


## বিজ্ঞপ্তি

বাংলাদেশ বিমান বাহিনীর জন্য **Ground Power Unit (Trolley Mounted) for two types of power output** এর Brand, Country of Origin and Latest Production Model প্রমিতকরণের লক্ষ্যে প্রদত্ত Technical Specification অনুযায়ী সংশ্লিষ্ট সরবরাহকারীগনের (অত্র মহাপরিদপ্তরের তালিকাভুক্ত সংস্থা সমূহ) নিকট হতে আবেদন পত্র আহবান করা যাচ্ছে। উক্ত প্রমিতকরণের জন্য আগ্রহী সরবরাহকারীগন নিম্ন স্বাক্ষরকারীর নিকট হতে Technical Specifications সংগ্রহ করে তা পূরণ করতঃ প্রমিতকরণতব্য যানবাহনের Brochure (containing all Technical Information including latest production model, brand, country of origin & photograph) সহ আগামী ১৩ মার্চ ২০২৩ তারিখের মধ্যে জমা দেওয়ার জন্য অনুরোধ করা হলো।

  
মাফরুহা বেগম  
স্কোয়াড্রন লীডার  
মহাপরিচালকের পক্ষে

তারিখ : 25 ফেব্রুয়ারি ২০২৩।

**TECHNICAL SPECIFICATION FOR GROUND POWER UNIT (TROLLEY MOUNTED) CAPACITY: MINIMUM 100 KVA, FOR OUTPUT: 115/200V AC, 3 PHASE, 400HZ AND 28V DC**

Ser No	Description	Specification Specified	To be Filled up by the Bidder.
1.	<b>Name of the Item</b>	Ground Power Unit (Trolley Mounted)	
2.	<b>Purpose/Utility</b>	The purpose of Ground Power Unit (Trolley Mounted) is to supply power to start the aircrafts/helicopters of BAF (like Yak-130, MiG-29B/UB, L-39ZA, K-8W, C-130J/B, AN-32, L-410UVP, GROB 120TP aircraft, MI-17, MI-171, MI-171Sh, AW139 & Bell-212 helicopter etc) on ground.	
3.	<b>Brand, Model and country of origin of Ground Power Unit (Trolley Mounted)</b>	a. Brand: To be mentioned by the bidder. b. Model: To be mentioned by the bidder. c. Country of origin: To be mentioned by the bidder.	
4.	<b>Engine for Power output of Ground Power Unit:</b> a. Horse Power b. No of Cylinder c. Engine displacement d. Rated RPM e. Fuel consumption/hour f. Cooling system g. Electric system h. Battery Capacity	a. 260 HP@ 2200 RPM and 270 HP @ 2000 RPM (or to be mentioned by the bidder). b. 06 Cylinder (minimum) c. 5800 cc (minimum) d. 2000-2200 RPM (or to be mentioned by the bidder). e. To be mentioned by the bidder. f. Water Cooled g. 24 VDC h. 120 Ampere Hour (or to be mentioned by the bidder).	
5.	<b>Alternator:</b> a. Type b. Output Power c. Output voltage d. Cooling	a. Brushless b. 100 KVA (Minimum) c. 115/200V AC, 3 Phase, 400 Hz & 0.8 PF d. Fan cooling	
6.	<b>Transformer Rectifier Unit (TRU) system:</b> a. Transformer:  b. Output filtering  c. Output Voltage Selector Switch/Trimmer/ AVR (Automatic Voltage Regulator)  d. Output delivery time	a. Two air-cooled step down <b>transformer</b> with rectifier Unit: is to be incorporated with the Trolley mounted Ground Power Unit and transformer is to be visible with separate entity. Moreover, the information of transformer must be available in the manual/brochure of the Ground Power Unit (trolley mounted). b. DC output must be incorporated with the filtering circuit so as to reduce the Radio Interference during operation. c. 3 to 5 steps <b>selector switch/trimmer</b> must be incorporated to adjust the DC output voltage between 26-30 volt <b>or</b> by AVR (Automatic Voltage Regulator) system. d. Power output delivery <b>delay time</b> should be less than <b>10 second</b> .	



