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Request for Quote for Supply, Installation, Testing and Commissioning of 750 KVA Diesel Generator

- The GEECI (Gallium Nitride Ecosystem Enabling Centre and Incubator) at SID-Indian Institute of Science is seeking bids from qualified industries for a 750 KVA Diesel Generator.
 - Companies need to submit two bids, a technical bid and a commercial bid, in two separate sealed envelopes. The bids should be submitted no later than 21 days from the date of posting of this tender, as listed on the website date/time stamp, and by 5 pm on the 21st day or next weekday in case the 21st day falls on a weekend or a national holiday.
 - Both technical and commercial bids should be addressed to “The Chief Executive, Society for Innovation and Development, IISc, Bangalore 560012.” GST# 29AAATS5333E1ZJ.”
 - The envelopes should be addressed to “Prof. Srinivasan Raghavan, CeNSE, IISc, Bangalore, 560012” and submitted to the office at CeNSE, IISc in Room No. GF 15 between 9 am and 5 pm.
 - All questions regarding this tender should be addressed to Prof. Srinivasan Raghavan at the email address sraghavan@iisc.ac.in
 - Post such submission all vendors should send an email to sraghavan@iisc.ac.in with the subject line: “GEECI_Bidder’s name Tool Name” to intimate him of the submission within one day.
 - Deviations from the technical specifications requested are allowed. Such deviations must be highlighted and justified. Their acceptance or rejection will be left to the discretion of the technical committee.
 - The equipment sought will be placed at the Centre for Nano Science and Engineering (CeNSE), Indian Institute of Science (IISc). IISc is India’s No. 1 institution on higher learning and the Center for Nano Science and Engineering is home to one of the best academic fabs in the world.
 - The technical response, corresponding to the tool being offered, should be in the form of a compliance table with at least 5 columns. Serial number in column 1. Each of the numbered technical items below should be addressed in a separate row of the table in column 2. Compliance to this requirement, in Yes/No, deviation from it and justification should be provided in the neighboring columns 3-5. Post the opening of a hard copy of the technical bid the committee will request for a soft copy of the files for further processing. Companies should NOT mail soft copies of the files unless specifically requested for.
 - Detailed technical specifications of the tool being offered should be included.
 - Any additional capabilities or technical details, that you would like to bring to the attention of the purchase committee, can be listed at the end of the technical table.
 - If multiple systems can fulfill the requirements, vendors can submit multiple bids.
 - Vendors are encouraged to highlight the advantages of their tools over comparable tools from the competitors.
 - The commercial bid should be broken up to the maximum extent possible into separate items with a cost against each to enable better comparison of price for various configurations across the bidders. As an option, please provide itemized cost for any suggested accessories/addons that may enhance the usability, capability, accuracy or reliability of the tool. Vendors are encouraged to quote for as many add-ons as their tool portfolio permits.
- The quotes should be split into a line item indicating the base price and then each optional item should be listed separately with its pricing.

1. The 70% of DG parts/Components should be of Indian make and Engine must be manufactured in India.
2. Please find the Technical requirements in Annexure-1.



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3. Vendors are encouraged to highlight the advantages of their DG set over comparable DG sets from the competitors.
4. Only vendors who are compliant with the technical requirements will be considered for commercial comparison. The bid is awarded to the lowest cost vendors (referred as L1)
5. The commercial comparison is done as per Government of India rules, specifically GFR 2017. Note that GFR has recently been amended. We shall follow the GFR rules as they stand on the date the tender has been released.
6. As per recent edits to the GFR, there are three classes of vendors distinguished by their “local content”. In the cover letter, vendors must mention which applies to them:
 - a. Class 1 supplier: Goods and services have a local content of equal to or more than 50%
 - b. Class 2 supplier: Goods and services have a local content more than 20% but less than 50%
 - c. Non-local supplier: Goods and services have a local content of equal to or less than 20%
7. In the commercial bid, please provide itemized cost of the system and required accessories.
8. As an option, please provide itemized cost for any *suggested* accessories/add-ons that may enhance the usability, capability, accuracy or reliability of the system. Vendors are encouraged to quote for as many add-ons as their part/material portfolio permits.
9. Please indicate the warranty provided with the Equipment. Warranty of 3 year or more is preferred.
10. GST @5% for supply of items as per concession available to educational institutions and 18% on Transportation/services.
11. The technical proposal must include references of 3 previous installations, preferable in India. Please provide the names and contact addresses of the referees, so that the committee can contact them independently.

