



# **INFORMATION SHEET FOR PROCUREMENT OF 1600kW GENERATOR SET**

**Reference No.: FNK-I/IUL/2023/304**

Issued on 31<sup>st</sup> December 2023

Issued by:

Fenaka Corporation Limited

Male', Republic of Maldives

## Section I: Instruction to Bidders

A. General	
<b>1. Scope of Bid</b>	<p>1.1 Fenaka Corporation Limited requests quotations for 1600kW generator set in accordance with <i>Section III, Technical Specifications</i></p> <p>1.2 It is in Fenaka Corporation Limited's discretion to cancel the bid invitation mentioned in 1.1 at any time.</p>
<b>2. Eligible Participants</b>	<p>2.1 Local companies registered in Maldives are eligible to participate in the tender</p> <p>2.2 Foreign companies are eligible to participate in the tender only if the total bid value is above 2,500,000 Maldivian Rufiyaa.</p>
B. Preparation of the Bid	
<b>3. Bid Prices</b>	<p>3.1 The unit price of each item and the total price shall be clearly indicated in the quotation</p> <p>3.2 All items shall be quoted in the bid (please refer to <i>Section III, Technical Specifications</i> for the details of required items)</p> <p>3.3 Quotation shall separately indicate the additional charges such as freight charges and Insurance.</p> <p>3.4 The bidder shall submit quotation on CIF basis to Male' port</p>
<b>4. Currency</b>	4.1 The bidder shall quote entirely in Maldivian Rufiyaa
<b>5. Alternative Bids</b>	5.1 Bidders can submit a maximum of two (2) options
<b>6. Validity of Bids</b>	6.1 Quotation shall remain valid for minimum sixty (60) days from the date of bid opening
<b>7. Bid Security</b>	<p>7.1 All bids should be accompanied with a bid security of USD 3,000 (Three Thousand US Dollars) or its equivalent in Maldivian Rufiyaa</p> <p>7.2 The bid security should be:</p> <ul style="list-style-type: none"> <li>- Original bank guarantee letter (or)</li> <li>- Bank guaranteed and stamped check (or)</li> <li>- An insurance policy from Maldives Monetary Authority (MMA) registered insurance company</li> </ul> <p>7.3 Any bid not accompanied by a Bid Security shall be rejected during bid opening</p>

	7.4	The bid security must be valid for a minimum of twenty (20) additional days beyond the validity of quotation
<b>8. Technical Compliance</b>	8.1	All relevant information including the brand shall be given to enable technical evaluation of quoted items
	8.2	The documents required for technical evaluation are: <ul style="list-style-type: none"> <li>- Technical data sheets of engine and the alternator</li> <li>- Datasheets specifying cooling system rated at ambient temperature 50°C</li> <li>- Certificate of Authenticity specifying manufacturer/assembler is an OEM or a genuine reputed international engine brand</li> </ul>
	8.3	If the manufacturer or assembler is not the same as the bidder, a document indicating that manufacturer or assembler is willing to sell the generator set to the bidder is required
	8.4	Technical compliance letter will be required to enable technical evaluation
	8.5	If the goods do not comply with the requirements mentioned in <i>Section III, Technical Specifications</i> , the bid will be rejected during evaluation.
	8.6	Generator set should comply with our requirements, if not the bid will be rejected
<b>9. Documents Comprising the Bid</b>	9.1	Quotation (inclusive of the delivery period and payment terms)
	9.2	Specifications of the offered product
	9.3	Certificate of Authenticity specifying that manufacturer / assembler is an OEM of a genuine reputed international engine brand
	9.4	Details of the company <ul style="list-style-type: none"> <li>- Company profile/background</li> <li>- Company registration certificate</li> <li>- GST registration certificate (for local bidders only)</li> <li>- TAX clearance report (6 months validity)</li> <li>- Contact details (name, designation, mobile number and e-mail address)</li> </ul>
	9.5	Experience letters, if available <ul style="list-style-type: none"> <li>- Letters within past five (5) years</li> <li>- Relevant experience letters</li> <li>- Letters with project name and value</li> </ul>

	9.6 One (1) compact disc with original bid document scanned and written
	9.7 Bids lacking the documents above are subjected to be rejected during the bid opening
<b>10. Format of Bid</b>	10.1 The Bidder shall submit two (2) sets of the bid document (1 original and 1 copy), enclosed separately in two envelopes and sealed with company stamp 10.2 All pages of the bid document shall be stamped and bound properly (excluding the bid security)
<b>C. Bid Submission</b>	
<b>11. Sealing and Marking Bid Document</b>	11.1 The bid document shall be sealed properly in an envelope clearly marked 'ORIGINAL' or 'COPY', with the name of the company and the tender reference number (FNK-I/IUL/2023/304)
<b>12. Bid Opening</b>	12.1 The bids will be opened 14 <sup>th</sup> January 2024, 10:00am in the presence of bidders 12.2 Bids will be opened at: Fenaka Corporation Limited Hilaalee Magu, K. Male', Republic of Maldives 12.3 Bids received electronically will not be accepted
<b>13. Bid Rejection</b>	13.1 Bidders that arrive after bid submission deadline shall not be able to participate in the bid 13.2 Bidders that do not register for the tender are unable to participate in the bid opening 13.3 Bids lacking the documents mentioned in 9. <i>Documents Comprising the Bid</i> (except 9.5 <i>Experience letters</i> ) and that do not comply with 10. <i>Format of Bid</i> are subjected to be rejected
<b>D. Awarding of Contract</b>	
<b>14. Payment Terms</b>	14.1 An advance will not be released for this project 14.2 Proposed payment terms should not be tied with submission of Bill of Lading.
<b>15. Factory Acceptance Testing</b>	15.1 The generator(s) shall be fully tested at the manufacturer workshop in the presence of Client's appointees. 15.2 The testing shall be conducted at internationally accepted testing standards

