



TECHNOLOGY DEVELOPMENT FUND (TDF) SCHEME



TITLE: DEVELOPMENT OF COMPACT ELECTROMECHANICAL ACTUATORS

1. **Description:** Precision advanced robotics applications such as Exoskeleton, humanoids, quadrupeds and other robots require compact actuators. These actuators are generally imported as an integrated system or at the component level, customized solutions optimal for our application are not available. Therefore, it is required to develop these actuators through Indian industry partners.

The components of these actuators include frameless motors, strain wave or any other gear assembly, encoders, torque sensors and electronic drive controller. Majority of these components are available outside India. Integration, assembly and testing of these imported components to make an actuator is the current approach. Anticipating their use in future due to increased need for advanced precision robots and exoskeletons, it is required to develop these technologies indigenously. The complexity and multi-disciplinary nature of the project might require multiple specialized industries to team up represented by a lead partner.

2. **Technical Specification:**

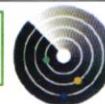
Parameter	Actuator Class			
	≥ 100 Nm	≥ 180 Nm	≥ 284 Nm	≥ 390 Nm
Peak Torque	≥ 100 Nm	≥ 180 Nm	≥ 284 Nm	≥ 390 Nm
Continuous Torque (min)	60 Nm	115 Nm	157Nm	120 Nm
Cont. Speed (~)	75 RPM	75 RPM	75 RPM	115 RPM
Power	< 1000 W	< 1000 W	<1 200 W	<1 500 W
Weight	< 850 g	< 1300 g	< 1500 g	< 3500 g
Diameter	< 110 mm	< 110 mm	< 110 mm	< 115 mm
Length	< 90 mm	< 90 mm	< 110 mm	< 170 mm
Encoder	19-bit or more with ± 0.1° accuracy			
	Incremental - RS422, SPI interface both end			
	Absolute – SSI, BiSS-C format			
Motor Drive	24-100 VDC			
	Hall, SSI, BiSS-C format			
	dual control loop capability			
	Interface: EtherCAT			

Scope of work includes design iterations, realisation, testing and delivery of six nos. of each acuator.

--End of Document--



TECHNOLOGY DEVELOPMENT FUND (TDF) SCHEME



FEASIBILITY CUM RFI RESPONSE FOR THE PROJECT REQUIREMENT UNDER TDF SCHEME (PROFROMA)

1. **Name of the Institute** (Industry/Academia):
2. **Contact details:**
 - a. Email
 - b. PoC
 - c. Address
3. **Title of the project requirement:**
4. **Project Description** (Define broad understanding of the project requirement and proposed solution under the project).
5. **Briefly detail the proposed technical solution in terms of subsystem/submodule levels.**
6. **Road map for achieving the proposed outcome (Development Plan Phase wise -Max 5 phases).**
7. **Development and production Estimates:**
 - i. Estimated time required for development of the proposed technology /product (In Months).
 - ii. Estimated cost required for the for development of the proposed technology /product (BQs of submodules/subsystems if any pls attach).
 - iii. Estimated production cost of the end product after successful development (per unit or batch cost).
 - iv. Whether the industry has already done any Suo moto design and development of the proposed product/technology at Technology Readiness Level – Yes/No
 - v. Details of Suo moto design and development done if marked Yes in previous question (within 250 words).
 - vi. Essential infrastructure required for development of the proposed product/technology for which funding is required.
8. **Technical strength in terms of manpower.**
9. **Relevant Work Experience.**
10. **Any other relevant information**

Queries if any and the reply in PDF FORMAT to be submitted online addressing to:

TO,

THE DIRECTOR TDF, DRDO

DRDO BHAWAN, RAJAJI MARG, NEW DELHI 110011

Email to, arjunk.hqr@gov.in, CC to dir.tdf-drdo@gov.in,