Annexure-1 Technical Requirements

Application	Back up source of Power during EB power outage.
Industry type	Semiconductor lab
Genset Capacity	750 KVA/600 KW
DG set	<p>Diesel Generator set must be with the following specifications :-</p> <ul style="list-style-type: none"> • Prime rating at rated rpm (as per ISO8528) must be 750KVA/600KW. • Vendor must specify the Genset Model. • Frequency, Power factor, voltage (with 3-phase supply) must be respectively 50Hz, 0.8 lagging, 415V. • Governing Class (as per ISO 8528 Part-V) must be G3. • Noise level must be < 75 d BA • Fuel consumption: a) At 50% load must be 90 Ltrs/hr \pm 5 Ltrs/hr b) At 75% load must be 125 Ltrs/hr \pm 5 Ltrs/hr c) At 100% load must be 155 Litres \pm5 Ltrs/hr • Fuel Tank capacity must be 990 Ltrs \pm 10 Ltrs. • Weight of the Genset with canopy (in dry condition) must approximately be 8300 KGS. • Overall Dimension of Genset must be : a) Length = 6800 mm \pm500 mm b) width = 2300 mm \pm 500 mm c) Height = 2700 mm \pm- 500 mm • Electrical Battery starting voltage must be 24V.
Engine	<p>Genset Engine must be supplied with following specification :-</p> <ul style="list-style-type: none"> • Rated output (prime continuous rating as per ISO 8528-1) must be 660 KW \pm 5 KW or 900 HP \pm5 HP. • Engine must have 12 Cylinder with cubic capacity of 23 \pm 0.5 Ltrs. • Rated RPM must be 1500 with bore x stroke length of 130 mm x 150 mm • Lube Oil change period must be for 500 Hrs. • Lube oil sump capacity should be 53 Ltrs \pm 2 Ltrs. • The Engine must be radiator cooled and cooling capacity must be 145 \pm 5 Ltrs. • Genset Engine must be supplied with following:- Electrical starter motor 12V DC Battery charging alternator , Bosch fuel system with mechanical governor, A1 Class , Spin-on lube oil filter and Spin-on dual fuel filter with water separator, Turbocharger, Charge air cooler, Silencer (Hospital grade),Dry type air cleaner, Shutoff coil, Flywheel and flywheel housing, first fill of lube oil and coolant.
Alternator	<p>Genset Alternator must be with following specifications :-</p> <ul style="list-style-type: none"> • Alternator is suitable for operation at 1500 RPM, 415 Volts, 0.8 pf (lag) suitable for 50 Hz, 3 phase, 4 wire systems, conforming to IS/IEC 60034-1 • Class-H insulation with IP:23 Protection.

	<ul style="list-style-type: none"> • The Alternator must be brushless type, screen protected, revolving field, self-excited, self-regulated through an AVR. • Alternator Efficiency(at 100% load)0.8pf must be 94 ± 0.5 • Alternator Efficiency(at 75% load)0.8pf must be 94.5 ± 0.5 • Permissible voltage dip at full load 0.8pf lag must be $\leq 19\%$ • Time permitted to build up rated voltage at rated rpm must be < 1 Sec provided engine reached rated speed. • Short circuit ration must be 0.485 ± 0.005 • Short circuit withstand time must be 3 times rated current for '10 sec' • Permissible overload of 10% for one hour in 12 hours of operation
Mounting arrangement	Engine and alternator must be mounted on a common MS fabricated base frame with AVM pads.
Control Panel	<ul style="list-style-type: none"> • The control panel must be manufactured with 14/16 gauge CRCA sheet and is powder coated for weather-proof and long lasting finish. • The control panel must consists of the following parts:- Microprocessor based Controller, Aluminum bus bars with suitable capacity within/outgoing terminals, Indicating lamps for 'Load On' and 'Set Running', Instrument fuses duly wired and ferruled, MCCB of suitable rating with overload and short circuit protections.
Genset Controller	<p>Microprocessor based generator set monitoring and control system must have following specification :-</p> <ul style="list-style-type: none"> • The control must provide a simple operator interface to the generator set, manual and remote start/ stop control, shutdown fault indication, and an LCD hour counter. • All functions must be integrated into a single control system providing enhanced reliability and performance compared to conventional generator set control systems. • This control must be designed and tested to meet harsh environment in which Gensets are typically applied. Features, Functions, protections 16 character x 2 line alphanumeric LCD display with LED Backlight. • Controller should display the following parameters for monitoring: - <ul style="list-style-type: none"> a)Phase Voltages & Currents, Frequency, Reverse power, Genset kVA, kW, kWh, kVAr, Power Factor, Canopy Temperature. b) Lube oil Pressure, Engine Temperature, RPM, Run Hours, Number of starts, Fuel Level, Auto / Manual Stop. c)Battery Charger condition d)AMF Feature e) Modbus communication, Synchronization, remote monitoring. • The following Diagnostic features must be displayed : - <ul style="list-style-type: none"> a) Battery charging failure, Over/Under speed, Over current, over / Under Voltage, Over kW, Phase Seq., Phase missing, Mains Under voltage, Earth Fault. trip, Fuel usage Alarm. b) Low lube oil Pressure, High Engine Temp, Low/High battery voltage, Low Fuel level ,Over Crank protection , routine maintenance indicator, Genset test facility, Mains frequency.



