESS)

With the information provided in this questionnaire, a complete design proposal including inverter configuration can be created. Budgetary Offers can only be prepared, if this questionnaire is filled properly Please send this questionnaire back to us (sunbelt@sma.de).

						Annotations
100	**GENERAL DATA**					
101	Project Name					**101 Project Name** Please find a descriptive name that clearly identifies this project (avoid e.g. "Battery project")
102	Customer					
103	E-Mail/Telephone					
104	Plant	☐ new plant	☐ refurbishment			
105	Project status	☐ lead	☐ bidding / tender	☐ contracted		
106	Financing	☐ secured	☐ open			
200	**LOCATION DATA**					
201	Country					**203 Latitude/Longitude/Altitude** e.g. 23°24' S, 46°65 W, 200 m AMSL
202	Nearest City/Location					
203	Latitude/Longitude/Altitude	° '	° '	m		
300	**APPLICATION DATA**					
301	Battery Location	☐ BESS Co-located with PV or other power plants				**302 Required Functions** PV smoothing: Controlled ramp down/up of PV powe Peak shaving: Balancing PV or load steps Frequency response: P(f) control Energy shifting: Stores excess PV energy for later use Reactive power management: Reactive power support or power factor compensation Grid Forming: creates its own grid w/o generator/grid Black Start: Restart of battery, inverter and related MV transformer (if applicable) after grid failure
		☐ BESS located in the grid (w/o other power sources)				
		☐ BESS installed behind the meter (Consumer side)				
302	Required Functions	☐ PV Smoothing	☐ Peak Shaving			
		☐ Frequency Response	☐ Grid Forming			
		☐ Energy Shifting	☐ Black Start			
		☐ Reactive Power Mgmnt	☐			**303 Inverter Operation Mode** Grid parallel – Battery inverter operates based on a utility grid or operating gensets (current source); Grid forming – Battery inverter actively forms and manages an islanded grid (voltage source)
303	Inverter Operation Mode	☐ Grid Parallel	☐ Grid Forming			
304	Operating Temperature		°C			
305	Design operating temperature		°C			
306	Humidity Level		%			
400	**LOAD PROFILE**					
401	Annual Energy Consumption		kWh			**402 Load** Active power available at transformer medium voltage side
402	Load (min & max)	Min	kW_{min}	Max	kW_{max}	**404 Average Load Power Factor** Indicate the average power factor of the load during one year
404	Average Load Power Factor					
405	Load Profile					**405 Load Profile** The load profile is an essential input for a reliable design proposal. **If available please provide a hourly load profile including possible seasonal variations**.
500	**BATTERY SYSTEM**					
501	Battery Type	☐ Not defined yet				**501 Battery Type** Voltage range – The battery voltage range at inverter input level
	Manufacturer					
	Cell Type /Rack Type					
	DC Voltage Range	-	V			
502	Battery Technology	☐ Li-Ion	☐ Others			
503	Required Battery Power		kVA			
504	Required Storage Capacity		kWh	☐ SMA Sunbelt to propose		
505	Battery Management	Model:				

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600	**PUBLIC GRID CONNECTION**				
601	Grid Connection Available	☐ Yes		☐ No	**605 Power Factor** at grid interconnection at the given full active power (e.g. 1 or 0,95)
602	Grid Feeding Permitted	☐ Yes		☐ No	
603	MV Connection required	☐ Yes		kV	**606 Max. Reactive Power** (e.g.cos φ = 0.8 or 1500kVAR) **Providing required operation envelop as PQ Diagram is the best**
604	Max. Feed-in Power		kVA	☐ no limitation	
605	Required power factor		cos φ		**607 allowable grid voltage deviation** E.g. ±5 % at full power E.g. ± 10 % with power reduction
606	Maximum reactive power		cos φ		
607	Allowable grid voltage deviation		V		
608	Nominal Frequency		Hz		
800	**GRID FORMING REQUIREMENTS (FILL OUT ONLY IF "GRID FORMING" IS REQUIRED)**				
801	Asymmetry of the load			% of the load	**801 Asymmetry of the load** Asymmetry in the load at the inverter side. Asymmetry at the load side can also be given. But then the transformer vector group shall be provided
802	Harmonics in the load			% of the load	**802 Harmonics in the load** If available provide I_THD in % of the load
803	Required Isc			A	**803 Required Isc on the MV Level** Isc on the MV level by the battery system. If a grid protection report is available, please supply!
700	**EXPECTED SCHEDULE**				
701	Date of Ordering	. .			
702	Planned Commissiong	. .			
703	Start of commercial Operation	. .			
800	**MISCELLANEOUS**				
801	Internet Connection Available	☐ Yes		☐ No	
802	Additional Comments				
900	**SCOPE DEFINITION FOR BUDGETARY OFFER**				
901	SMA SUNBELT Scope	☐ Engineering		☐ Batteries.	**101 SMA SUNBELT Scope** SMA Sunbelt can offer different services in their budgetary offer. Please indicate which services should be included in the budgetary offer. Further
		☐ Inverters		☐ Battery Containers	
		☐ MV – Transformer		☐ Commissioning support	
		☐ MV – Switchgear		☐ Preventive Maintenance	
		☐ .Power Management		☐	

Please attach a Single Line Diagram (SLD) of the electrical distribution. An SLD is the basis for a reliable bill of materials.