

**QUAD CHANNEL ROTARY ELECTRO MECHANICAL ACTUATOR
(QC REMA-3)**

Technology Brief

The Rotary Electro Mechanical Actuation System (QC REMA-3) being one of the key components of Aerospace vehicles a vital role in achieving the manoeuvring of the system. It is used to control pitch, yaw and roll by four front mounted control surfaces (FINS) operated by four individually controlled Rotary Electromechanical Actuators (QC REMA-3).

1. **Min Facility/ Capability required at the time of submission of EoI:** The participating firms shall meet following essential criterion:
 - a. The firm's turnover should be greater than Rs 48.5 Cr per annum for preceding consecutive three year period.
 - b. As an essential criterion, the firm should have demonstrated capability of development/fabrication & assembly of Avionics Systems (similar to Electro Mechanical Systems and Servo Controller qualified and delivered to Ministry of Defence / Defence Establishments / Public Sectors / Paramilitary Forces / any Government agencies. In addition, prior experience in development / fabrication of avionics systems with expertise in integration and handling should be possessed by the firm. (S.O copies for the delivery of similar systems should be provided with EoI)
 - c. Expertise in Avionics grade hardware development, testing the following features is essential-
 - (i) BLDC Motors
 - (ii) Servo Controller
 - (iii) Gears.
 - (iv) MIL grade/ IPC class-3 PCBs
 - (v) Multi-layer PCBs

For the above, Relevant Supply Order (SO) copies with technical specifications/ Scope of work & Inspection/ Acceptance Report (IR) copies (Minimum 1 SO & IR

and maximum 5 SO and IRs) and demonstration of such hardware. Systems/Sub-systems delivered on or after 01 January 2018 will only be considered.

d. The participating firms shall have in-house facilities for components / PCBs storage in controlled environments and facilities for environmental tests (Climatic and Dynamic test facilities).

- (i) Humidity Controlled Storage facility
- (ii) 10X Optical inspection system
- (iii) ESD Safe Manual Soldering and rework facility
- (iv) Controlled conformal coating facility
- (v) PCB cleaning facility
- (vi) ESD safe assembling and integration facility
- (vii) Test equipment such as multi-meters, oscilloscopes, isolation testers, Function Generators, Frequency Response Analyzer
- (viii) ESD safe Test bench for functional testing
- (ix) Load Test facility for REMA.

e. Previous and on-going experience of delivery of similar systems with clearance by Defence QA agencies like DGQA, MSQAA / R&QA, SSQAG, RCI, CQA etc. is essential.

f. It is essential that the participating firms shall have ISO 9001:2015 /AS 9100D certification.

2. Desirable in-house facilities for components / PCBs storage in controlled environments and facilities for environmental tests (Climatic and Dynamic test facilities).

- a. SMT line for complete automated reflow certified by any QA agencies.
- b. Climatic and Dynamic test facility with valid calibration certificates
- c. Inspection systems: 3D X-Ray, Automated Optical Inspection equipment.
Relevant proof to be furnished for above.
- d. Dynamometer for motor testing

3. The firm should allow DRDO Technical Team to visit and inspect the above facilities

4. The industry shall have experienced and skilled manpower for fabrication, inspection, debugging, testing and documentation of electro mechanical systems & electronics, established quality management system, willingness and capability to setup specialized infrastructure.

- a) Minimum Manpower requirement for Hardware development and testing
 - (i) Two Electronic Engineers B.E / B.Tech / M.Tech with domain expertise of testing and debugging
 - (ii) Two IPC certified Electronics/ Electrical Diploma / ITI persons.
 - (iii) One IPC certified QC Electronics Engineer B.E / B.Tech with domain expertise.
 - (iv) One QC Mechanical Engineers B.E / B.Tech with domain expertise.
 - (v) One Mechanical Diploma / ITI fitter for integration activity
- b) Expertise in Documentation: Preparation and maintaining records of each stage involved in the realization of the Systems with QC approval such as line card / log books
Relevant proof to be furnished for above.
- c) If firm has collaboration (MoU) with other firms for certain function/ facilities, assessment of firms with which there is an MoU will also be carried out . The MoU between the firms should be valid for the period of license for ToT, if awarded.

5. Technical Assessment Committee (TAC) may seek additional document from the industry and or may visit the industry to verify the claims made by the industry.

