INVITATION FOR EXPRESSION OF INTEREST (EOI) FOR FRAMING OF SPECIFICATION FOR DESIGN , DEVELOPMENT , MANUFACTURING , TESTING AND SUPPLY OF PEDESTAL SYSTEM AS PER ANNEXURE A

Chief General Manager, MPF invites EOI for framing of specification for **DESIGN , DEVELOPMENT , MANUFACTURING , TESTING AND SUPPLY OF PEDESTAL SYSTEM AS PER ANNEXURE A**

DEVELOPMENT OF PEDESTAL SYSTEM	
General description	Design , Development , Manufacturing , Testing and Supply of Pedestal System as per Annexure A

Technical Requirement of Pedestal System for Combat Vehicles Annexure A

Sr No	Sub systems		Specification Parameter	Requirement
1	**2 Axis Gyro Stabilized Pedestal Mechanical Structure**	I.	Design	Integrated compact design (mechanical, electrical and electronic) of complete pedestal system which include stabilised electro-optical system, stabilised gun and gun control systems, slip rings, cables & harnesses(up to slip rings), as a single unit . The design must be compact in size as a single unit
		II.	Special Features	1. Robust Design to absorb gun shock up to 12.7 mm calibre guns 2. The mechanical structure o complete pedestal system must offe protection of STANAG level 1 to a its sub-systems as mentioned in abov points
2	**Overall System Parameters**	I.	Traverse movement	n x 360 deg rotation
		II.	Elevation movement	-20° to +85°
		III.	Max Velocity for AZ & EL axis	Bidder to specify
		IV.	Max Velocity for AZ & EL axis	Bidder to specify
		V.	Max. acceleration (traverse and elevation)	Bidder to specify
		VI.	Stabilization Accuracy required for main pedestal system	Bidder to specify
		VII.	Stabilization Accuracy required for optical system pedestal	Bidder to specify
		VIII.	Pointing Accuracy in both azimuth and elevation	Bidder to specify
		IX.	Other Technical Parameters	Bidder to specify
3	**Traverse & Elevation Mechanism of Pedestal Control (Gyro Stabilised)**	I.	Stabilization	Dedicated FOG Gyro Stabilised
		I.	Motor technology	Bidder to specify technology and typ
		II.	Make	Bidder to specify (Reputed make onl
		III.	Gear Box	Bidder to specify

		IV.	Maximum Torque Requirement	Maximum torque requirement shall b arrived based on pedestal weight an configuration
		V.	Power requirement	As per the optical pedestal design power rating of motor shall be selecte
		VI.	Encoder	Bidder to specify type, encode position values/ revolution, syste accuracy
		VII.	Other Technical Parameters	Bidder to specify
4	**Traverse & Elevation Mechanism of Electro Optical Control**	I.	Traverse movement	±10°
		II.	Elevation movement (Independent of Gun movement)	-20° to +85°
		III.	Pointing Accuracy in both azimuth and elevation	Bidder to specify
		IV.	Velocity for AZ & EL axis	Bidder to specify
		V.	Motor technology	Bidder to specify technology and type
		VI.	Make	Bidder to specify (Reputed make only
		VII.	Gear Box	Bidder to specify
		VIII.	Maximum Torque Requirement	Maximum torque requirement shall b arrived based on pedestal weight an configuration
		IX.	Power requirement	As per the optical pedestal design power rating of motor shall be selecte
		X.	Other Technical Parameters	Bidder to specify
5	**Rate Gyro Unit**	I.	Technology	High Performance Fiber Optic Gyro
		II.	Make	Reputed Make (MIL GRADE)
		III.	No of Axis	2 axis
		IV.	Range	Bidder to specify
		V.	MTBF	Bidder to specify
		VI.	Misalignment	Bidder to specify
		VII.	Magnetic Sensitivity	Bidder to specify
		VIII.	Bias	Bidder to specify
		IX.	Bandwidth	Bidder to specify
		X.	Connector	Bidder to specify
		XI.	Digital Serial Data Transfer	Bidder to specify
		XII.	Mechanical Housing	Bidder to specify
		XIII.	Environmental Conditions	Temperature Operating -40°C t +65°C Temperature non operating -55°C t +85°C Vibration: 0.1 g2/Hz (preferably Shock Operating : 800 g;0.5 ms 250g;4ms /100g;11ms
		XIV.	Other Technical Parameters	Bidder to specify

