

Technical Specification for Tender No. 2022-23/07 Released Government E - Marketing (GeM Portal)

| 3D Scanner | | |
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| Sl. No. | Specification | Range / Value |
| 1.1 | Make | Bidder to specify |
| 1.2 | Model | Bidder to specify |
| 2 | Scanner type | Handheld |
| 3 | 3D point accuracy, up to | 0.05 mm or better |
| 4 | 3D resolution, up to | 0.1 mm or better |
| 5 | Data processing algorithms | Geometry and texture based |
| 6 | Working distance | < 1.0 meter |
| 7 | Data acquisition speed | 1 million points per sec or higher |
| 8 | Depth of Field | 250 mm or better |
| 9 | Scanning Area | (175 - 225 mm) x (125 - 175 mm) |
| 10 | Angular field of view | Bidder to specify |
| 11 | Colors | 24 bits per pixel or better |
| 12 | Object preparation | Marker free scanning with no object preparation essential |
| 13 | 3D reconstruction rate for real-time fusion, up to | Bidder to specify |
| 14 | 3D light source | VCSEL / Flashbulb / Blue LED (or) Suitable for functioning of the equipment |
| 15 | 2D light source | White LED array/ RGB LED (or) Suitable for functioning of the equipment |
| 16 | Display/touchscreen | Integrated suitable size half HD screen, CTP / Optional Wi-Fi/Ethernet video streaming to external device(or) USB streaming through external computer |
| 17 | Interface | Wi-Fi, Ethernet, SD card (or) 1 × USB 2.0, USB 3.0 compatible |

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| 18 | Computer requirements: Laptop | |
| 18.1 | Supported OS | Data processing: Windows 10 x64 bit |
| 18.2 | Computer specifications | Intel Core i7, 32GB RAM, NVIDIA GPU with 4 GB VRAM, CUDA 6.0, 1 TB Hard disk SSD |
| 19 | Output formats: | |
| 19.1 | 3D mesh | OBJ, PLY, WRL, STL, AOP, ASCII, PTX, E57, XYZRGB |
| 19.2 | CAD | STEP, IGES, X_T |
| 19.3 | Measurements | CSV, DXF, XML |
| 20 | Others: | |
| | The other features of the scanner HD, Hybrid geometry and texture tracking system , ability to capture texture, Bulit-in position sensors Embeded multi-core processing system and Built-in exchangeable battery, optional AC power | |
| 21 | Any other accessories required | Bidder should submit complete scope of supply (Machine, standard accessories, Optional Acessories etc with make model) in the technical bid without price. Bidder should supply complete start up package including material necessary to prove the machine and provide training. |
| 22 | Scope of supply | The bidder must have supplied machines at other Institutes in the past (a satisfactory performance certificate from those users may be solicited if needed). Bidder should submit complete contact details. |
| 23 | Terms & Conditions | Manufacturer of the supplied equipment must be ISO Certified |
| | | Authorization Letter from OEM |
| | | List of clients in last five years to be provided. |
| | | Manufacture/Supplier should have sizable installations of same model worldwide and at least Fives in India. |
| 24 | INSTALLATION, COMMISSIONING AND TRAINING | Bidder should state the space required and condition of floor and any other requirements for installation of the machine and equipments. State clearly the specifications of electrical requirement. Vendor should carry out installation and commissioning of the machine and its accessories on a turnkey basis. |

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| 25 | Installation and commissioning requirements | Minimum of 5 days training for five persons which includes basic & advanced level training. Training content and plan to be submitted. Training faculty must have adequate experience in this field. |
| 26 | Training and documentation | The vendor should supply the necessary manuals such as |
| | | · Software instruction |
| | | · Maintenance and trouble manual |
| | | · Training |
| | | · Installation and Commissioning |
| | | · Handling of accessories |
| | | · Software key (if any) |
| 27 | Technical support and service | · Software CDs |
| | | Manufacturer should have established after sales & service network in India. The vendor shall have local service and application office and infrastructure to attend by visit within 48 hours of need. Technical support personnel must have adequate experience in this field. Technical support personnel details should be submitted. Name and address of the authorized service centre/ partner in India along with the certificate of authorization should be attached. |

| 3D Printer | | |
|------------|----------------|---|
| Sl. No. | Specification | Range / Value |
| | Make | Bidder to specify |
| | Model | Bidder to specify |
| 1 | MACHINE | |
| 1.1 | Technology | Solid based additive manufacturing system (Latest Fused Deposition Modeling system) |
| 1.2 | Build Volume | Minimum build volume 350 * 350 * 350 mm (±50mm) |
| 1.3 | Nozzles | 2 (Dual Wear Resistance Nozzles) for model and support materials. |
| | | Nozzles for layer thickness: 0.3, 0.4, 0.6 mm |

