



# TECHNOLOGY DEVELOPMENT FUND (TDF) SCHEME



## TITLE: DEVELOPMENT OF COMPACT ELECTROMECHANICAL ACTUATORS

- Description:** Precision advanced robotics applications such as exoskeletons, humanoid, quadrupeds and other robots require compact actuators. These actuators are generally imported as an integrated system or at component level. Customized solution optimal for our application are not available.

Currently, components of these actuators include motors, gear assembly, encoders, sensors and electronic drive controllers. Although, BLDC motors are imported, technology exists within country, harmonic gear assemblies are mostly imported. Motors drives can also be indigenously developed. However, none of these are currently manufactured in India. Anticipating the uses of such technology in a large scale in future, it is even more vital to develop these actuators in the country. At the end of the development certain parts of the actuators might still be imported.

The proposed product is being developed for the first time. There is no existing system available within the country and all the components are imported.

- Functional and operational requirements:**

Parameters	Actuators
1. Peak Torque	: 100 Nm – 390 Nm
2. Continuous Torque	: 60 Nm – 157 Nm
3. Max Speed	: 75 RPM – 115 RPM
4. Power	: < 700 W - < 1000 W
5. Weight	: 850gm – 3500gm
6. Size	: Dia = < 110mm – < 115mm
	: Length = < 90mm - <170mm
7. Encoder	: 19 bit or more with $\pm 0.1^\circ$ accuracy
	: RS422, SPI interface
	: Both end
8. Motor drive	: 24-100 VDC
	: Hall, SSI, Biss-C format
	: Dual control loop capability
	: Interface: Ether CAT

**--End of Document--**



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### **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**

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