MALDIVES METEOROLOGICAL SERVICE (MMS)

Hulhule' Republic of Maldives

TERMS OF REFERENCE

SUPPLY, DELIVERY AND INSTALLATION OF A GENERATOR SET CONTROLLER TO MMS

[27th December 2018]

1) Introduction

Maldives Meteorological Services (MMS) has received assistance from Italian Ministry of Environment, Land and Sea towards strengthening Maldives' efforts to address the impacts of climate change and reduce climate vulnerabilities and associated impacts and risks. MMS intends to apply part of the proceeds to strengthen the capacity of MMS by implementing the project "supply, delivery and installation of a generator set controller to MMS"

2) Objective

The main objective of the assignment is to install a controller in the generator located in the radar station of the MMS, Hulhule. The main aim of this assignment is to ensure uninterrupted power service as the smart module will allow the technicians to monitor the status of the generator remotely.

3) Scope and Methodology

Based on the above explanations and objectives of the project, MMS seeks to engage competent consultant to;

a) Deliver a compatible controller for replacing the existing yanmar YH550DTLS-5F engine's controller which is CEM7.

b) Install the supplied controller and complete the project on a turnkey basis

4) Mandatory Documents and Requirements

a) Financial Proposal

   Form 1 – Proposal Submission Form

   Form 2 – Financial Break down

b) Form 3 – Work Schedule

c) GST Registration Certificate (If applicable)

d) Company Registration Certificate (If a proponent is a company or a firm)

5) Evaluation Criteria

5.1. Pre Evaluation

Pre Evaluation is a preliminary evaluation done based on the documentation requirement

before moving on to the Technical Evaluation. Pre Evaluation determines if bidder is substantially responsive to the terms of this ToR as specified below;

- Bidder conforms to all requirements identified under Section 4. Mandatory Documents and requirements.

Substantially non-responsive bids at this pre evaluation stage will be rejected from further stages of evaluation.

Substantially responsive bids at this pre evaluation stage shall be qualified for further evaluation (Technical Evaluation).

5.2. Technical Evaluation

Technical evaluation is to confirm if the proposed smart module does comply with all the requirements listed under the technical evaluation. Technically non responsive bids from this stage would not be qualified to the financial evaluation.

5.3. Final Evaluation

The proposal would be qualified to this stage after being assessed in pre evaluation and technical evaluation. In this evaluation, the proposals would be compared to their proposed price, duration and experience to complete the project. Point system set for the final evaluation is:

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#	Detail	Point
1	Pricing	85 %
2	Duration	05 %
3	Experience	10 %

Experience would be considered to all submitted letters which is addressed to relevant works completed within the past 5 years. Each valid letter would carry 2 points.

6) Payment Schedule

Payment

The method and conditions of payment to be made to the Supplier under this Contract shall be as follows:

(a) Advance Payment: Fifteen (15) percent of the Contract Price shall be paid on the request of the Supplier and subject to the Approval of the Ministry of Finance and Treasury of the Republic of Maldives.

The Payments succeeding the Advance Payment shall be paid after the deduction of the 15% against the Advance Payment and up to the total amount of the Advance Payment according to the to the Public Procurement Regulation (February 2017) of the Republic of Maldives.

#	Payment Description and Requirements	Allocation
	Delivery of the module – Contractor would be eligible to claim for this payment once the module is delivered to the site and the MMS technicians did the screening and approve if it's the proposed module accordingly to the requirements	30%
	Installation of the module – Contractor would be eligible to claim for this payment once the module is installed and completed the entire assignment on turnkey basis and the MMS technicians did the screening and approve if the entire scope has been completed accordingly to the requirements	90%

7) Technical Requirements:

Controller

The generator set controller shall be a microprocessor based control system that will provide automatic starting, system monitoring and protection. The controller system shall also provide local monitoring and remote monitoring. The control system shall be capable of PC based updating of all necessary parameters, firmware and software.

Controller buttons, display and components	The generator set controller shall include the following features and functions: • Push button Master Control buttons. The buttons shall be tactile-feel membrane with an indicator light to initiate the following functions: Run Mode: When in the run mode the generator set shall start as directed by the operator. Off/Reset Mode: When in the Off/Reset mode the generator set shall stop, the reset shall reset all faults, allowing for the restarting of the generator set after a shutdown. Auto Mode: When in Auto the mode the generator set shall be ready to accept a signal from a remote device. • Push Button/Rotary Selector dial. This dial shall be used for selection of all Menus and sub-menus. Rotating the dial moves you through the menus, pushing the dial selects the menu and function/features in that menu. Pushing the button selects the feature/function and sub-menus. Switches and buttons should have internationally accepted symbols and English text • Digital Display. The digital display shall be alphanumeric, with 2 lines of data and approximately 16 characters. The display shall have back lighting for ease of operator use in high and low light conditions. The display shall display status of all faults and warnings. The display shall also display any engine faults. While the generator set is running the display shall scroll all important information across the screen for ease of operator use. The scroll can be stopped by pushing the rotary dial. The display shall fall asleep when the generator set is not running and will wake-up when the generator set starts or the rotary dial/push button is depressed. • Fault Light. The controller shall have an annunciator fault light that glows red for faults and yellow for warnings. These faults and