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| 1.4 | Layer resolution | Minimum 20 micron or better |
| 1.5 | Part accuracy | Parts produced should be within an accuracy of +/- 0.15 mm |
| 1.6 | Support structure | Soluble and breakaway |
| 1.7 | Machine Control | Machine should build parts in circulated air heated chamber to provide uniform temperature control and heated build environment throughout the volume of the build and each layer of the print. |
| | | Chamber Temperature: as per the requirement of printing material |
| | | Non heated removable and flexible build plate/sheet made form heat absorbing material such as Polycarbonate or ceramic build plate or equivalent |
| | | Motion controlled components should place outside and should be insulated from the heated build chamber. |
| | | The support material distinct material which should extrude from a different print head/nozzle. |
| | | The machine shall automatically calibrate nozzle and build platform in X, Y and Z axis before the start of each job. |
| | | Auto and manual calibration of offset between model and support nozzle. |
| | | The extruder Nozzle tips should be self cleaning |
| 1.8 | Filament Flow Control | 3D Printer should have Automatic Filament Flow Control System for easy and smooth dispensing of material |
| 1.9 | Air Circulation System | 3D Printer should have air circulation system |
| 1.10 | Material Flow Rate | 50 mm ³ /sec or better |
| 1.11 | Extruder/ Nozzle Temperature | 450 °C or Better |
| 1.12 | Monitoring | Live camera for tracking and monitoring, mobile app for android and iOS should be available |

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| 1.13 | Material Handling | Material handling systems should be part of the Printer with automatic material loading, feeding and storage management system. Material cabinet should be dry sealed with humidity control. All material spool/cartridges (model and support) should have an EEPROM /chip to indicate the quantity of material available in the spool / cartridge at any instance of the machine operation during idle or run time. Tip life should be displayed on the monitor. |
| | | For large jobs. The machine shall automatically pause and prompt the operator to replenish material and resume printing in case of the material (for both model and support) gets consumed during the build process. The machine should keep the chamber temperature and heated airflow constant while the machine is paused. |
| 1.14 | Connectivity | Wi-Fi, USB, LAN/SD card compatible |
| 1.15 | User Interface | Touch Screen |
| | | Using computer with appropriate software. Software should display and control. Complete program of solution must be provided. |
| 1.16 | Slicing software | Software should be able to import any native CAD formats like stl, obj igs, vrml. stp, Parasolid, native files of CAD packages etc and be able to repair errors like open surfaces, inverted normal etc without use of any 3rd party software. |
| | | Software should be from same OEM; 3rd party software is not allowed. License must be perpetual and cloud support must be available. |
| | | Software should allow by changing the parameters / add or deletion of support, infill percentage, etc., |
| 2 | Materials | |
| | | Standard Materials (Print Settings should be pre-configured in machine and software): ABS, ASA, Chemical Resistant Material, Nylon12, Carbon Fiber re-enforced material, PC-ABS, Fire-Resistant PC-ABS |
| | | Research Material: User should be able to run self-developed/open-source materials metal and polymer filaments. |

