Technical Specification For Tender No. 2022-23/04 Released Government e- Marketing (GeM Portal)

Uv - Weather - O - Meter		
Sl. No.	**Specification**	**Range / Value**
1	Effective radiation area	4000 cm^2
2	Components surface temperature	45 ^oC - 80 ^oC for UV Cycle 45^oC -60^oC for condensation
3	Temperature accuracy	± 0.1 ^oC or better
4	Temperature resolution	1 ^oC or better
5	Temperature controller	Black panel Temperature
6	Centre distance of lamp	5 cm
7	Humidity	100%
8	Light source	UV Fluorescent Lamp
9	Wavelength	UVA (340 nm) & UVB (313 nm)
10	Temperature sensor :	Black panel
11	Minimum sample holder plates	Aluminum Plates 24 sample holders
12	Water spray system	Water spray system consisting of spray nozzle, piping control & drain.
13	Conditioning cycle	Light cycle and Condensation cycle

14	Irradiance Calibration	Irradiance calibration (calibration radiometers for periodical calibration) with NIST traceability (UVA & UVB)
15	Irradiation Control	Irradiation control (solar eye automatically maintain light intensity through feedback look this controller monitor UV intensity and compensate lamp aging or any other variability by adjusting power to the lamp) with NIST traceability
16	Other built –in features	· Easy programming of cycles, temperature checking and status performance with proper safety controls.
		· Self diagnostic system for complete error checking and performance status should be displayed.
		· The built-in calibration includes lamp calibration service or maintenance.
		· The system shall be able to stimulate Heat, Rain and Dew conditions as per requirements of various standards.
		· Data Acquisition Program via Ethernet
		· De-ionized water unit.
		While supplying the Machines, the supplier should also provide the following items apart from above:
		· 02 years of warranty.
		· 01 additional set of UVA & UVB (12nos. each)
		· Validation certificate

		· Hard copies of Operational & Service Manual- 01 Set..
		· Machine should come with all other essential accessories & spares required for installation, commissioning& Operation
		· Onsite Training to be provided.

Xenon Weather - O - Meter		
Sl. No.	**Specification**	**Range / Value**
1	Light source	Air cooled Xenon Arc Lamps
2	Sample compartment	Approx. 3000 Sq. cm or more
3	Sample holder type	Flat Bed Type. Suitable for removing and replacing the sample holder shall be provided.
4	Filter	Optical Filter system to simulate outdoor / indoor testing
		Filters should be of non-ageing type to avoid frequent change
5	Panel	Black Panel Temperature (BPT) Control
		Black Standard Temperature (BST) Control
6	Control	Chamber Air Temperature Control
		Simultaneous control of BST & CAT required
		Relative Humidity Control required
		Microprocessor control required
		Touch screen/key pad
		Irradiance control required
		Irradiance Sensors at 340nm, 420 nm & TUV range
		Irradiance Calibration device for quick, easy, error free and automatic

		Provision of water spray front & back required
		Data logging interface along with software
		Capability of mounting and testing fabric specimens/ plastic specimens
		Back spray and dual spray in xenon test chamber
8	Standard compliance	Compliance to various international standards (ISO, ASTM and other standards)related to Plastics, fiber, textiles, elastomers/rubbers, latex, adhesives etc.,
		Suitable Radiometer with NIST Traceable calibration certificate for optional filters for Xenon test chamber
		Black Panel Calibration Thermometer for Xenon test chamber
9	Accessories to be quoted and supplied along with machine / equipment	Specimen holder set.
		One additional Set of Xenon Arc Lamp
		Other types of Filters (Window glass, UV/Extended UV) as specified in the above referred standards to be provided
		Suitable model of Compressor, Chiller and Water purifier compatible to the weatherometer to be provided.
10	Additional features	· Easy programming of cycles, temperature checking and status performance with proper safety controls.
		· Self diagnostic system for complete error checking and performance status should be displayed.
11	Other Mandatory Items	While supplying the Machines, the supplier should also provide the following items apart from above:
		· 03 years of warranty.
		· Hard copies of Operational & Service Manual- 01 Set.