6. Technology Absorption (TA) Certificate: Once LAToT is signed by the industry, ToT holder industry is required to produce actuator system (Actuator and Controller) based on TTD received from DRDO and carry out functional demonstration to RCI to complete the Qualification and acceptance testing at their own cost and submit a compliance report. The cost of testing and hardware/ software will be borne by ToT holder industry. The ToT holder industry also should have established requisite infrastructure setup as required and indicated in EoI (DRDO team may visit for inspection of established facilities).

On completion of above task satisfactorily, a technology absorption certificate will be issued to the industry. The firm should take necessary steps to retain trained manpower for the execution of production orders.

Technology absorption certificate shall be obtained within a period of 3 years after receipt of LAToT, otherwise the LAToT may be revoked. TA certificate may be required to participate in tenders.

Contact details :

Industries seeking ToT should send their Expression of interest (EoI) to Director, RCI on the following address along with duly filled 'Application cum Industry Assessment Form' with all supporting documents via email.

Director,
Research Centre Imarat
DRDO Lab
Vignayankancha
Hyderabad – 500 069
Phone no: 040-24306000/6001
Fax No: 040-24306002
Email ID: director[dot]rci[at]gov[dot]in

A copy of 'Application cum Industry Assessment Form' to be forwarded to Director DIIQM, DRDO HQ on the following address for information via email:-

Director
Directorate of Industry Interface & Quality Management (DIIQM)
Room No. 447, DRDO Bhawan, DRDO HQrs,
Rajaji Marg, New Delhi-110011
Phone: 011-23013209/23015291
Fax: 011-23793008
Email: diitm[dot]hqr[at]gov[dot]in

Application cum Industry Assessment Form

All industries are requested to fill in the form given below and provide supporting documents (as applicable). Kindly provide the reference of page no. of supporting document in the relevant field of form. The list of documents to be attached is provided in Annexure – I.

PART-1

General Information

(Please fill the form and enclose documents in support of information provided)

1.	Name of the Technology requested for Technology Transfer (Technology name and concerned Lab, Category)		Page no of enclosure
2.	Name of the industry/ organization		
3.	Complete Address and other details		
	Registered Office State Phone No Fax Email Website		
	Factory State Phone No Fax Email Website		
4.	Point of Contact Name Designation Address Mobile No Ph No Email ID		
5.	NAME OF CMD/ MD /PARTNERS/ PROPRIETOR/ etc Name Designation Address Mobile No Ph No Email ID		
4.	Date of Incorporation of company		
5.	Foreign Direct Investment in company (if any in %)		
6.	Shareholding pattern		
7.	Turn over as per Audited Balance Sheet for the preceding three years. Year _____ Year _____ Year _____		
8.	Annual budget for R&D during last three years (if any) Year _____		

	Year _____ Year _____		
9.	Income Tax returns for the preceding three years period Year _____ Year _____ Year _____		
10.	Nature of company DPSU, Private Limited, Public Limited, Partnership, Proprietary, Ex- Serviceman Unit		
11.	Category of industry Large Scale, Medium Scale, Small Scale, Micro, Startup		
12.	MSME Registration No		
13.	Certificates of registration as a manufacturing unit, if any.		
14.	If Startup, DPIIT Registration No		
15.	UDYOG AADHAR No		
16.	PAN Number		
17.	Details of Industrial license for defence manufacturing issued by DPIIT (if any)		
18.	Details of PESO license (if any)	Not applicable	
19.	GST Number		
20.	Nature of business Manufacturing/ Sole Selling or Authorized Agent/ Assembler/ Traders/ Dealer/ Processor/ Repacker/ Others		
21.	Details of current products and services Products and services Supplied (please specify Govt/ Domestic market/ Export)		
22.	Record of past performance (e.g., Supply orders executed against of Ministry of Defence orders, Public Sectors and Paramilitary Forces, if any).		
23.	Details of registration with NSIC / SSI, DGS&D, other Defence Department, other Govt. Dept, membership of FICCI/ASSOCHAM/CII or other Industrial Association (Attach relevant copies of registration letters)		
24.	Have you already taken any technology from DRDO (If yes, give details attaching separate sheet) Name of the Technology, Lab, Year,		

	License number & Status		
25.	ISO/ ISI certification or any other certification (If yes, give details)		
26.	Relevant clearances form the authorities/ ministries (if any)		
27.	Capacity and capability to undertake developmental work and to accept attendant financial and commercial risks.		
28.	Capacity/capability to market the product through the marketing network, sales and service network, reliability to maintain confidentiality.		