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| 2.1 | Materials | Vendor should quote all possible materials and supply 5 Nos. of Filament Spool on each material, excluding the quantity of material required for installation, training, and calibration. Machine should be calibrated to fabricate parts with all the materials mentioned above at the time of installation. |
| | | Vendor should attach the quality certificate of each material with test report evaluating the parameters according to ASTM/DIN standards tested on same/similar machine from same OEM. |
| 2.2 | Customised material guidance | Machine should have the provision of testing materials developed by the customer and professional guidance should be given to adhere to the system compatibility and configuration |
| 2.3 | Material Quality and Property | Vendor should also supply proven parameters for all the suitable materials with clear documentation and statistics of the mechanical properties with respect to build orientation and layer thickness. |
| 3 | ESSENTIAL ACCESSORIES | |
| 3.1 | Support removing system | As per the requirement to be quoted by the bidder (for soluble support removal) |
| 3.2 | Consumables | Vendor should supply minimum quantities of consumables like build platforms, nozzle for all layer thickness, wiper blade assembly with purge ledge, brush etc., required for 6 months |
| 3.3 | Tool kit | Vendor should supply standard tool kit for start-up, removal of parts and cleaning (list to be attached). |
| 3.4 | Any other accessories required | Vendor should supply all the other accessories, material transport trolleys / carts and spares required for effective and better utilization of machine. All the required accessories should be listed |
| 3.5 | Compressor | Vendor should supply Suitable compressor with dryer and all necessary accessories (if required) |
| 3.6 | De-humidifier | Vendor should supply suitable de-humidifier to maintain room humidity level within suitable range for machine operation (if required). |
| 3.7 | Online UPS | Vendor should supply suitable UPS with minimum 60 minutes power backup for the machine and essential accessories. Should have built in safety to protect machine from voltage spikes and sudden surges. |

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| 3.8 | Workstation with accessories | Vendor should supply suitable OEM workstation computer system with complete accessories and UPS. It should have minimum of i7 (3.4 GHz, quad core) processor of latest configuration, 64GB RAM (2400MHz, DDR4), 1TB hard disk (7200 RPM), and 4GB graphics card or better configuration, with windows operating system and MS office recent version. |
| 4 | OTHER ESSENTIAL REQUIREMENTS | |
| 4.1 | Benchmark part | Vendor should submit two numbers of benchmark parts in two material which should be built in the quoted machine same is to be built during prove out of the machine at the site |
| 4.2 | Manufacturer's/Suppliers Credential Credentials | Supplier should have sizable installations of same model worldwide and at least three same or similar models in India. Supplier should submit complete contact details and acceptance letter from the recent customers. |
| | | Manufacturer of the quoted equipment should be ISO certified and should have supplied same/similar machine in India/globally for a period of minimum of 10 years. |
| 4.3 | Safety Requirements | The machine and all the accessories supplied to meet objective should be able to operate without any risk or hazard, without any additional protection, provision, training or guarding devices and meet current international standards such as CE, FCC, EMC, Low Voltage Directive 60950-1, 62368 - Certificate of Conformance to be attached |
| 4.4 | Scope of supply | Vendor should supply complete start up package necessary to prove the machine and provide training. List for scope of supply to be submitted. |
| 4.5 | Environment Protection | The machine and all the accessories supplied should be safe to use without emission of any hazardous gases, noise level and radiation without any need for additional equipment, provision or training and meet current international standards |
| 4.5 | Consumables & accessories and their availability | List all such material that will be used in building part. Tender shall include list of all essential spares and consumables to be provided with replacement time prescribed for each such item and its availability within reasonable time period. In case if any such item is likely to be out of availability within service period of machine, such item shall be included in initial supply |
| 4.6 | Price list of material, spares, and consumables | Price list of each material with minimum order quantity, machine spares and consumables are to be quoted. |

| 5 | | INSTALLATION, COMMISSIONING AND TRAINING |
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| 5.1 | Installation and requirements | Vendor should state the space required and condition of floor and any other requirements for installation of the machine and equipment's. State clearly the specifications of the following items required for installation such as Transformer, chiller, UPS, Air conditioner, Dehumidifier, separate special earthing, vibration isolation. Material disposal procedure for the soluble support system / agitation / cleaning tank |
| 5.2 | Training and documentation | Minimum of 5 days training for five persons which includes basic & advanced level training. Training content and plan to be submitted. Training faculty must have adequate experience in this field. |
| | | The vendor should supply the necessary manuals such as |
| | | ◆ Software instruction |
| | | ◆ Maintenance and trouble manual |
| | | ◆ Training |
| | | ◆ Installation and Commissioning |
| | | ◆ Handling of accessories |
| | ◆ Software key (if any) | |
| | Installation and requirements Commissioning | The Vendor should support necessary site preparation for installation. Vendor should carry out installation and commissioning of the machine and its accessories on a turnkey basis. Material disposal procedure for the soluble support system / agitation / cleaning tank. |

| CNC EDM | | | |
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| Sl. No. | Specification | Range / Value | |
| | Make | Bidder to specify | |
| | Model | Bidder to specify | |
| 1 | Work Tank Size | mm | (900-1100) X (500-700) X (250-450) |
| 2 | Work Table Size | mm | (600-700) x (300-400) |
| 3 | Axis travel: | | |
| 3.1 | X Axis | mm | 400 -500 |
| 3.2 | Y Axis | mm | 300 -400 |
| 3.3 | Z Axis | mm | 250-350 |
| 4 | Measurement resolution | µm | 1 |
| 5 | Maximum Job weight | kg | Minimum 500 |
| 6 | Max. electrode weight | kg | Minimum 50 |