		· Machine should come with all other essential accessories & spares required for installation, commissioning & Operation
		· Onsite Training to be provided

Oxygen Transmission Rate (OTR)		
Sl. No.	**Specification**	**Range / Value**
1	Measuring range for film and sheet	Test Range, Single Cell Mode, Unmasked - 0.05 to 200 cc/(m^2-day)or equivalent.
		Test Range, Single Cell Mode, Masked - 0.1 to 2,000 cc/(m^2-day)or equivalent.
		Test Range, Dual Cell Mode, Unmasked - 0.006 to 100 cc/(m^2-day)or equivalent.
		Test Range, Dual Cell Mode, Masked - 0.01 to 1,000 cc/(m^2-day)or equivalent.
2	Resolution	Resolution, Single Cell Mode- 0.01 cc/(m^2-day)
		Resolution, Dual Cell Mode - 0.005 cc/(m^2-day)
3	Measuring range package	0.0005 to 1.0 cc/(pkg-day)
4	Resolution	0.00005 cc/(pkg-day)
5	Measuring chambers	2 Chambers (with independent sensors)
6	GTR Repeatability (50 cm^2)	±0.002 cc/(m^2 · day) or ± 1% of relative whichever is greater
7	Test Method	Coulometric (sensor in cell)
8	Sample size	10.2cmx 10.2cm(50cm^2Test area),small size samples should also be tested with the help of 5cm^2 aluminum masking foil.
9	Film Test Cell per module	2X50cm^2 (pneumatic clamping cell)
10	Thickness of sample	Upto 3mm
11	Carrier Gas Requirement	One Gas Cylinder with gas mixture of 98%N2 & 2%Hydrogen as per ASTM requirement to be supplied.

12	Test Gas Requirement	One Gas Cylinder of 99.99% dry O2 as per ASTM requirement to be supplied.
13	Humidity Range	0%RH & 35%RH to 90% RH, 100% RH for films" and packages RH sensor directly at sample site.
14	Humidity control accuracy	±3%RH
15	Temperature Requirement	10-40^{0}C
16	Temperature control accuracy	±0.5°Cor better
17	Gas Pressure Range	30 – 35 psig
18	Cell Clamping	Pneumatic
19	Barometer	Barometric pressure compensator
20	Special Features	ü Fully Automatic Testing
		ü Automatic RH control & Built-in software
		ü Faster Speed to test
		ü Improved results
		ü Easy film replacement
		ü No calibration Required
		ü Advisory screen prompts operator input
		ü Customize and store up to 99 test methods
		ü System protects against over or under pressure
		ü System protects against thermal runaway
		ü Status-screens display real-time information
		ü Pneumatic clamping
		ü "No-flow" adjustment required
		ü Repeated calibration not required before each testing
		· Necessary two precision, two stage SS diaphragm Regulator for Carrier gas & test Gases of best quality with all necessary tubing fittings&Moisture tap filtersfor accurate pressure adjustment.
		· Standard Reference/Certified Films
		Rings for sample cell of necessary quantities

21	Accessories to be supplied	· Kit consisting Brass Nut, Brass Ferrule, O ring for cell,Copper tubing, cutting kit,Grease, syringe & certified film as mentioned above.
		· Aluminium Foil Mask for 5cm^2 film sample
		Operating Software
		Suitable computer with accessories
22	Calibration	Calibration certificate traceable to NIST for the certified Films and instrument to be supplied
23	Other Mandatory Accessories to be quoted and supplied along with machine / equipment	While supplying the Machine, the supplier should also provide the following items apart from above:
		· Basic tool Kit-01 set
		· Hard copies of Operational & Service Manual- 01 set
		· Necessary Hoses & Nipples required for gas connections-01 set
		· The Machines should come with all other essential accessories & spares (as per ASTM & ISO standards) required for installation, commissioning & operation.

Thermo Gravimetric Analyser (TGA)		
Sl. No.	**Specification**	**Range / Value**
1	Balance Sensitivity:	0.1 µg or Better
2	Balance Measurement Range:	Up to 1 g or more
3	Weighing precession:	0.01 % or better.
4	Signal Resolution:	0.002 µg

5	Temperature Range:	ambient or less to 1000°C or more
6	Temperature measurement accuracy:	± 0.5°C or better
7	Temperature Accuracy:	±0.5°C or better
8	Dynamic Temperature Precision	±1°C or better
9	Isothermal Precision	±1°C or better
10	Heating rate:	0.1°C/minute or lower to 100°C/minute
11	Cooling time:	10 min or better, any cooling accessory required should be quoted
12	Sample Pans:	Platinum Pans 10 Nos., Alumina Pans – 10 Nos., Lid for Platinum Pans -10 Nos., Lid for Alumina Pans- 10 Nos, Quartz Crucible 10 Nos. Aluminium Pans -500 Nos. with crimping machine (if necessary)
13	Capacity of Pan	Volume of the sample shall be 100µm or compatible with the equipment
14	Chiller:	Suitable inbuilt chiller with CE certification should be quoted.
15	Gas Flow Control:	System must include software programmable mass flow controller (2 or more) for convenient & precise gas control and switching between gases (Inert & Air).
		The system should be able to perform under flowing inert and /or active gases, static as well as vacuum atmosphere. All vacuum accessories required should be quoted