	warnings shall be displayed in the digital display. The fault light will also glow yellow when not in AUTO. • Alarm Horn. The controller shall provide an alarm horn that sounds when any faults or warnings are present. The horn shall also sound when the controller is not in the AUTO mode. • Alarm Silence/Lamp Test Button. When this button is depressed it shall test all controller lamps. This button will also silence the alarm horn when the unit is not AUTO. • Dedicated user inputs. The controller shall have dedicated inputs for remote emergency stop switch, remote 2 wire star for transfer switch and auxiliary shutdown. • The controller shall have auto resettable circuit protection integral on the circuit board.
System Controller Monitoring and Status Features and Functions	The generator controller shall display and monitor the following engine and alternator functions and allow adjustments of certain parameters at the controller • Overview menu 1. Active shutdowns and warnings shall be displayed if present and without the need of operator interface. 2. Engine runtime with total hours 3. Average line to line voltage 4. Coolant temperature 5. Fuel level or pressure 6. Oil pressure 7. Battery voltage 8. Software version 9. Frequency 10. Average current • Engine metering menu 1. Engine speed 2. Oil pressure 3. Coolant temperature 4. Battery voltage • Generator metering menu 1. Total power in VA 2. Total power in W 3. Rated power % used 4. Voltage L-L and L-N for all phases 5. Current L1, L2, L3 6. Frequency

	• Generator set information 1. Generator set model number 2. Generator set serial number 3. Controller set number • Generator set run time 1. Engine run time total hours 2. Engine loaded total hours 3. Number of engine starts 4. Total energy in kW • Generator set calibration, the following are adjustable at the controller 1. Voltage L-L and L-N all phases 2. Current L1, L2, L3 3. Reset all calibrations • Voltage regulation, +/-0.5% regulation, the following is adjustable at the controller Voltage Adjustable +/- 10%
Generator Set Warning, Shutdown Alarm and Status	The generator set shall have alarms and status indication lamps that show non-automatic status and warning and shutdown conditions. The controller shall indicate with a warning lamp and or alarm and on the digital display screen any shutdown, warning or engine fault condition that exists in the generator set system. The following alarms and shutdowns shall exist as a minimum: Engine functions 1. Engine over speed (shutdown) 2. Engine under speed (shutdown) 3. High coolant temperature (alarm & shutdown) 4. High fuel level (alarm) 5. Low DC battery voltage (alarm) 6. Low coolant level (shutdown) 7. Low coolant temperature (alarm) 8. Low engine oil level (alarm & shutdown) 9. Low fuel level (alarm & shutdown) 10. Low oil pressure (alarm & shutdown) 11. Over crank (shutdown) Generator functions 1. AC sensing loss over & under current (alarm & shutdown) 2. Ground fault input (alarm) 3. kW overload (shutdown) 4. Over-frequency (shutdown) 5. Over AC voltage (shutdown) 6. Under-frequency (shutdown)

	7. Under AC voltage (shutdown) 8. Emergency stop (shutdown)
Generator Remote Monitoring and other devices	Remote Annunciator: Inputs and Outputs. The controller shall have relay outputs and digital and analog inputs standard on the board. Also provide additional inputs and outputs via remote board that connects to the genset controller and provides optional connections for customer devices

Remote Annunciator Panel.

The remote annunciator enable remote viewing of the generator status. The panel shall be connected to the generator controller via either network communication wires or via hard wired connections. Options shall be available to provide ATS source availability, contactor position, and loaded or unloaded test for transfer switches. The panel shall have the capability to be either flush- mounted or surface-mounted. The annunciator shall meet UL508 requirements.

The controller should provide a convenient means of remotely monitoring generator sets, transfer switches, sensors and output controls. Users should be able to access the remote monitoring device from any PC or Mac computer. Controller should be able to connect to internet via GSM/GPRS connection.

Users should be able to remotely:

- start and stop generator sets
- start and stop transfer switch tests
- Reset and acknowledge warning type faults on generator sets and transfer switches.
- Activate and deactivate output controls.

Notification: When an event becomes active, the user can choose to receive notifications via

- SMTP (email)
- SMS (text)
- SNMP traps

ANNEX 1: STANDARD FORMS

FORM -1: PROPOSAL SUBMISSION FORM

To: ……

Dear Sirs:

We, the undersigned, offer to "SUPPLY, DELIVERY AND INSTALLATION OF A GENERATOR SET CONTROLLER TO MMS" in accordance with your Term of Reference dated **……** and our Proposal. We are hereby submitting our Proposal; our financial offer is for the sum of **……** which is inclusive of the local taxes.

We hereby declare that all the information and statements made in this Proposal are true and accept that any misinterpretation contained in it may lead to our disqualification.

If negotiations are held during the period of validity of the Proposal, we undertake to negotiate on the basis of the proposed staff. Our Proposal is binding upon us and subject to the modifications resulting from Contract negotiations.

We undertake, if our Proposal is accepted, to initiate the services and fulfill the requirements of the terms of reference.

We understand you are not bound to accept any Proposal you receive.

We remain,

Yours sincerely,

Authorized Signature: …….....
Name and Title of Signatory: ……..
Name of Firm: …….....
Address: ……...

FORM-2: FINANCIAL BREAKDOWN

	Description	**MVR**
	Supply and delivery of the generator controller	
	Installation of the generator controller	
	GST	
	Total with GST:	

Indicate the total cost with detail cost to be paid in Maldivian Rufiyaa.

Note: The total contract price should be quoted inclusive of Goods and Services Tax (GST) as per the GST Legislation and Circulars.

FORM-3: WORK SCHEDULE

Task	**Proposed Duration (Days)**
Delivery of Proposed Equipment	
Installation of Equipment	
Testing and Commissioning of Equipment	
Duration for the entire Assignment	