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| 7 | Dielectric Unit | | Filtration system - 10μ or better ; Flushing Injections ; |
| 8 | Generator | | ISPG Integrated / Transistor-controlled pulse generator or better |
| 9 | Max. machining current | A | 50 or better |
| 10 | Minimum surface roughness (Ra) | μm | 0.25 or better |
| 11 | Control System | Latest with complete module CNC controller (or OEM system) and Capable storage to store large part programs for continuous running. Program input/output can be performed through USB/LAN. Software should have possibility to create machining programs both in dialogue and visual modes directly from the operator panel. | |
| 12 | Essential Accessories: | | |
| 12.1 | Servo Motor (X, Y, Z) | Bidder should quote and supply OEM / Wellknown branded with make, model and major specification for smooth running of the machine. | |
| 12.2 | Glass Scale Feedback (X, Y, Z) | | |
| 12.3 | Flushing system | | |
| 12.4 | Filter set | | |
| 12.5 | Servo voltage stabilizer | | |
| 12.6 | Ultra Isolation transformer | | |
| 12.7 | Chiller Unit | | |
| 12.8 | Collet holder with collet set | | |
| 12.9 | 3D probe measuring system for Erowa or System 3R | | |
| 12.10 | Erowa or System 3R electrode holding system kit | | |
| 12.11 | Remote controller | | |

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| 12.12 | Clamping kit | |
| 12.13 | Precision machine vice 4” | |
| 12.14 | Ethernet, USB ports, RS-232C Communication Ports | |
| 12.15 | Auto Fire Extinguisher | |
| 12.16 | Machine lamp | |
| 12.17 | Dielectric fluid (400 Litre) | |
| 13 | Others | Need to specify and quote if any other accessories available /required for smooth running of the machine. |
| 14 | Terms & Conditions | Manufacture/Supplier should have sizable installations of same or better model worldwide and at least Five in India which is education institutions centrally funded institution. A Satisfactory Performance certificate from two institutions to be provided for eligibility. Bidder should submit complete contact details |
| | | The quoted machine should be recently manufactured with the latest technologies and should not be a absolute model in the market and has atleast minimum 7 years residual market |
| | | Equipment should be CE certified |
| | | Authorization Letter from OEM |
| 15 | Scope of supply | List of clients in last five years to be provided. |
| | | Bidder should submit complete scope of supply (Machine, standard accessories, Optional Accessories etc with make model) in the technical bid without price. Bidder should supply complete start up package necessary to prove the machine and provide training. |
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| 16 | INSTALLATION, COMMISSIONING AND TRAINING | |
| 16.1 | Installation and requirements | Bidder should state the space required and condition of floor and any other requirements for installation of the machine and equipments. State clearly the specifications of electrical requirement. Vendor should carry out installation and commissioning of the machine and its accessories on a turnkey basis. |

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| 16.2 | Training and documentation | Minimum of 5 days training for five persons which includes basic & advanced level training. Training content and plan to be submitted. Training faculty must have adequate experience in this field. |
| | | The vendor should supply the necessary manuals such as |
| | | · Software instruction |
| | | · Maintenance and trouble manual |
| | | · Training |
| | | · Installation and Commissioning |
| | | · Handling of accessories |
| | | · Software key (if any) |
| · Software CDs | | |
| 16.3 | Warranty | The whole system and its accessories should be given three years warranty for replacement and service against any design, manufacturing and workmanship defects from the date of installation and commissioning. |
| 16.4 | Technical support and service | Manufacturer should have established after sales & service network in India. The vendor shall have local service and application office and infrastructure to attend by visit within 48 hours of need. Technical support personnel must have adequate experience in this field. Technical support personnel details should be submitted. Name and address of the authorized service centre/ partner in India along with the certificate of authorization should be attached. |
| 16.5 | Annual Comprehensive Maintenance Contract (ACMC) as optional | Vendor should quote for Annual Comprehensive Maintenance Contract for the whole system and accessories supplied after the completion of performance warranty period. Supplier has to provide service support within 48 hours. Calibration of the machine shall be a part of warranty and ACMC. It shall also be mandatory to perform calibration after every major repair or breakdown |

