বিজ্ঞপ্তি

বাংলাদেশ বিমান বাহিনীর জন্য **Electronic Ground Power Unit (EGPU), Capcity: Minimum 90 KW (Continous), Output: 115/200V AC, 3 Phase, 400Hz and 28V DC)** এর Brand, Model and country of origin প্রমিতকরণের লক্ষ্যে প্রদত্ত Technical Specification অনুযায়ী সংশ্লিষ্ট সরবরাহকারীগণের (অত্র মহাপরিদপ্তরের তালিকাভুক্ত সংস্থা সমূহ) নিকট হতে আবেদন পত্র আহবান করা যাচ্ছে। উক্ত প্রমিতকরণের জন্য আগ্রহী সরবরাহকারীগণ নিম্ন স্বাক্ষরকারীর নিকট হতে Technical Specifications সংগ্রহ করে তা পূরণ করতঃ প্রমিতকরণতব্য যানবাহনের Brochure (containing all Technical Information including brand, model, country of origin & photograph) সহ আগামী ০৫ নভেম্বর ২০২৫ তারিখের মধ্যে জমা দেওয়ার জন্য অনুরোধ করা হলো। উক্ত তারিখের পর কোন আবেদন গ্রহণযোগ্য হিসেবে বিবেচিত হবে না।

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TECHNICAL SPECIFICATION FOR STANDARDIZATION OF ELECTRONIC GROUND POWER UNIT (eGPU), CAPACITY: MINIMUM 90 KW (CONTINUOUS), OUTPUT: 115/200V AC, 3 PHASE, 400HZ AND 28V DC

Note: Bangladesh Air Force may disqualify an offer without any notice who has previous record of poor performance such as abandoning the job, not properly completing the contract, significant delay to supply the contracted items, litigation history of financial failures, submission of improper or fraudulent information/ certificate/ document and non-submission of required certificates/ documents with the offer.

Ser No	Description	Specification Specified	To be filled up by the Manufacturer/ Principal
1.	**Nomenclature**	Electronic Ground Power Unit (eGPU)	
2.	**Utility/Purpose**	The purpose of Electronic Ground Power Unit (eGPU) is to supply power to start aircrafts/helicopters of BAF (like Yak-130, MiG-29, K-8W, C-130, AN-32, L-410, GROB-120 aircraft and MI-17, MI-171, MI-171Sh, AW-139, AW-119, Bell-206 and Bell-212 helicopter) on ground	
3.	**Brand**	To be mentioned by the bidder	
4.	**Model**	Latest production during tender	
5.	**Type**	Plug and play type Electronic Ground Power Unit (eGPU)	
6.	**Country of Origin**	USA, UK, Canada, Switzerland, Australia, Norway, New Zealand, Japan, South Korea and EU Countries.	
7.	**Country of Manufacturer**	USA, UK, Canada, Switzerland, Australia, Norway, New Zealand, Japan, South Korea and EU Countries.	
8.	**Name of the Manufacturer with full address**	To be mentioned by the bidder.	
9.	**Name of the Principal with full address**	To be mentioned by the bidder.	
10.	**Name of the Local Agent with full address**	To be mentioned by the bidder.	
11.	Specifications of Battery		
	a. Type of Battery	**Lithium Iron Phosphate (LFP)**, maintenance-free, deep-cycle, long-life (≥ 3,000 charge/discharge cycles)	
	b. Battery and BMS Requirements	Battery chemistry shall be Lithium Iron Phosphate (LiFePO4). The Battery Management System (BMS) shall provide: full cell-level monitoring and balancing, over-voltage and under-voltage protection, over-current protection, thermal sensors at cell and module level, automatic isolation contactor and fail-safe disconnect, detailed SOC and SOH reporting, event logging (≥12 months of data), and remote telemetry interface (CAN/Modbus/TCP — vendor to specify).	