Ser No	Description	Specification Specified	To be Filled up by the Bidder.
	e. Voltage Regulator f. Voltage Stabilizer g. Control System and Instruments for the TRU h. Output Power System	e. Automatic Voltage Regulator for maintaining the nominal output voltage $28 \pm 2V$ DC. f. Auto Voltage Stabilizer must be fitted for obtaining stable power at variable load. g. Input contractor for transformer, Power ON Pushbutton, Power OFF Pushbutton, DC output indicator light, Over voltage protection trip, DC Voltmeter & DC Ammeter must be available with the GPU. h. i) Rated Current: Minimum 800 Amps continuously. ii) Inrush/Surge Current for supplying 1 (one) minute: <b>2500 Amps.</b>	
7.	<b>Output power cable</b>	a. Two output cable for 115/200V AC, 400 Hz, 3 phase, 04 wire at least 15 meters long insulated covered in a standard 06 pin aircraft adapter at both side of the GPU to start MI-series hel/C-130 /Yak-130 aircraft etc. b. Two output cable for $28.5 \pm 1V$ DC, 800-1500 Amperes at least 15 meter long should be fitted with a standard aircraft 03 pin, flat adapters at both sides of the GPU to start Bell-206/212 hel/ AW-119 hel/L-410UVP/K-8W/AN-32 aircraft etc. c. All the output Power Cables should be covered with insulated rubber material. Wrapped with flexible suitable cover in order to protect the cable from surface friction and rainfall.	
8.	<b>Instrument for 400 Hz AC Electrical system:</b> a. Voltage Regulator b. Control Instrument	a. Solid state voltage regulator to maintain variation of output voltage within $\pm 1\%$ of the nominal value in changing loads. b. i) Contactors. ii) Power ON lights. iii) Power ON-OFF Switch. iv) Voltmeter. v) Ammeter. vi) Frequency meter. vii) Current Transducer. viii) Voltage trimmer for adjusting output voltage $\pm 5\%$ of nominal value. ix) Ammeter and Voltage selector Switch. x) Voltage adjust regulator. xi) Speed adjust regulator. xii) Emergency shutdown switch. xiii) Load capacity meter (Watt meter). xiv) Any other standard equipment required for operational requirement.  <b>Control instrument may be above system or Digital system.</b>	
9.	<b>Battery</b>	Required quantity of battery of 12V DC is to be provided. However, capacity of each battery should be at least 120 ampere hour.	

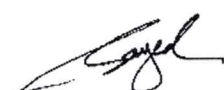


Sl No	Description	Specification Specified	To be Filled up by the Bidder.
10.	<b>Technical data for Trolley</b>	a. The Power Unit should be mounted on Trolley/Trailer. b. The Trailer/Trolley must have at least 04 pneumatic wheels. c. Standard tyre size to be quoted by the bidder. d. Trolley should be two axles. e. Trolley should be turn able with the help of towing bar and all wheels should be turn able to 360 <sup>o</sup> . f. Towing bar with self locking and safety brake system. g. Platform should be metallic. h. Trolley mounted Ground Power Unit should have folding type metallic cover on all sides with access door. j. Special surface treatment against corrosion. k. Two reflectors at the rear side of the trolley.	
11.	<b>Body and Chassis</b>	a. Body must be of Steel and fabricated with steel chassis. b. The GPU must be fitted with foot step at both side and rear of the trolley. c. The GPU must have mudguard flaps at the back of each wheel. d. Ground clearance of chassis should not be less than 300 mm.	
12.	<b>Canopy of the Power</b>	The generating and control equipment should be fully protected from rain/sun by sliding zinc coated Canopy which allows unrestricted access to major equipment. It should be capable to operate in hot humid monsoon prone region.	
13.	<b>Metallurgical Treatment</b>	Anti-corrosive treatment must be given on all parts of the GPU prone to corrosion.	
14.	<b>Towing Hooks</b>	Towing hooks with locking facilities should be fitted in the front and rear of the Trolley mounted Ground Power Unit.	
15.	<b>Noise Control System</b>	A noise reduction kit should be fitted to reduce the noise level while operating the GPU.	
16.	<b>Fault Protection Devices:</b>  a. Electrical Power system	Following system must be incorporated with the GPU. Moreover, the information about following protection devices must be available in the manual/brochure of the GPU.  i) Under and over frequency protection system and cut off provision. ii) Under and over voltage protection system and cut off provision. iii) Overload protection system. iv) Short circuit protection system.	

