QUESTIONNAIRE FOR INDIGENOUS DEVELOPMENT OF 24-28 MW MARINE GT UNDER MAKE-I CATEGORY

Ser	Determinants	Firm's Remarks
Company Details		
1.	Name and registered office address	
2.	Factory/ Work address	
3.	Category of industry – Large scale/ SME/ MSME	
4.	Details of Supply Orders executed in last 03 yrs	
5.	Organisation structure and details of manpower held:- (a) Technical – Skilled and unskilled. (b) Administrative.	
6.	Past business details with *IN*	
Financial Status		
7.	Profit and Loss Account	
8.	Average Annual Turnover, in last 03 years	
9.	Present Net worth	
10.	Present source of finance and borrowing limit (Bank details)	
Technical Details		
11.	Competence in designing, manufacture and integration of Marine Gas Turbine including the control system.	
12.	R&D capability and facilities:- (a) Details of R&D infrastructure held (b) Details of technical manpower held for R&D efforts	
13.	In-house manufacturing facilities and infrastructure:- (a) Forging (b) Casting (c) Machining (d) Heat treatment (e) Metallurgy (f) CAD/ CAM (g) Robotics (h) Tools/ Metrology (facility and calibration accreditation)	

Ser	Determinants	Firm's Remarks
14.	In-house testing facilities available for testing and tuning of Marine Gas Turbine.	
15.	Capabilities to design and manufacture sub-assemblies and components:- (a) Broad list of sub-assemblies and components designed and manufactured in-house. (b) Broad list of sub-assemblies and components outsourced from Indian/ foreign manufacturer.	
16.	Details of IPR held	
17.	Details of IPR translated to field products	
18.	Quality Assurance:- (a) Organisation structure of QA and QC department. (b) Compliance to ISO 9001:2015 Quality Management system (Certificate to be enclosed) (c) Are the manufacturing/ assembly processes statistically quality controlled. (d) Are all Critical to Quality Processes (CTP) and parameters Critical to Quality (CTQ) identified. (e) Is the process Capability index (Cpx) measured and ensured more than 1.33.	
19.	Broad plan/ roadmap for design, development, manufacture and delivery of Marine Gas Turbine with associated Control and Monitoring system:- (a) Technologies to be acquired/ imported towards development of Marine Gas Turbine. (b) Envisaged indigenous content. (c) Capability of integrating the Marine Gas Turbine with alternator. (d) Mode of participation: Single/ JV. (e) In case of JV - List of joint partners. (f) Estimated time for completion of initial design.	
20.	Estimated timelines for prototype development with milestones	
21.	Estimated timelines for production of final product as per *IN* requirement, post successful prototype development	
22.	Details of standards to be followed for development, manufacture and testing of Marine Gas Turbine and its control system.	

Ser	Determinants	Firm's Remarks
23.	Envisaged indigenous content in the main Marine Gas Turbine and controls	
24.	Adequacy of infrastructure capabilities for Marine Gas Turbine production and spare manufacture to meet *IN* requirements:- (a) Requirement of setting up of new assembly line or augmenting/repurposing the existing assembly line. (b) Requirement of erecting a new test bed or augmenting/ repurposing the existing test bed.	
25.	Roadmap for providing onsite after-sales basis:- (a) Spares (indigenous and imported) (b) DI and repair services. (c) Capability to undertake AMC/ RRC/RC.	
26.	Costing:- (a) Cost of prototype development and their basis (approx. 600 hrs of trials run envisaged). (b) Cost of final product and their basis (type-testing subsequent to proving of prototype and shipboard trials required by Indian Navy). (c) Envisaged number of prototypes required.	
27.	Whether the firm is capable of developing a Reversible Marine Gas Turbine.	
28.	Previous experience of the vendor in development of systems operating under saline environment.	
29.	Whether the company or its board member have ever been blacklisted by GoI, State govt or any other organisations. Details be furnished in case the response to the query is 'yes'.	
30.	Any other details that the vendor like to put forwards to the feasibility study board	

DRAFT TECHNICAL REQUIREMENT OF 24-28 MW MARINE GAS TURBINE

1. Technical specifications of the 24-28 MW Marine Gas Turbine is as follows, however, the same are subjected to change at PSQR stage: -

Ser	Description	Value
1	Power rating continuous	24-28 MW 35°C
2	SFC as specified at full power	~160-180 gms/hp-hr
3	Compression ratio	~16 -18:1
4	Power Turbine/ HP Turbine	Multi-Stage
5	Type of construction/shaft configuration	Modular construction with single/twin spool pool and free power turbine
6	Dry weight	Will be specified at PSQR stage
7	Dimensions	Will be specified at PSQR stage
8	Type of control	VME-64 Based Integrated Controls
9	MTBO	~35000 hrs
10	Fuel	High Flash High Speed Diesel (IN 512)
11	Thermal Efficiency	~38-40%
12	Compressor type	Axial, multistage (variable stator vanes may be considered)

2. Environmental conditions are as follows:-

Ser	Condition	Value
1	Temperature (aa) Ambient Air (ab) Sea Water	 -40 °C to 40 °C -2 to 38 °C
2	Relative Humidity at 40°C	95%
3	Engine room air temperature	+0 °C to +55 °C
4	Salinity of Fresh Water used for cooling in primary circuit (as applicable)	Up to 1000 ppm
5	Salinity of Sea Water used for cooling in primary/ secondary circuit (as applicable)	≤ 37000 ppm

3. **Type Test.** The GT must be type tested to requirements stated in DEFSTAN 02-309 as amplified in DEFSTAN 02-362 and DME 303D and iaw DQAN/Policy/SG-I/2025/02 dated

27 Feb 25. *IN* and/or Third Party IACS accredited Inspection & Acceptance Agency for type-testing will be nominated by *IN*. GT is to be subjected to all applicable type tests in accordance with MoD/DGQA letter DQAN/Policy/SG-I/2025/02 dated 27 Feb 25. The electrical equipment is to undergo type testing as per table below:-

Ser	Test	Specification	Test Condition/ Severity
1	Vibration	JSS 55555 - Test 28	5 - 33 Hz
2	High Temperature	JSS 55555 - Test 17	55 deg C for 16 Hrs. Procedure 5, Test Condition 'G'
3	Damp heat	JSS 55555 - Test 10	40 deg C - 95 deg C RH for 16 Hrs
4	Drip proof	JSS 55555 - Test 11	Vertical Water drip 1 m height for 15 min
5	Mould growth	JSS 55555 - Test 21	29 ° C 90 % RH mould growth chamber for 28 days
6	Bump	JSS 55555 - Test 5	1000 bumps - 40 G, 6 m/sec
7	Shock / Impact	JSS 55555 - Test 24	As per laid down Specifications
8	Inclination/ Tilt	CL 0563 Sec 19	
9	EMI/EMC	MIL-STD 461 D	

Contact Details of Project Officer of 24-28 MW Marine Gas Turbine" under Make I scheme:

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Last date of response : **12 Dec 25.** (by hard copy to above address and soft copy, preferably to be in MS Word Format)