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		Required certificates on delivery: UN 38.3 test report, IEC 62133 or equivalent and cell/pack test reports. Vendor shall provide cell manufacturer traceability and a statement on thermal runaway mitigation.	
	b. Country of origin of Battery	USA, UK, Canada, Japan, South Korea, EU Countries and China	
	c. Name of the manufacturer of the Battery	To be mentioned by the bidder	
	d. Number of Battery	To be mentioned by the bidder	
	e. Voltage, Ampere and Capacity of each Battery	To be mentioned by the bidder	
	f. Life Cycle	≥3000 cycles @80%DoD	
	g. Energy Density	160-180 Wh/Kg	
	h. Discharge Rate	To be mentioned by the bidder	
	j. Capabilities of addition of Battery	To be mentioned by the bidder	
	k. Number of starts in full charged condition	To be mentioned by the bidder	
	l. Replacement warranty of battery pack	Minimum 5 years replacement warranty and a performance guarantee: battery usable capacity ≥80% of nameplate after 3000 cycles at 80% DoD (vendor must provide supporting test data). Vendor must guarantee spare module and replacement parts availability for at least 15 years.	
	m. Type of Charger	On board fast charger compatible to equipment along with necessary charging cable (Charging time for full charge is to be mentioned)	
	n. Capacity of Charger	To be mentioned by the bidder	
	p. On-board Charger	Vendor must state charger power (kW), maximum charge current, charge profile (CC–CV), time to 80% from 20% SOC and time to 100% from 0% SOC at nominal mains, input power factor (≥0.95) and harmonic distortion. Charger must include active power factor correction and meet IEC 61000-3-2 for harmonic currents.	
	q. Input Cable and Plug	20 meter long (minimum) 3 phase connecting Plug (both male and female)	
	r. Test Bench Report	Test bench report for capacity of each battery is to be provided with unit.	

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	s. Certifications & Safety Compliance	The following certificates and test reports must be submitted in English language along with the offer. Failure to provide any of these documents will render the offer non-compliant: (1) UN 38.3 Test Report – Official test report from a certified laboratory confirming that the battery pack has successfully passed UN Manual of Tests and Criteria, Part III, Subsection 38.3 for safe transportation of lithium batteries. (2) IEC 62133 Certificate – Certificate of compliance for the battery pack (or equivalent UL/EN standard) demonstrating compliance with international safety requirements for secondary lithium cells and batteries. (3) Material Safety Data Sheet (MSDS) – Manufacturer-issued MSDS for the battery cells and the complete battery pack, including chemical composition and handling precautions. (4) Battery Pack Manufacturer Test Bench Report – Original test bench performance report (capacity, cycle life, safety tests) issued by the battery pack manufacturer. (5) Cell Traceability Document – Document from the battery pack manufacturer showing the source, manufacturer name and batch/lot number of the individual cells used in the pack. (6) Pack-Level Compliance Certificate – Certificate showing compliance of the battery pack to applicable UL/IEC standards (e.g., UL 1973, UL 2580, or IEC 62619), as appropriate for aviation ground power applications. (7) Transport Compliance certificate from the manufacturer or authorized agent that spare batteries and packs conform to IATA/ICAO Dangerous Goods Regulations (DGR) for air transport of lithium batteries. All certificates and reports must be authentic, signed/stamped by the issuing authority and submitted as original or notarized copies. Unsigned, undated, or draft documents will not be accepted.	
12.	**Output of the Electronic Ground Power Unit (eGPU):**		
	a. Output Power	AC rating: 90 kW continuous at 115/200 V AC,	

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		3-phase, 400 Hz (nominal). DC rating: 28 V DC continuous at vendor-declared amperage (A) and peak/inrush capability. Bidders must state: (i) continuous AC power (kW), (ii) AC line-to-line and line-to-neutral voltages, (iii) AC rated current (A) at unity power factor and at vendor-declared power factor, (iv) continuous DC power or DC continuous current (A) at 28 V, and (v) maximum combined AC+DC power the unit can supply simultaneously. For simultaneous operation, bidders must provide a derating/power-sharing table showing AC and DC available when both are in use.	
	b. Output Voltage	(1) 115/200 V AC, 3 Phase, 400 Hz (2) 28 V DC (3) 115/200 V AC, 3 Phase, 400 Hz and 28 V DC **simultaneously**	
	c. Output Current	(i) AC rated current: vendor is to specify amperes at 90 kW for PF=1 and at declared PF. (ii) DC rated current: vendor is to specify continuous DC current at 28 V and peak/inrush capability (A) including duration. (iii) Vendor must provide formula and calculation sheet used to size AC and DC currents and a power-sharing/derating table for simultaneous operation.	
	d. Power Factor	To be mentioned by the bidder (if any)	
	e. Voltage Regulation	≤±0.5% for balanced linear loads from 10% to 100% load. For unbalanced single-phase loading, per-phase voltage deviation shall not exceed ±2% for up to 30% single-phase imbalance; vendor to provide proof test data. Transient voltage dip on 0→100% load step shall be ≤8% and recover to within ±0.5% within 50 ms (vendor must supply measured waveform in FAT).	
	f. Voltage Recovery	Δ<8% and recovery time 10 ms to 100% load change	
	g. Total Harmonic Distortion	<2% (linear load)	
	h. Output delay timer	Power output delivery **delay time** should be less than 10 seconds (if delay timer is fitted in the Ground Power Unit)	
13.	**Protection & Safety Requirements** (all protection and alarm functions must be factory-tested and verified during FAT and SAT. Non-functional or partial compliance will not be accepted):		
	The Ground Power Unit shall incorporate comprehensive protection and indication systems to ensure safety of aircraft, operators, and		