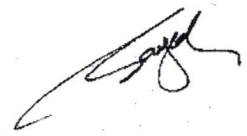




PR 3	Description	Specification Specified	To be Filled up by the Bidder.
17.	b. Engine Section	b. Automatic shut-down system is to be available of engine for: <ul style="list-style-type: none"> <li>i) Low oil pressure.</li> <li>ii) High oil pressure.</li> <li>iii) High coolant temperature.</li> <li>iii) Engine over speed.</li> <li>iv) Engine over heat.</li> <li>v) Any other items, if necessary.</li> </ul>	
18.	<b>Lighting system</b>	The following lighting system must be available: <ul style="list-style-type: none"> <li>ii) Parking lights</li> <li>iii) Turning indication lights</li> <li>v) Number plates lights (Rear)</li> <li>vi) Brake lights.</li> <li>vii) Clearly visible flashing beacon light on top of the cabin and 'NAV' light qty-04 (blue &amp; red) on roof (front &amp; rear corner).</li> <li>ix) Manually/auto rotatable, approx 1 to 2 feet height adjustable flood light (70 to 75 watt DC) at rear roof top for night operation.</li> </ul>	
19.	<b>Warning System and Fault Memorizing Display</b>	Different warning system of engine failure like over/under Frequency, over/under Voltage, over load, over temperature, low oil pressure, High oil pressure etc should have visual warning system in digital display board (LED/LCD display).	
20.	<b>28V DC Power Socket</b>	One standard two pin, 15 amps, 28V DC socket with a "ON-OFF" switch should be fitted in the power control board and it must easily be accessible to use.	
21.	<b>Cable box</b>	a. Cable boxes having steel cover are to accommodate all the power cables to protect the power cables from rain. The location position of the boxes should be easily accessible.	
22.	<b>Fuel Tanks</b>	A fuel tank capacity of not less than 50 gallons should be fitted with the Ground Power Unit (Trolley mounted).	
23.	<b>Driving Speed</b>	The Trolley mounted Ground Power Unit should be capable to move one place to another by towing tractor at the speed of 15 KM/hour.	
24.	<b>Color</b>	a. Canopies should be golden yellow gloss colour.  b. Cable boxes, Noise boxes, Chassis, wheels, bumpers, mudguards, fuel tanks, etc should be painted with standard black colours.	
25.	<b>Dimension</b>	a. Length: To be mentioned by the bidder. b. Height: To be mentioned by the bidder c. Width: To be mentioned by the bidder	



NO	Description	Specification Specified	To be Filled up by the Bidder.
26.	<p><b>For standard tools, and accessories are to be supplied with each GPU (Trolley mounted) by the suppliers:</b></p>	<p>a. One Dry chemical fire extinguisher of capacity 5-10 Kg for each Ground Power Unit (Trolley mounted).</p> <p>b. One spare wheel assemble (loose) complete with tyre and tube for each Ground Power Unit (Trolley mounted).</p> <p>c. One set of applicable jack for each Ground Power Unit (Trolley mounted).</p> <p>d. Wheel removing tools set for each Ground Power Unit (Trolley mounted).</p> <p>e. Supplier is to provide 02 x soft copy (CD) of the manuals/publications and related software (if available) required for maintenance/rectification of the power unit and Prime Mover separately with each Trolley mounted Ground Power Unit.</p> <p>f. A list of tools/ special tools with quantity required for maintenance of Ground power unit and Trolley is to be submitted along with the offer.</p>	
27.	<p><b>Standard Fittings</b></p>	<p>a. All safety devices are to be incorporated as per the international standard.</p> <p>b. All types of fittings are to be done by the manufacturer as per the requirement of user.</p> <p>c. The supplied Ground Power Unit (Trolley mounted) must be equipped with all standard fittings and accessories as required.</p>	