PART-2

Infrastructure and other Information

1.	Total area of factory Covered (m ²), Uncovered (m ²), Bonded space available (m ²)	
2.	Ownership of factory Self-owned, partnership, rental	
3.	Electric power Sanctioned Installed Standby (if any)	
4.	Availability of adequate infrastructure (List of machines and their production capacities) and technical expertise	
5.	Name of bank & A/c No Name of bank A/c type A/c no Address of the bank Phone: Email:	

6. Details of current products:

S.No	Type	Description	Licensed/installed capacity	Annual production for preceding 3 years

7. Details of foreign collaboration, if any

S.No	Product	Name and address of collaborator	Year	Remarks

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8. Details of products developed for services

S.No	Nomenclature of stores	Order No. and date	Remarks

9. Please give details of important facilities & infrastructure as per following format for:

- a) Production
- b) Unconventional, special m/c
- c) Testing & quality control facilities

S.No	Description of m/c	Make & model	Qty	Date of purchase	Remarks

10. Furnish the following details with relevant certificates and documents

- a) R&D facilities available
- b) Inspection quality control of raw material components
- a) Assistance from central agency for testing / calibration etc.
- b) laboratory and drawing office facility

11. Principal customers:

S. No	Name & address	S.O No and date	Date of last supply	Products supplied	Value

12. Future plans (if any) in respect of expansion programme/ installation of additional machines/ test facilities etc.

13. Name of the technology requested for transfer

(give self-assessment of your capability to absorb the technology)

14. Details of employee as on date on firm's pay roll

PERMANENT				
Category	Post Held	Number	Qualification	Total Service

Technical	Prod. Manager Q.C. Manager Supervisor Testing Staff (QC) Skilled workers Unskilled workers, etc			
Administrative	Purchase Manager Accounts Officer Office Superintendent Clerical Others, etc			

TEMPORARY				
Category	Post Held	Number	Qualification	Total Service
Technical	Prod. Manager Q.C. Manager Supervisor Testing Staff (QC) Skilled workers Unskilled workers, etc			
Administrative	Purchase Manager Accounts Officer Office Superintendent Clerical Others, etc			

DECLARATION :

I / we confirm that the information furnished in Part 1 & 2 above is correct. In the event of any information given by me / us is found incorrect / false at any time, I / we understand our EoI for ToT will be cancelled/ rejected without notice, beside any other appropriate action against me / us.

Industry seal

Authorized signatory

Name(s) in capital

Designation and seal of authorized signatory

Date:

Place:

List of supporting documents to be attached with EoI

- (a) Memorandum and Articles of Association (Should be incorporated as per Indian Companies Act, as amended time to time)
- (b) Certificates of registration as a manufacturing unit, if any.
- (c) Audited Balance Sheet for the preceding three years.
- (d) Income Tax returns for the preceding three-year period
- (e) Details of shareholding/ownership pattern especially foreign partners/ shareholders, foreign employees, directors, etc. The company must adhere to the prevailing Govt of India policies and regulations on Foreign Direct Investment (FDI)/DIPP norms as applicable.
- (f) Annual budget for R&D during last three years.
- (g) Numbers and details of IPR or patents, etc., held by the company.
- (h) Number of technically or professionally qualified personnel employed.
- (i) Record of past performance (e.g., Supply orders executed against of Ministry of Defence orders, Public Sectors and Paramilitary Forces, if any).
- (j) Availability of adequate infrastructure (List of machines and their production capacities) and technical expertise.
- (k) List of testing and support equipment.
- (l) ISO/ ISI certification or any other certification.
- (m) Relevant clearances from the authorities/ ministries (if any).
- (n) Capacity and capability to undertake developmental work and to accept attendant financial and commercial risks.
- (o) Capacity/capability to market the product through the marketing network, sales and service network, reliability to maintain confidentiality.
- (p) Industrial license for defence manufacturing issued by DPIIT (if any).
- (q) PESO and DPIIT license for explosive handling if ToT is for high energy Material, explosives, propellants, and component/ system dealing with, it etc.
- (r) Undertaking from company seeking ToT that none of its Directors, Independent Directors, non-executive Directors, Key management personnel are involved in any corrupt practices, unfair means/ illegal activities.