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	equipment. The following protections and alarms are mandatory:		
	a. General Electrical Protection:		
	(i) Over-voltage and under-voltage protection		
	(ii) Over-current and overload protection		
	(iii) Short-circuit protection (including DC crowbar for DC output)		
	(iv) Inverse polarity protection for DC connections		
	(v) Control voltage error protection		
	(vi) Internal high temperature protection with automatic shutdown		
	(vii) No-break power transfer capability		
	(viii) Neutral voltage supervision and neutral voltage displacement protection		
	(ix) Leakage current supervision with earth-leakage trip sensitivity ≤30 mA		
	b. Mechanical & Environmental Protection:		
	(i) Protection class minimum IP55 for the unit		
	(ii) Battery compartment with ventilation, smoke/gas detection, and provision for manual/automatic fire suppression		
	(iii) Thermal runaway detection with automatic battery isolation and warning		
	c. Interlocks & Safety Features:		
	(i) Soft-start on AC output		
	(ii) Plug insertion interlock with mechanical keying		
	(iii) Automatic shut-down and alarm in case of unsafe connection or fault condition		
	d. Indications & Alarms:		
	(i) Separate beacon/indicator for "Operation" and "Charging" status		
	(ii) Beacon/indicator for "Low Battery Warning"		
	(iii) Audio/visual alarms for all fault conditions (overload, over-temperature, leakage, etc.)		
14.	**Control Panel**	User friendly Plug and Play type.	
15.	**Environmental Conditions**		
	a. Operating Temperature	-10°C to +55°C without additional heating/ cooling. (vendor to declare derating above 40°C)	
	b. Relative Humidity	10–95% non-condensing, tropicalized for high humidity and salt-laden atmosphere.	
	c. IP rating	IP55 minimum for full unit	
	d. Noise Level	≤60 dB(A) measured at 7 m under full continuous rated load in free field	
	e. Sensitive electronic enclosures	IP56/IP65 required	
	f. Environmental test reports (temperature, humidity, salt spray, vibration, shock)	MIL-STD-810	

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16.	**Canopy of the Electronic Ground Power Unit (eGPU)**	All the equipment should be fully protected from rain/sun by sliding zinc coated canopy which allows unrestricted access to major equipment. It should be able to operate in hot humid monsoon prone region.	
17.	**Metallurgical Treatment**	Anti-corrosive treatment must be given on all parts of the Ground Power Unit prone to corrosion.	
18.	**Output Power Cable**	Following Output Power Cable must be fitted with each Ground Power Unit: a. One output cable 115/200 VAC, 400 Hz, 3 Phase, 04 wire (at least 15 meters long) with a standard 06 pin aircraft adapter. b. Output cable for 28 VDC, 1500 amperes (at least 10 meter long) with a standard 03 pin flat adapter. c. All the output power cable must be covered with insulated rubber material.	
19.	**Cables & Connectors**	Vendor must confirm compatibility of supplied 6-pin 400 Hz aircraft adapter and 3-pin 28 V DC flat adapter with Yak-130, MiG-29, C-130, AN-32, L-410, MI-17 family, AW-139 and other listed aircraft. Cables shall be flexible silicone-insulated, rated for outdoor use, temperature – 40°C to +90°C, minimum lengths: 15 meter. Storage reels or trays shall be provided with mechanical protection.	
20.	**28V DC Power Socket**	One standard two pin, 15 amps, 28 VDC socket with a "ON-OFF" switch should be fitted in the power control board and it must be easily accessible to use.	
21.	**Operation Cycle**	The Electronic Ground Power Unit (eGPU) should be able to operate for min 06 hours continuously. The bidder is to specify about the operation cycle of the offered Electronic Ground Power Unit (eGPU).	
22.	**Electrical Equipment/ Aggregate**	The country of origin of all the electrical equipment/ aggregate, control instrument and other accessories should be from the stated countries mentioned in clause number 6.	
23.	**Dimension, Volume and Weight of GPU**	To be mentioned by the bidder.	
24.	**Towing System**	(1) Self-Propelled Power Pusher/ Towing system is to be incorporated with the Electronic Ground Power Unit which would be capable to tow or draw the eGPU around the tarmac area (standard self-propelled towing system is to be mentioned by the bidder with brochure and specifications).	