16	Atmosphere:	The system should also be suitable to perform adsorption studies of gases such as NH_3, CO, CO_2, H_2 etc. from a 1 % or more mixture of these gases in an inert gas. The quoted MFC should be able to control the flow rate of such gases. All other accessories required to perform adsorption studies should be quoted.
17	High vacuum pump :	Ultimate vacuum less than 10 mbar or better.
18	Provision for easy interfacing of TGA with MS or FTIR in future shall be provided. (shall be quoted separately).	
19	Gas cylinder:	High purity (99.999%) nitrogen,oxygen zero air gas cylinder (capacity 47 litre) with double stage double meter gas regulator with stainless steel diaphragm and pressure gauge suitable for above cylinder should be quoted
20	Software	The latest Microsoft windows based user friendly software should be supplied. The software should have the ability to data access, storage and analysis. The software should also have the ability to Plot thermal curves for TGA against time and or/temperature. Calculate derivative of TG data and plot DTG curves. Baseline correction, integration and prepare overlay of curves. Possibility of converting data into ASCI format and export the same for further manipulation.
21	Others	· For the entire third party item being quoted the model and make should be specified in the quotation
		· System should be supplied with latest branded PC and Printer.
		· To supply necessary spares and accessories
22	Accessories to be quoted and supplied along with machine / equipment	The following accessories should be quoted invariably
		· Auto sampler with 10 sample position

		· Kinetics software, based on model free isoconversional method based algorithm
23	Calibration	Calibration certificate to be produced wherever required traceable to NIST CRM (Nickel, Calcium Oxalate Monohydrite or equivalent) Standard weight of 1 mg & 100 mg (with certificate)
24	Warranty	03 years

Industrial 3D Computer Tomography Scanner (3D CT Scanner)		
Sl. No.	**Specification**	**Range / Value**
1	**System Information**	
1.1	Make	Bidder to specify
1.2	Model	Bidder to specify
1.3	Application	Dimensional and Defect analysis for Metal & Plastics
1.4	Technology	X-ray based CT
2	**X Ray Tube**	
2.1	Tube voltage	225 KV
2.2	Maximum Tube current	up to 3000 µA
2.3	Focal spot size	5 µm or better
2.4	Power	300 W or Better
3	**Detector**	
3.1	X ray Detector	Flat Panel Detector
3.2	Pixel size	(100 - 200) µm x (100 - 200) µm
4	**Manipulator**	
4.1	Manipulator	5 Axes or better
4.2	Max Load	20 kg or better
4.4	Rotation Axes	0° - 360° x n (The position of the rotary table should be adjustable between x-ray tube and detector)
5	**Measuring range**	Dia: 150 - 200 x H :300 -350 or Better (units in mm)
6	**Max Object Size**	Dia: 150 - 200 x H :300 -350 or Better (units in mm)
7	**Accuracy :**	**It must be ensured that measurements can be taken at any magnification position without additional calibration measures**
7.1	Sphere center point error	4.0 +L/100 µm or better
7.2	Probing error	3-4µm or better
8	**Radiation Protection Enclosure**	
8.1	Material	Enclosure should be made of suitable material which absorbs X-Rays and prevents outside radiation
8.2	Dimensions	A minimum distance must be kept on all sides around the radiation protection enclosure as per the safety standard.
9	**Software**	