6	**Gun Control System***	I.	Mechanical Safety Control of Gun	1. Electronic Control of mechanical safety of gun through liner actuators
		II.	Cocking mechanism	1. Electronically controlled cocking operation of gun by linear actuator 2. Manual control cocking operation of gun
		III.	Ammunition Box	Stowage of properly stacked of 600 belted rounds 7.62 mm × 51 mm ammunition
		IV.	Ammunition Counter	Electronic sensor to count no of ammunition fired and no of ammunition available in the ammunition box
		V.	Feeding Mechanism	Smooth feeding of ammunition from ammunition box to the gun through appropriate design of mechanical guide
		VI.	Firing Mechanism	Manual(mechanical) as well as electronic control of trigger operation of Gun
		VII.	Other Technical Parameters	Bidder to specify
7	**Slip Rings**	I.	Weight	< 1Kg (as per requirement)
		II.	Make	reputed slip ring manufacture (suitable for defence application) (MIL GRADE)
		III.	Range of operating voltages	6 V -30V
		IV.	Maximum current Rating	As per complete pedestal system requirement
		V.	Signal & Data integrity	a. Friction less contract between the circuits b. There should not be any interference between intra-circuits. C. EMI shielding against interference from external sub –systems.
		VI.	Other Technical Parameters	Bidder to specify
8	**OPERATOR CONSOLE**	I.	Design	All the controller (right grip/ controller and left grip/ controller) and control panel must be a single unit
		II.	Right joy stick (Grip)	a. Pedestal and gun Motion: 1. right movement of joysticks corresponds to clockwise movement (traverse motion) of pedestal and gun 2. Left movement of joysticks corresponds to counter-clockwise movement (traverse motion) of pedestal and gun 3. Forward movement corresponds to down movement (elevation motion) pedestal and gun. 4. Backward movement corresponds to down movement (elevation motion) pedestal and gun.
		III.		b. Toggle switches on joystick toggle switch correspond to arming of gun by removing mechanical safety of gun. Another press on this button will disarm gun by activating mechanical safety of gun
		IV.		c. Cocking: Press type button will cock the gun

		V.		d. Fire: Index finger controlled press button to do actual firing of gun
		VI.	Left joystick (Grip)	a. Camera selection b. LRF Controls b. Tracking the target d. Camera zooming
		VII.	Control Panel	1. System ON/OFF switches 2. Opto Electronics ON/ OFF Switch 3. Emergency Stop switch
		VIII.	Other Technical Parameters	Bidder to specify
9	**HMI / MFD**	I.	Dimensions (Screen Size)	Bidder to specify
		II.	Technology	Bidder to specify
		III.	Resolution	Bidder to specify
		IV.	Operating System	Bidder to specify
		V.	Hardware Details	Bidder to specify
		VI.	Operating Temperature	Bidder to specify
		VII.	IP Rating	Bidder to specify
		VIII.	Soft-key/ Programmable control buttons	Bidder to specify
		IX.	Connectors	MIL GRADE CIRCULAR
		X.		RS 422/ Ethernet/Fiber Optics
		XI.	Video recording	a. There should be Video recording facility through HDMI/USB port
		XII.		b .Internal storage facility to record for duration of 24 Hr
		XIII.	Mil Std	MIL STD 461E/F,MIL-L-8562 A FOR SUN light readable /NVIS, JS-55555,
		XIV.	Other Technical Parameters	Bidder to specify
10	**Cable and Harnessing**	I.	Cable and Harnessing	1. All cable/ harness to and fro from every system to slip rings must be as per standard EED 50-12. 2.Cables from Slip rings to Control Panel/ HMI/ controller (length cable approx 3 m)
		II.	Other Technical Parameters	Bidder to specify
11	**Battery**	III.	Battery Type	Bidder to specify (Military Grade Only)
		IV.	Battery Voltage	Bidder to specify
		V.	Power Rating	Bidder to specify
		VI.	Battery Standards compliance	Bidder to specify
		VII.	Battery Charger	Bidder to specify
		VIII.	Other Technical Parameters	Bidder to specify

12	**Software**	IX.	SOFTWARE FUNCTIONING (Target acquisition, battle management and communication system)	a. Control algorithms to meet desired stabilization and positional accuracy for both Optical and Weapon platform to be implemented. b. Tracking algorithm to be implemented to track the target with speed of 150 Kmph at maximum range 2000 meters c. To ensure Gun stabilization while the pedestal mounted platform is on move. d. To ensure target identification and complete control of all subsystems e. To ensure the defined hit probability by complete control of all subsystems. High hit probability, wind speed /direction and temperature data should be included in Ballistic calculation. However there should be option to exclude the metrological Sensor data for calculation. f. Built in Test: Self –diagnosis and test features to be implemented .It should include power on tests, continuous test and invoked test features
		X.	Other Technical Parameters	Bidder to specify
13	**Standard Compliance and tests**	I.	Environmental Test Specification	JSS 55555 CLASS L (L3)
		II.	All electrical/ electronic equipments	ESS Test as DQA guideline
		III.	Reliability of electronic equipment	MIL HDBK 217
		IV.	Design of electronic equipment	MIL HDBK454
		V.	Control of EMI	MIL STD 461 C
		VI.	Electromagnetic Effect	MIL STD 464 A
		VII.	Software development and documentation	IEEE 12208
		VIII.	Other Technical Parameters	Bidder to specify

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