**TECHNICAL SPECIFICATION FOR GROUND POWER UNIT (TROLLEY MOUNTED) CAPACITY:  
MINIMUM 100 KVA, FOR OUTPUT: 115/200V AC, 3 PHASE, 400HZ, 28V DC AND 28/56V DC**

Ser No	Description	Specification Specified	To be Filled up by the Bidder.
1.	<b>Name of the Item</b>	Ground Power Unit (Trolley Mounted)	
2.	<b>Purpose/Utility</b>	The purpose of Ground Power Unit (Trolley Mounted) is to supply power to start the aircrafts/helicopters of BAF (like Yak-130, MiG-29B/UB, F-7MB/FT-7B, F-7/FT-7BG/F-7BGI, L-39ZA, K-8W, C-130J/B, AN-32, L-410UVP, GROB 120TP aircraft, MI-17, MI-171, MI-171Sh, AW139 & Bell-212 helicopter etc) on ground.	
3.	<b>Brand, Model and country of origin of Ground Power Unit (Trolley Mounted)</b>	a. Brand: To be mentioned by the bidder. b. Model: To be mentioned by the bidder. c. Country of origin: To be mentioned by the bidder.	
4.	<b>Engine for Power output of Ground Power Unit:</b> a. Horse Power b. No of Cylinder c. Engine displacement d. Rated RPM e. Fuel consumption/hour f. Cooling system g. Electric system h. Battery Capacity	a. 260 HP @ 2200 RPM and 270 HP @ 2000 RPM (or to be mentioned by the bidder). b. 06 Cylinder (minimum) c. 5800 cc (minimum) d. 2000-2200 RPM (or to be mentioned by the bidder). e. To be mentioned by the bidder. f. Water Cooled g. 24V DC h. 120 Ampere Hour (or to be mentioned by the bidder).	
5.	<b>Alternator:</b> a. Type b. Output Power c. Output voltage d. Cooling	a. Brushless b. 100 KVA (Minimum) c. 115/200V AC, 3 Phase, 400 Hz & 0.8 PF d. Fan cooling	
6.	<b>Transformer Rectifier Unit (TRU) system:</b> a. Transformer:  b. Output filtering  c. Output Voltage Selector Switch/Trimmer/ AVR (Automatic Voltage Regulator)  d. Output delivery time	a. Two air-cooled step down <b>transformer</b> with rectifier Unit: is to be incorporated with the Trolley mounted Ground Power Unit and transformer is to be visible with separate entity. Moreover, the information of transformer must be available in the manual/brochure of the Ground Power Unit (trolley mounted). b. DC output must be incorporated with the filtering circuit so as to reduce the Radio Interference during operation. c. 3 to 5 steps <b>selector switch/trimmer</b> must be incorporated to adjust the DC output voltage between 26-30 volt <b>or</b> by AVR (Automatic Voltage Regulator) system. d. Power output delivery <b>delay time</b> should be less than <b>10 second</b> .	