9.1	Software package for Reconstruction/Data Acquisition / Data Evaluation / Analysis and Visualization : The software should be modular, yet fully integrated, complete system.	1. Suitable software for data reconstruction/ data acquisition and machine control : System for optimization of reconstruction parameters, 3D filters, different resolutions, different quality levels, automatically proposed reconstruction parameters. 2. The software shall facilitate the controls of all components of the CT system (such as the tube, detector, manipulation) and permits the control of all relevant steps during CT measurement, such as the creation of projection data sets, reconstruction of volumes, visualization of volumes and projections. 3.Suitable software with complete module for Volume analyses and Geometry Analyses modules. The volume analyses software should be the latest version of the evaluation software includes Basic evaluation, defect analysis and wall thickness analysis. The volume analyses software must be used for automated evaluation, After scan a prepared evaluation must be launched automatically. 4.Automatic Geometry Calibration - module for automatically determining the calibration value based on projections. 5. Beam Hardening Correction - Module for balancing unavoidable beam hardening artifacts in single material or multiple material samples. It should be fully automatic for single material samples. 6. Automatic ring artifact correction 7. Automatic selection of region of interest avoiding hull of air surrounding. The software should be Perpetual/ permanent licensed copy of 3D visualization software for creating pseudo color rendering. The license should be perpetual/ permanent. At the end of the measurement, voxel data for the visualization and a control file, which contains all parameters required for the visualization, should be available.
9.2	Interfaces to other software Modules : all common software packages from different manufacturers should be usable.	Due to the modular software architecture, there should be a possibility to integrate additional modules at a later date. Thus, the system should be prepared to consider additional reconstruction tools or artefact corrections.
10	**Computer**	
10.1	Reconstrution Computer & Evaluation Computer	**Two numbers** high-performance multicore processors of the latest Xeon generation as per the specification given below or sutable for the CT system; Processor: Intel Xeon Silver 4214R 12c, 2.4GHz, 16.5MB DDR4 2400, Turbo, HT, 100W, 1TB Operating System: License Windows 11 Pro 64 for Workstations Memory: 64 GB RDIMM DDR4 2933MHz ECC (x2), 4DP Graphic memory: NVIDIA® RTX™ A4000 16GB GDDR6 Hard Drive : 4 TB 7200rpm HDD 3.5" SATA (x2) Other : Provision for RAM memory Expandable up to 256 GB, Monitor : 27" (diagonal)LED , USB mouse, Key board - 02nos. each. 3/3/3 Warrenty - 3 years for part, labor and on-site service Software installation and licensing (For both operating software and Evaluation software) Suitable for data transfer to CAD/CAM, with multi-user and networking facility.

11	Online UPS	Vendor should supply branded UPS with 60minutes power backup suitable for the machine and essential accessories. Should have built in safety to protect machine from voltage spikes and sudden surges
12	**Calibration sets, Qualification Test piece and fixure plates**	A calibration set of artefacts is required to run the VDI/VDE workflow to bring the CT into the accuracy specification. Accessories requires are calibrated artefacts for the length measurement and probing error. Vendor should supply required calibration sets for Axis, Geometry, detector pixel, etc.and fixture plates for the scanner. One set of calibration certificates from the laboratory traceable for the CT system.
13	**Filter for X ray tube**	Bidder should provide suitable filter for CT system
14	**Essential accessories**	Better should quote and supply suitable chiller, Compressor etc. as per the requiremnt of the CT system
15	**Any other accessories**	1. List all such material that will be used in part of CT system for commissioning should be included in the cost of the equipment. 2. 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
16	**Scope of supply**	Bidder should submit complete scope of supply (Machine with make , model, computer hardware & suitable softwares, all acessories) in the technical bid without price. Bidder should supply as a complete package necessary to prove the machine and provide training.
17	**Safety Requirements**	
17.1	General Compliance	The machine and all the accessories supplied to meet objective should be able to operate without any risk or hazard, with additional protection,provision, training on guarding devices and meet current international standards. The machine should comply with standard, safety and protection. Vender should provide necessary details regarding standard, safety and protection The CT should be designed, manufactured and tested according to the standards and regulations prescribed. (including Radiation protection rules for the technical application of X-ray equipment (Indian X-ray regulation)). The Operation of the CT scan should be in closed chamber with necessary safety measures and must be radiation tight. Chamber door must auto lock during operation

