HESSEQUA MUNICIPALITY

HES-TECH 15/2526

SUPPLY, DELIVERY AND INSTALLATION OF AN INVERTER AND BATTERY PACK TO INTEGRATE WITH EXISTING SOLAR PANELS – CIVIC CENTRE IN RIVERSDALE

PART C3.1: DESCRIPTION OF WORKS

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C3.1.1 Overview of the Works

C3.1.1.1 **SCOPE OF WORKS:**

1. Project Overview

Hessequa Municipality seeks a turnkey solution for the supply, delivery, installation, and commissioning of a 50kW 3-phase hybrid inverter and a suitable lithium battery system. The system will replace the existing off-grid inverter at the Civic Centre and integrate with the existing 36kW solar PV array.

The solution must enable:

- Grid-tied operation with export of excess solar energy to the municipal grid.
- Reliable battery backup functionality during grid outages.
- Maximised self-consumption of generated solar energy.
- Compliance with all relevant municipal registration and NRS 097-2-1 requirements for embedded generation.

2. Scope of Contract

PHASE	DELIVERABLES
Engineering	- Design integration with existing PV strings (no reconfiguration) - Single Line Diagram (SLD), layout drawings, and earthing scheme - Grid connection and export interface design
Procurement	- 50kW 3-phase hybrid inverter (certified for grid feed-in) - Lithium battery system - AC/DC cabling, protection devices, racking, monitoring platform
Construction	- Removal of old inverter - Installation of the new hybrid system - Minimal power disruption during changeover

Compliance & registration	- Complete and submit all documentation required for municipal registration of the solar PV system as a Small-Scale Embedded Generator (SSEG) - Ensure full grid export capability in line with local utility rules
Commissioning	- System testing and validation - Prove ≤20ms switchover to battery on grid failure - Provide full performance report - Train municipal staff on system use and maintenance

3. Technical Specifications

3.1 Hybrid Inverter (50kW, 3-Phase)

No.	Technical Specification	Requirement	COMPLY	
			YES	NO
1.	Nominal AC Output Power	50 kW (Three-phase)		
2.	Maximum DC Input Power	≥ 65 kW		
3.	Number of MPPT Trackers	Minimum 3, preferred 4		
4.	MPPT Voltage Range	150 V to ≥ 850 V DC		
5.	Max DC Input Voltage	≥ 1,000 V DC		
6.	Max AC Output Current	≥ 80 A		
7.	Grid Support Features	Export limitation, phase balancing, grid-tie, off-grid & backup mode		
8.	System Efficiency (Euro)	≥ 97 %		
9.	Battery Compatibility	Compatible with high-voltage $LiFePO_4$/ Lithium-Ion battery banks (≥ 48 V nominal modules)		
10.	Communication Protocols	RS485, CAN, and Modbus; remote monitoring via Wi-Fi/Ethernet/LAN		
11.	Protection Features	Anti-islanding, overload, short-circuit, surge, over/under voltage, reverse polarity		
12.	Enclosure Protection Rating	≥ IP65		
13	Operating Temperature Range	−20 °C to +60 °C (with derating if applicable)		
14.	Certifications	CE, IEC/EN 62109-1/2, NRS097 or equivalent		
15.	Warranty	Minimum 5 years, extendable to 10 years		

3.2 Lithium Battery (50kWh Usable)

No.	Technical Specification	Requirement	COMPLY	
			YES	NO
1.	Battery Chemistry	Lithium Iron Phosphate ($LiFePO_4$) Lithium ion battery		
2.	Total Nominal Energy	> 50 kWh		
3.	Usable Energy (DoD ≥ 90 %)	≥ 45 kWh		
4.	Nominal Voltage	≥ 48 V per module; compatible with inverter's DC voltage range		
5.	Scalability	Stackable or parallel modules, min. 10 units if <6 kWh each		
6.	Depth of Discharge	≥ 90 %		
7.	Round-Trip Efficiency	≥ 95 %		
8.	Battery Management System (BMS)	Integrated BMS with protections; compatible with inverter CAN/RS485 protocols		
9.	Communication Interfaces	CAN and RS485 (Modbus optional)		
10.	Enclosure Protection	≥ IP55		
11.	Operating Temperature Range	0 °C to +55 °C (charge); −10 °C to +55 °C (discharge)		
12.	Certifications	UN38.3, IEC 62619, CE or equivalent		
13.	Warranty	Minimum 10 years or ≥ 6,000 cycles at 90 % DoD		

4. System Integration Requirements

System Integration Requirements				
No.	**Technical Specification**	**Requirement**	**COMPLY**	
			YES	**NO**
1.	PV Compatibility	Seamless integration with existing 36kW array, no alteration of existing string configuration		
2.	Grid Interaction	Bidirectional power flow (import/export) supported		
		Compliant with NRS 097-2-1 and SSEG feed-in requirements		
		Anti-islanding protection included		
3.	Municipal Registration	Bidder must handle full SSEG registration process with Hessequa Municipality		
		Include all necessary documentation, diagrams, and compliance reports		
4	Monitoring	Cloud-based dashboard		
		Real-time monitoring of solar production, energy import/export, battery SOC, and system status		

5. Project Timeline

Milestone	Timeline
• Equipment Delivery	≤ 6 weeks after purchase order
• Installation & Commissioning	≤ 2 weeks
• **Total Duration**	**≤ 8 weeks**

6. Conditions of Tender

1. Technical Submission:
   - Bidders must, in their response to this request for quotation, include the technical specifications of the products (details of the hybrid inverter, batteries, etc).

2. Compliance with Technical Specifications:
   - Bidders must comply fully with all requirements listed under the Technical Specifications and System Integration Requirements section. Failure to comply will render the bid non-responsive.

3. Project Completion Period:
   - The project must be completed within 8 weeks from the date of official order placement.

4. Compulsory Site Inspection:
   - Attendance of the compulsory site inspection is required for bid eligibility.

5. Installation address:

Civic Centre
Van den Berg Street
Riversdale
6670

6. COIDA Certificate
   - A valid COIDA certificate must be provided.

Failure to adhere to the beforementioned may result in your tender being declared non-responsive.

DECLARATION,

I, THE UNDERSIGNED (NAME) .....

CERTIFY THAT THE INFORMATION FURNISHED ABOVE IS CORRECT. I ACCEPT THAT THE MUNICIPALITY MAY ACT AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.

AUTHORISED SIGNATURE: .....

NAME: .....

CAPACITY: ..... DATE: .....