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	<ul style="list-style-type: none"> Control includes provision for Service adjustment and calibration of DG control functions, Voltage, frequency selection, Configurable input and output set up, Meter calibration, Engine controls, Power Start operates on 12 VDC batteries. Auto start mode accepts a ground signal from remote devices to automatically start the DG set. The remote start must also wake up the control system from sleep mode.
Engine Starting	<ul style="list-style-type: none"> The control system supports automatic engine starting, Primary and back up start disconnects are achieved by battery charging alternator feedback or main alternator output frequency. Controller provide configurable time delay of 0-300 secs to start after remote start signal and time delay of 0-600secs prior to shut down after stop signal. Sleep mode increase battery life. Configurable current settings from low to minimize current draw when genset is not working. Engine Protective functions must include:-Configurable alarm output, Emergency stop: Annunciated whenever an emergency stop signal is received by the control. Low lube oil pressure warning and Shutdown, High engine water temp warning / Shutdown, Low coolant temp warning, Sensor failure indication, Low and high battery voltage warning, Weak battery warning, Fail to start shut down, Cranking lockout: Control will not allow the starter to engage or to crank the running engine. Cyclic cranking: Configurable for the number of starting cycle, (1 to 7) and duration of crank and rest periods. Alternator Protective functions includes, - High and Low AC voltage shut down, Under and Over frequency shutdown / warning, Loss of sensing voltage input shut down.
Acoustic enclosure/Canopy	<ul style="list-style-type: none"> The acoustic enclosure shall be made of 1.6 mm thick CRCA sheets in suitable approved shade and a structural/ sheet metal base frame painted in black. The walls of the enclosure are insulated with fire retardant foam so as to comply with the 75dBA at 1 mtr sound levels specified by Ministry of Environment & Forest. The enclosure has the following features: Specially designed to meet stringent MOEF/ CPCB norms of 75dBA @ 1mtr at 75% load under free field conditions, Two point lifting for easy handling at customer site, Designed to have optimum serviceability,. Air inlet louvers specially designed to operate at rated load made on special purpose CNC machines for consistency in quality and workmanship, Powder coated for long lasting service life and superior finish, With UV resistant powder coating, can withstand extreme environment.

	<ul style="list-style-type: none"> • Use of special hardware for longer life, Insulation material meets exacting IS 8183 specifications for better sound attenuation, Flush styling - no projections, Fluid drains for lube oil and fuel, Fuel filling point inside the enclosure.
Installation, Testing & commissioning	<ul style="list-style-type: none"> • The Installation should be carried out by trained Engineer/ technicians. • The Installation, testing and documentation procedure followed should be compliant to Industry standards. • All the Test certificates/reports/documents should comply to CPCB Norms. • All electrical/circuit /piping schematic drawings to be submitted. • Two set of User manual to be submitted.
Safety	The installation technician should follow all site safety terms. (Mandatory PPE: Safety helmet with face shield, electrical insulated gloves, electrical insulate Safety shoes.)
Recommendation	<ul style="list-style-type: none"> • The Vendor must submit references from at least 3 previous installations • The names and contact addresses of the referees must be submitted with the proposal, so the purchase committee can contact them independently.
After sales Service(during warranty Period)	<p>Scope of work (Vendor):</p> <ul style="list-style-type: none"> • DG set must be checked for its proper functioning and if any defect is found the same must be rectified. • The entire DG Engine system must be checked for any fuel/coolant leak and attended to if necessary. • Genset controller will be tested for proper functioning and in case of any malfunctioning they will be either rectified or replaced accordingly. • Microprocessor board and software will be checked for their correctness and rectified. • Breakdown calls must be attended within 48 hours. • Engine & Alternator systems must be reliable and support for next 10 years.



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Note :-

1. Vendor must submit **Design & GA** drawings for approval before Manufacturing/Supply.
2. Any type of Civil / Structural works such as making of wall openings/closing for the passage of pipes, supports, framework etc., will be in vendor/Contractor's scope.
3. Any Work permit/shutdown required for work must be intimated prior 5-6 days before start of work.

Thanking you,