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		(2) Lockable tow bar interlock with standard tow eye.	
25.	**Mobility & Towing**	Maximum towing speed ≤15 km/h. Operational speed limiter/governor must be provided with selectable settings (5 km/h, 10 km/h, 15 km/h). Unit shall include parking brake interlock; emergency stop switches and audible reversing alarm.	
26.	**Lighting System**	The following lighting system must be available: a. Clearly visible flashing beacon light on top of the eGPU and 'NAV' light qty-04 (blue & red) on roof (front & rear corner). b. Flashing indication lights during moving.	
27.	**Tyre and Wheels**	a. The Electronic Ground Power Unit must be incorporated with two axle four wheel (front axle center pivoted for 60° left/ right turn able). b. Size of wheels of pneumatic tyres with drum is to be mentioned by the bidder. c. 01 x set of wheels is to be provided as spare.	
28.	**Braking System**	Manual wheel brake provision must be available.	
29.	**Body and Chassis**	a. Body must be of steel and fabricated with steel trolley. b. Ground clearance of trolley should not be less than 180 mm.	
30.	**Color**	a. Canopies should be painted with fleet white or **golden yellow gloss** color. b. Cable boxes, Noise boxes, chassis, wheels, bumpers, mudguards, fuel tanks, etc should be painted with standard black colors.	
31.	**Standard Fittings**	a. All safety devices are to be incorporated as per the international standard. b. All types of fittings are to be done by the manufacturer as per the requirement of the user. c. Any other things required to operate the Electronic Ground Power Unit (eGPU) smoothly to be provided by the bidder within the quoted price.	
32.	**EMC & Grounding**	**Electromagnetic Compatibility (EMC):** a. The unit shall comply with either MIL-STD-461 (latest revision) or IEC 61000 series standards (vendor to specify). b. Minimum compliance shall include: (i) Conducted Emissions (CE) (ii) Radiated Emissions (RE) (iii) Conducted Susceptibility (CS)	

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		(iv) Radiated Susceptibility (RS) c. Surge immunity shall comply with IEC 61000-4-5. d. Vendor must submit valid EMC test reports from an accredited laboratory. Self-declarations will not be accepted. **Grounding:** a. The GPU shall be supplied with an aircraft grounding clamp, cable and reel. b. Ground continuity between clamp and unit chassis shall not exceed 1.0Ω when connected to aircraft ground point. c. Vendor shall demonstrate grounding effectiveness during FAT and SAT. **Documentation:** a. Complete EMC compliance certificates, test reports and grounding test results must be submitted in English language with the offer. b. Offers without authentic EMC certificates/test reports will be treated as non-compliant.	
33.	**For standard tools, and accessories are to be supplied with each Electronic Ground Power Unit (eGPU) by the suppliers:**	a. One Dry chemical fire extinguisher of capacity 5-10 Kg for each Electronic Ground Power Unit (eGPU). b. One spare wheel assembles (loose) complete with tyre and tube for each Electronic Ground Power Unit (eGPU). c. One set (qty-02) lifting jack for each Electronic Ground Power Unit (eGPU). d. Wheel removing tools for each Electronic Ground Power Unit (eGPU). e. 01 x Tools box with sufficient tools. But bidder is to submit a list of tools to be supplied with Electronic Ground Power Unit (eGPU) mentioning type and quantity with the offer.	
34.	**Publications**	Following Publications are to be supplied along with each Ground Power Unit: **Manuals**: Maintenance manuals, Operation manuals, Illustrate Parts Catalogue & Illustrate Parts Breakdown (with detail description and part number of items at component level and detailed drawing, circuit diagram etc), Repair & Workshop manual and trouble-shooting manual each 02 copies are to be provide with each Electronic Ground Power Unit (eGPU) together with Power Pusher/ Towing system. Supplier is to provide 02 x soft copy (CD) of	

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		the manuals/ publications and related software (if available) required for maintenance/ rectification of the power unit and Prime Mover separately.	
35.	The supplied Electronic Ground Power Unit (eGPU) must be equipped with all standard fittings and accessories.		