| CNC Lathe / Milling Programming Simulator | | |
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| Sl. No. | Specification | Range / Value |
| | Make | Bidder to specify |
| | Model | Bidder to specify |

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| 1 | CNC Programming Simulator-1 No, having similar hardware unit of CNC Machine for 2 axis Turning and 3 axis milling operations for FANUC / SIEMENS (or) Equilvalent controllers with the following features | |
| 1.1 | Basic education | |
| 1.2 | Integrative training in programming, toolpath generation, interactive NC Prgram Compilation and valiadtion with post processor. | |
| 1.3 | Machining verification through graphics simulation & operation selection like MDI, Emergency stop button, Manual Pulse generator and over ride switch | |
| 1.4 | Display device-10 inch LCD (Min.) | |
| 1.5 | Simulator Weight-10 to 12 kg | |
| 1.6 | Communication I/F -Ethernet | |
| 1.7 | Built -In USB port , CF Card | |
| 1.8 | Part program storage -512 KB or better | |
| 2 | CNC Simulation software with PC-10 Nos . | |
| 2.1 | The above Simulator should be supplied with latest versions of CNC Education package software along with PC Compatiable for the software supplied. PC Configuration :Processor (CPU): Intel Core i5 or equivalent Operating System: Microsoft Windows 10 Professional x64 Memory :16 GB RAM Storage:512 GB internal Solid State Drive (SSD) or 1 TB internal HDD Monitor/Display: 24" LCD monitor UPS:1 KVA | Bidder to specify |
| 3 | GENERAL TERMS & CONDITIONS | |
| 3.1 | The quote shall be supplied with reference to the module_ | |
| 3.2 | The license must be perpetual_ | |

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| 3.3 | Warranty : Three years from the date of acceptance of installation_ | |
| 3.4 | The Installation and training will be the responsibility of the supplier_ | |
| 3.5 | During the above period of maintenance, any upgrades released will be supplied free of cost | |
| 4 | Accessories to be quoted and supplied along with machine / equipments: | Bidder to specify and quote if any other accessories available /required for smooth running of the machine. |
| 5 | Terms & Conditions | Manufacture/Supplier should have sizable installations of same or better model worldwide and at least Five in India which is education institutions centrally funded institution. A Satisfactory Performance certificate from two institutions to be provided for eligibility. Bidder should submit complete contact details |
| | | The quoted machine should be recently manufactured with the latest technologies and should not be a absolute model in the market and has atleast minimum 7 years residual market life. |
| | | Equipment should be CE certified |
| | | Authorization Letter from OEM |
| | | List of clients in last five years to be provided. |
| INSTALLATION, COMMISSIONING AND TRAINING | | |
| 6 | Installation and commissioning requirements | Bidder should state the space required and condition of floor and any other requirements for installation of the machine and equipments. State clearly the specifications of electrical requirement. Vendor should carry out installation and commissioning of the machine and its accessories on a turnkey basis. |
| 7 | Training and documentation | Training should be provided during installation. Total training duration shall be of 07 days. Training shall be planned in two phases basic for 4 days and advanced for 3 days. Training content and plan to be submitted. Training faculty must have adequate experience in this field. |
| | | The vendor should supply the necessary manuals such as |
| | | · Software instruction |
| | | · Maintenance and trouble manual |
| | | · Training |
| · Installation and Commissioning | | |

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| | | <ul style="list-style-type: none"> · Handling of accessories · Software key (if any) · Software CDs |
| 8 | Technical support and service | <p>Manufacturer should have established after sales & service network in India. The vendor shall have local service and application office and infrastructure to attend by visit within 48 hours of need. Technical support personnel must have adequate experience in this field. Technical support personnel details should be submitted. Name and address of the authorized service centre/ partner in India along with the certificate of authorization should be attached.</p> |