- 15.3 Generator(s) should be tested to run at 25%, 50%, 75%, 100%, and 110% of rated load and power factor until the engine temperature stabilized for 30 minutes, and should check the protections below:
- Lub oil low level (alarm testing)
  - Lub oil low pressure (alarm testing)
  - Earth fault (alarm testing)
  - Over current (alarm testing)
  - High temperature (alarm testing)
  - Cooling system (alarm testing)
  - High voltage pressure (alarm testing)
  - All the functioning tests and routine tests should be done
- 15.4 All the protections should work properly, it should be examined for oil and coolant leaks, and it should be visually tested and secured
- 15.5 The remote radiator should operate continuously 100% in a 50-degree ambient temperature.
- It should be designed with vertical air discharge remote radiator with motor and fan
  - It should include all the generator connection pipes, accessories, joints and diagrams
  - The radiator should be developed remotely from the engine providing an added flexibility cooling system, and to be installed at the desired location
  - It should be designed with lower power consumption, and high efficiency aero foil designed fans are used
  - It must be designed with lower noise levels
  - The radiator core should be formed using high efficiency fin profile
  - The thickness of connection pipes must be in a range of 2mm to 4mm
- 15.6 Two (2) engineers from Fenaka Corporation Limited shall carry out necessary inspection and testing of equipment prior to shipment in supplier's warehouse to validate the items

	<p>15.7 The bidder shall arrange airfare, transportation, stipend (as per the Client's policy), accommodation and lodging for two of Client's engineers for the testing (minimum two days for testing)</p>
--	--

## Section II: Evaluation Criteria

**Proposal Cost:** 40 points for the lowest price

- $(\text{Lowest price} / \text{proposed price}) \times 40$

**Delivery:** 25 points for the lowest delivery period

- $(\text{Lowest delivery period} / \text{proposed delivery period}) \times 25$
- If the delivery period indicates 'ex-stock', it shall be taken same as the party offering the longest delivery period.

**Credit Period:** 30 points for the maximum credit periods

- $(\text{Proposed credit period} / \text{longest credit period}) \times 30$

**Experience:** 5 points for the experience.

**Note:** Any discrepancy in technical details specified in quotation with technical specification document, the specification shall prevail.

## Section III: Technical Specifications

Description	Quantity
Generator Set 1600KW	01

\*Please note that the below specifications are for one unit only.

Asim/ Ahmed This is amended from TSG  
26/12/23



### Generator Set 1600kW - Technical Requirement

1Nos x 1600kW / 2000kVA prime rated diesel generator set with parameters 0.8 P.F, 415kV, 3 Phase, 4 wires, 50 Hz at 1500 r.p.m conforming to following :

- The generator set shall consist of Engine coupled to Alternator (Dynamo) mounted on common base frame.
- The engine shall be of original Cummins and the Alternator must be Stamford Brand conforming to relevant international Standards.
- The Generator Set assembler must be authorized and licensed by Engine Manufacturer and must be certified to ISO 9001, 14001 and European Conformity (CE) Standards.
- The engine must produce a mechanical power output (kWm) which should meet the required electric power ( kWe) of 1600kW and must be coupled with a 1600kW Alternator with pre-installed Droop CT and a control connection box.(termination box to connect control cables and power cables)
- Generator arrangement and drive  
The simplex type of base plate, heavy duty rolled steel constructed, bolted, and electrically welded, drilled on the underside to allow the fitting of foundation bolts. The engine and the alternator are to be mounted on a base plate and vibration mounts to be mounted underside of the base plate. The vibration mounts are to be supplied as loose items.
- Finishing: After assembling the genset zinc coated self-etching primer should be applied to the complete set.

#### Engine to be complete with following auxilliary items:

- o Heavy electrical flywheel
- o SAE flywheel housing
- o Air filters, Lubricating Oil Filters, Fuel Filters and all other such filter required for operation of the engine
- o High engine temperature switch
- o lub oil sender
- o Water Temperature Sender
- o All necessary items to run and to protect the engine
- o Starting equipment fitted to engine, consisting of :
  - 24 Volt charging alternator (Brushless)
  - 24 Volt starting motor
  - Fuel Shut-off solenoid
  - Heavy duty maintenance free batteries
- o The engine to be fitted with a close tolerance Cummins Electronic Governing system, which should include etc, actuators, magnetic pickups, etc, including wiring.

