

Title: Supply, Installation, commissioning and comprehensive O&M of Natural Gas Microturbine for MGL Office, Mahape

Brief Background:

MGL has its administrative office building at Mahape. Electrical power to the office building is being fed by MSEDCL (erstwhile MSEB) through 22/0.433KV electric substation with MGL as a LT consumer.

MGL intends to install microturbine driven by natural gas as a fuel to power electrical load of MGL administration office building at Mahape. Heat generated from burning of gas can be used for centralised air conditioning system.

Proposed Scope:

Supplier scope includes complete engineering, manufacture, supply, inspection, testing, preparation for shipment for the Micro Turbine Generators along with the accessories including full compliance with all applicable design codes and standards. This shall include entire civil, electrical, mechanical or any other works required for safe, installation and commissioning and reliable operation of unit. Microturbine shall be capable of running at any load factor.

Further, Supplier scope also includes operations & maintenance of the microturbine setup for five years from the date of commissioning of unit at MGL site which also includes spares and consumables required. Supplier shall carry out all scheduled and unscheduled maintenances/breakdowns of the microturbine as per guidelines of original equipment manufacturer or any other work for safe and reliable operation of unit.

MGL will make natural gas available at 4barg (+/-0.5barg) at the inlet of turbine. It shall be responsibility of the service provider to use this gas as per requirement of turbine. Any change in pressure and other parameters shall be taken care by Supplier.

MGL in future may install microturbines at other administrative Buildings or CNG Station based on the techno-economic feasibility as alternative source of power generation. Supplier shall also provide the range of microturbine available with them.

Contract Duration:

Duration of Contract: 1year (supply, installation and commissioning of microturbine) + 5 years (comprehensive operations and maintenance of Microturbine for first 5 years from the date of commissioning) from Date of PO/LOI which includes spares and services.

Inputs from MGL:

1. Site address:

MGL Office
X/5-1 Mahape MIDC,
Post: Kopar Khairane
Navi Mumbai 400709

2. Electrical load: (starting: Direct On Line)

3 Phase Induction motor:	1X5.5kw	
	1X5.5kw	
	1X3.2kw (continuous running with multiple start/stops)	
	1X2.2kw (as and when required based on water level)	
	1X2.2kw	
Office building lighting & split AC units:		10kw
UPS (server & back up):	3X10KVA	
Fire Jockey Pump:	1X7.5kw	

3. Proposed capacity of Microturbine: ~60-65KW

4. Natural Gas (Typical composition as given below)

Gas components	Mole %
Methane	: 88 to 98 % v/v
Ethane	: 02 to 08 % V/V
Propane	: 1.21
Other higher Hydrocarbon	: < 2% V/V such as
Iso-Butane	: 0.05
N-Butane	: 0.06
Iso-Pentane	: 0.00
N-Pentane	: 0.00
Hexane	: 0.00
Nitrogen	: 0.33
Carbon Dioxide	: 0.02
Sulphur content	: < 5 ppm
Moisture dew point	: minus 15 °C
Average calorific value	: 8500kcal/m3 (NCV)

The gas is odorized by use of Mercaptan base.

5. Microturbine:

The MICROTURBINE's shall comply with the following general specifications:

- The MICROTURBINE units, together with all auxiliaries shall be completely packaged, tested and ready for operation upon installation at MGL site.
- MICROTURBINE package should be of compact design, and a source of clean energy (NOX emission should be less than 10ppm). The main sub- assemblies of the micro turbine, its fuel system and its integrated controller shall be packaged in a single enclosure.
- All rotating components shall be mounted on a single shaft.
- The generator shall be air cooled using air that is filtered before entering the MICROTURBINE.
- A power conversion system shall be provided to convert generator power to a clean voltage of 415 volts, 50 hertz and 3 wire/4 wires.

- f. Supply of Gas: MGL scope to supply natural gas at the inlet of microturbine. Available gas supply to Microturbine is 4 barg (minimum 3.5 barg)

6. Generator

- a. The generator output should be 415 volt, 3 phase 50 Hz, 3 lead
- b. The generator must run at the same speed as the Micro Turbine and be directly connected to avoid problems of alignment and gear box maintenance and lube oil etc.
- c. The generator shall be located inside the MICROTURBINE enclosure to provide protection from external environmental conditions.
- d. Any fittings or accessories or structures, which may not be specifically mentioned but which are usual and necessary are to be provided by the Supplier without any extra charge, for the project to be completed in all respects/details.

7. Regulations

All the equipment and materials including their installation shall conform to the following applicable latest codes and standards.

- a. Indian Electricity Rules 1956.
- b. The Indian Electricity Act 1910.
- c. Fire Insurance Regulations
- d. Regulations lay down by the Electrical Inspector of the Government of Maharashtra
- e. Regulations laid down by the Factory Inspector of the Government of Maharashtra
- f. Relevant Indian/International Standards Institution's specification
- g. Factory Acts
- h. Central/State Pollution Control Board and any other statutory requirements given by Govt. agencies time to time.
- i. Any other act/regulation/guideline applicable

8. Liaison with PWD Electrical Inspector office:

Contractor shall arrange for the inspection of turbine installation and necessary approvals and registration of the same with PWD electrical inspector. Any assistance required from MGL (as an owner of installation) shall be provided.

9. Deliverables:

- a. Supply of microturbine for aforesaid electrical load and electrical details
- b. Installation & commissioning of microturbine
- c. Installation of set up for use of exhaust gases for VAM machine on roof top (including connection and fabrication of exhaust piping)
- d. Integration of microturbine with existing electrical system of MGL office building
- e. Operation & maintenance of microturbine during contract period
- f. Any lifting/shifting/handling of unit for installation & commissioning

Interested parties for above may submit their **technical proposal without prices** in a sealed envelope with product specification and operation suitable for MGL's Requirement, along with Terms & Conditions of proposed business model. The envelope should be duly sealed and super scribed with subject as "**Expression of interest for Supply of Natural Gas based Microturbine**"

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