Ser N	Description	Specification Specified	To be Filled up by the Bidder.
6.	e. Control Box  f. Voltage Regulator  g. Voltage Stabilizer  h. Control System and Instruments for the TRU  j. Output Power System	e. A control box must be fitted for changing the 28 VDC output of two TRU's into single 56V DC output for starting the F-7MB/FT-7B, F-7/FT-7BG/F-7BGI etc.  f. Automatic Voltage Regulator for maintaining the nominal output voltage $28 \pm 2V$ DC.  g. Auto Voltage Stabilizer must be fitted for obtaining stable power at variable load.  h. Input contractor for transformer, Power ON Pushbutton, Power OFF Pushbutton, DC output indicator light, Over voltage protection trip, DC Voltmeter & DC Ammeter must be available with the GPU.  j. i) Rated Current: Minimum 800 Amps continuously. ii) Inrush/Surge Current for supplying 1 (one) minute: <b>2500 Amps.</b>	
7.	<b>Output power cable</b>	a. One output cable for 115/200V AC, 400 Hz, 3 phase, 04 wire at least 15 meters long insulated covered in a standard 06 pin aircraft adapter at one side of the GPU to start MI-series hel/C-130 /Yak-130 aircraft etc.  b. Two output cable for $28.5 \pm 1V$ DC, 800-1500 Amperes at least 15 meter long should be fitted with a standard aircraft 03 pin, flat adapters at both sides of the GPU to start Bell-206/212 hel/ AW-119 hel/L-410UVP/K-8W/AN-32 aircraft etc.  c. Two output cable for 28/56V DC, 800-1800 amperes, at least 15 meter long fitted with six pin adopter at both sides of the GPU to start F-7MB/FT-7B, F-7/FT-7BG/F-7BGI aircraft etc.  d. All the output Power Cables should be covered with insulated rubber material. Wrapped with flexible suitable cover in order to protect the cable from surface friction and rainfall.	
8.	<b>Instrument for 400 Hz AC Electrical system:</b> a. Voltage Regulator  b. Control Instrument	a. Solid state voltage regulator to maintain variation of output voltage within $\pm 1\%$ of the nominal value in changing loads.  b. i) Contactors. ii) Power ON lights. iii) Power ON-OFF Switch. iv) Voltmeter. v) Ammeter. vi) Frequency meter. vii) Current Transducer. viii) Voltage trimmer for adjusting output voltage $\pm 5\%$ of nominal value. ix) Ammeter and Voltage selector Switch. x) Voltage adjust regulator. xi) Speed adjust regulator. xii) Emergency shutdown switch. xiii) Load capacity meter (Watt meter). xiv) Any other standard equipment required for operational requirement.  <b>Control instrument may be above system or Digital system.</b>	



S. No	Description	Specification Specified	To be Filled up by the Bidder.
	<b>Battery</b>	Required quantity of battery of 12V DC is to be provided. However, capacity of each battery should be at least 120 ampere hour.	
9.	<b>Technical data for Trolley</b>	<p>a. The Power Unit should be mounted on Trolley/Trailer.</p> <p>b. The Trailer/Trolley must have at least 04 pneumatic wheels.</p> <p>c. Standard tyre size to be quoted by the bidder.</p> <p>d. Trolley should be two axles.</p> <p>e. Trolley should be turn able with the help of towing bar and all wheels should be turn able to 360°.</p> <p>f. Towing bar with self locking and safety brake system.</p> <p>g. Platform should be metallic.</p> <p>h. Trolley mounted Ground Power Unit should have folding type metallic cover on all sides with access door.</p> <p>j. Special surface treatment against corrosion.</p> <p>k. Two reflectors at the rear side of the trolley.</p>	
10.	<b>Body and Chassis</b>	<p>a. Body must be of Steel and fabricated with steel chassis.</p> <p>b. The GPU must be fitted with foot step at both side and rear of the trolley.</p> <p>c. The GPU must have mudguard flaps at the back of each wheel.</p> <p>d. Ground clearance of chassis should not be less than 300 mm.</p>	
11.	<b>Canopy of the Power</b>	The generating and control equipment should be fully protected from rain/sun by sliding zinc coated Canopy which allows unrestricted access to major equipment. It should be capable to operate in hot humid monsoon prone region.	
12.	<b>Metallurgical Treatment</b>	Anti-corrosive treatment must be given on all parts of the GPU prone to corrosion.	
13.	<b>Towing Hooks</b>	Towing hooks with locking facilities should be fitted in the front and rear of the Trolley mounted Ground Power Unit.	
14.	<b>Noise Control System</b>	A noise reduction kit should be fitted to reduce the noise level while operating the GPU.	
15.	<b>Fault Protection Devices:</b>  a. Electrical Power system	<p>Following system must be incorporated with the GPU. Moreover, the information about following protection devices must be available in the manual/brochure of the GPU.</p> <p>i) Under and over frequency protection system and cut off provision.</p> <p>ii) Under and over voltage protection system and cut off provision.</p> <p>iii) Overload protection system.</p> <p>iv) Short circuit protection system.</p>	