#### Cooling Equipment /System

Cooling equipment comprising a heavy-duty tropical remote radiator, Air-cooled Fluid cooler type (ACFC), with fans driven by Electric Motors (ABB or equivalent).

The cooling equipment consisting of V type radiator with heavy-duty structure, suitable for tropical weather, and equipped with vertical air flow fans driven by electric motor with IP Standard IP55 or IP65 , 7.5HP (ABB or equivalent) with VCD.

Radiator must be designed to adequately cool the generator at an ambient temperature of 50°C.

The cooling circuit and pipeline should be designed for two separate circuits for jacket water and after cooler water of the engine. ACFC with Primary FCW-160(LT+HT) Secondary FCW-200 or equivalent that is designed and sized to adequately cool CUMMINS 1600kWm engine and meet the specs below:

Cores : Tin Coated  
 Motor controller : Automatic  
 Low Coolant Level Protection : Engine Shutdown  
 Air Flow : Vertical  
 Ambient Temperature : 50°C  
 Inlet Coolant Temperature : 90°C  
 Outlet Coolant Temperature : 84°C  
 Heat Rejection : 742 kW  
 Maximum Coolant Friction Head : 69 kPa  
 Maximum Static Head : 18.3m  
 Electric Motor : 3ph, 400V, 5.6kW  
 Motor Starter : Soft Starter  
 Motor Protection : IP 54  
 Insulation: Class F  
 No. of Fans: 3 Nos  
 Noise Level : 75dB (A) @ 7m  
 Overall Dimensions (L x W x H): 4660 x 2030 x 2495mm

All installation accessories must be British Standard and include seamless pipes, gauges, gate valves, flanges, bolts elbows and expansion tank.

Cooling water pipelines should be designed to install at 6meters distance from the engine.

- **Exhaust system:**  
450 mm of stainless steel below type flexible exhaust, together with suitable flanges and fittings shall be supplied for each silencer.
- **Alternator**  
The alternator shall be brushless revolving type alternator, having class H insulation on both the stator and field windings. It shall be built and rated to BS 5000, tropically impregnated with voltage regulation being in the order of +/- 1.5% from no load to full load under the steady state conditions assuming a speed variation not exceeding 4% on the engine. Anti-Condensation Coil to be fitted in the Alternator. The output voltage of the alternator should be 415V.  
Alternator coil shall be varnished with red oxide prior to assembly.
- **Fuel System**  
1 No x fuel day tank of 12-hour capacity complete with level indicator, drain plug, filler, fuel return with fuel outlet connections and a fuel filter fitted with outlet connection is to be mounted. These mounts are to be supplied as loose items. All necessary fittings to be supplied in conformity with fuel flow diagram.
- **Factory Testing**  
The generator set should be fully tested at the manufacturer factory/workshop in the presence of client/appointees to check the ratings, overload, functional tests on a dummy load prior to dispatch. The tests shall consist of:
  - a) Load as follows ensuring engine speed does NOT change more than 4% at all times
    - run the machine at 75% of full load for 30 minutes
    - run the machine at 100% of full load for 30 minutes
    - run the machine at 110% of full load for 15 minutes
  - b) The Supplier must arrange for all travel, food, accommodation and lodging for two staff of Fenaka Corporation for factory testing.



- **Literature and Drawings consisting of:**
  - o 1 No x Manual on How to handle the generation equipment
  - o 1 Nos x Electrical wiring diagram
  - o 1 No x Engine operation and maintenance manual
  - o 1 No x Engine parts catalogue
  - o 1 No x Generator parts catalogue
  - o 1 No x Generator operation and maintenance manual
  - o 1 No x Generator AVR manual
  - o 1 No x Governor control unit manual
  - o 1 No x Engine shop manual
  - o
- **Accessories**
  - o 2Nos x Primary silencer barrel (to match engine exhaust)
  - o 2Nos x Secondary silencer barrel (to match engine exhaust)
  - o 4Nos x 3meter Exhaust pipe with diameter ( to match engine exhaust)
  - o 6Nos x Elbows having dia (to match the engine exhaust)
  - o 8Nos x Flanges having dia (to match the engine exhaust)
  - o 1Lot x Bolts, Nuts and Washers for the Flanges. (Each set shall include 1 bolt, 2 washers, 1spring washer 2 Nuts)
  - o 1Lot x Split type rockwool insulation legging suitable for Exhaust pipes. The legging shall be covered with High Quality Aluminium foil.
- **Warranty**  
The Generator set should carry a warranty of one year.

#### Documents Required for Technical Evaluation

- Manufacturer's Technical Datasheet of engine
- Manufacturer's Technical Datasheet of Alternator
- Manufacturer's Technical Datasheet and drawing for the remote radiator
- Certificate of Authenticity specifying manufacturer /Assembler is an OEM of offered brand.
- ISO certification for ISO 9001 and ISO 14001 of generator manufacturer/assembler
- European Conformity (CE) Standard Certification