S. No	Description	Specification Specified	To be Filled up by the Bidder.
15.	b. Engine Section	b. Automatic shut-down system is to be available of engine for: <ul style="list-style-type: none"> <li>i) Low oil pressure.</li> <li>ii) High oil pressure.</li> <li>iii) High coolant temperature.</li> <li>iii) Engine over speed.</li> <li>iv) Engine over heat.</li> <li>v) Any other items, if necessary.</li> </ul>	
16.	<b>Lighting system</b>	The following lighting system must be available: <ul style="list-style-type: none"> <li>ii) Parking lights</li> <li>iii) Turning indication lights</li> <li>v) Number plates lights (Rear)</li> <li>vi) Brake lights.</li> <li>vii) Clearly visible flashing beacon light on top of the cabin and 'NAV' light qty-04 (blue &amp; red) on roof (front &amp; rear corner).</li> <li>ix) Manually/auto rotatable, approx 1 to 2 feet height adjustable flood light (70 to 75 watt DC) at rear roof top for night operation.</li> </ul>	
17.	<b>Warning System and Fault Memorizing Display</b>	Different warning system of engine failure like over/under Frequency, over/under Voltage, over load, over temperature, low oil pressure, High oil pressure etc should have visual warning system in digital display board (LED/LCD display).	
18.	<b>28V DC Power Socket</b>	One standard two pin, 15 amps, 28V DC socket with a "ON-OFF" switch should be fitted in the power control board and it must easily be accessible to use.	
19.	<b>Cable box</b>	a. Cable boxes having steel cover are to accommodate all the power cables to protect the power cables from rain. The location position of the boxes should be easily accessible.	
20.	<b>Fuel Tanks</b>	A fuel tank capacity of not less than 50 gallons should be fitted with the Ground Power Unit (Trolley mounted).	
21.	<b>Driving Speed</b>	The Trolley mounted Ground Power Unit should be capable to move one place to another by towing tractor at the speed of 15 KM/hour.	
22.	<b>Color</b>	a. Canopies should be golden yellow gloss colour.  b. Cable boxes, Noise boxes, Chassis, wheels, bumpers, mudguards, fuel tanks, etc should be painted with standard black colours.	
23.	<b>Dimension</b>	a. Length: To be mentioned by the bidder. b. Height: To be mentioned by the bidder c. Width: To be mentioned by the bidder	





No	Description	Specification Specified	To be Filled up by the Bidder.
24.	<b>For standard tools, and accessories are to be supplied with each GPU (Trolley mounted) by the suppliers:</b>	<p>a. One Dry chemical fire extinguisher of capacity 5-10 Kg for each Ground Power Unit (Trolley mounted).</p> <p>b. One spare wheel assemble (loose) complete with tyre and tube for each Ground Power Unit (Trolley mounted).</p> <p>c. One set of applicable jack for each Ground Power Unit (Trolley mounted).</p> <p>d. Wheel removing tools set for each Ground Power Unit (Trolley mounted).</p> <p>e. Supplier is to provide 02 x soft copy (CD) of the manuals/publications and related software (if available) required for maintenance/rectification of the power unit and Prime Mover separately with each Trolley mounted Ground Power Unit.</p> <p>f. A list of tools/ special tools with quantity required for maintenance of Ground power unit and Trolley is to be submitted along with the offer.</p>	
25.	<b>Standard Fittings</b>	<p>a. All safety devices are to be incorporated as per the international standard.</p> <p>b. All types of fittings are to be done by the manufacturer as per the requirement of user.</p> <p>c. The supplied Ground Power Unit (Trolley mounted) must be equipped with all standard fittings and accessories as required.</p>	