17.2	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 and the product should carry the CE marking.
17.3	Other conditions	The Bidder must have supplied atleast 3 such machines with similar capacity within India including OEM installations in the past. A satisfactory performance from those users to be enclosed
18	**Installation, Commissioning and Training**	
18.1	Installation and commissioning	1. The Bidder should state the space required and condition of floor and any other requirements like electrical, etc.. for installation of the machine and equipment and bidder should support necessary site preparation for installation. Bidder should carry out installation and commissioning of the machine and its accessories on a turnkey basis. 2. After completion of installation and training, three measurements shalll be carried out similar to those carried out during pre-dispatch inspection to check the full functionality and reproducibility of the system.
18.2	Training and documentation	1. Minimum of 5 days training for 5 persons which includes basic & advanced level training. The Training should cover a. Operation and full maintenance of the main system b. Software usage c.Safety precautions needed during operation and maintenance 2. Training faculty must have adequate experience in this field. 3.Submission of the detailed technical, maintenance and operating manuals for both, system and software in hard or soft copy formats before the installation of the CT.
19	**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 24 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. a) The manufacturer shall confirm to support the maintenance and after-sales service of the complete system, after erection and commissioning, during and after the warranty period including supply of spares up to not less than 10 years, either directly or through their authorized service representative positioned in India. b) The service support should be available within 10 days of intimating an event of breakdown. c) After-sales service to be provided from factory trained and competent service engineers in case of any breakdown. Service during warranty should be free of charge. The supplier should be prepared to enter into a service contract after the warranty period

20	**Guarantees and technical assistance**	2 years from the date of sucessful installation & Training / Onsite support - Intervals and performance as specified by the manufacturer plus a minimum of 8 years spares & service support after the expiry of the warranty period.
21	**Annual Comprehensive Maintenance Contract (ACMC)**	Annual Maintenance Contract for the three years after warranty period shall be quoted separately and the same will not be considered for evaluation. Supplier has to provide service support within 24hrs. The calibration of the machine shall be the part of the warranty & ACMC. It shall also be mandatory to perform calibration after every major repair or breakdown.
22	**Condition of the equipments**	All items of equipment must be new. The parts and pieces that relate to the structure and fairings must present quality finish without scratches, stains, dents and broken, within the standard announced by the supplier and validated by the technician who will accept on the part of CIPET.
23	**Other conditions**	The Bidder must have supplied atleast 3 such machines with similar capacity within India including OEM installations in the past. A satisfactory performance from those users to be enclosed

Free Hand Scanner		
Sl. No.	**Specification**	**Range / Value**
1	Make	Bidder to specify
2	Model	
3	Camera & pixel size	Dual camera with at least 12 Mega Pixel resolution having optical blue light projector
4	Scanner & Light Source	Optical Blue LED light based 3D Scanning system. System should be stand alone and mounted on a studio stand. Should not be handheld type, arm type or connected to any optical/laser tracker system.
5	Measuring Volume	Minimum 2 measuring volume to cover small part to lmedium size
6	Acquisition Time	Should be 2 seconds or less
		To be reported as per VDI 2634 - Part 3 with following accuracy for different Scanning volumes as below:
		Small FOV

7	System Accuracy	a. Probing Error Form 0.010 mm
		b. Probing Error Size 0.010 mm
		c. Spacing Error 0.020 mm
		Medlum FoV
		a. Probing Error Form 0.015 mm
		b. Probing Error Size 0.015 mm
		c. Spacing Error 0.030 mm
8	Data Transmission	Between sensor and data acquisition system should be through Ethernet or Thunderbolt
9	LED Bulb Life	Minimum 10,000 hours or better
10	Calibration	Certified caiibration plates covering all measurement volumes to be supplied
11	Transport Box & Casing	Transport box and casing to be supplied
		Supplied Mounting and Handling system of the Sensor could be handled by a single person.
		High quality height adjustable tripod stand with manual tilt axis for quick and easy manual sensor positioning. The tripod should be equipped with high-quality and smooth-running wheels for maximum maneuverability.
12	Mounting and Handling System	Scanner should have 10 meter sensor cable

13	Automatic Rotary Table	Rotation of rotary table should be auto- synchronised with scanning software.
		Automatic Rotary table of diameter 300 mm (minimum) and load capacity20 kg (Minimum) to be supplied. Resolution: 1° (or better), RPM- 7
14	Guided Pointers	The system should be equipped with guided pointers for setting of optimum standoff distance
15	Stand-off Distance	Stand off Distance should be same for all Fov`s , 500 ~ 1000 MM
16	Fields of View and Component Size to Cover	System should be upgradable with the ability to change only the lenses - if necessary, for adapting for different fields of views (FOV).
		No manual setting of focus is needed, either at projector or at camera.
17	Operating Conditions	The instrument should be capable of operating at 10 to 40 deg C temperature and Relative humidity 55% or less with no condensation.
18	Merging Scanned Data	Should have the ability to merge scanned data using different methods likE automatic , Manual points Mode, , countor without points , Hybrid switching with in same Project
		Merging of back or front side should be with or without use of reference marker
19	Onsite Calibration	VDI 2634 - Part 3 Calibration & accuracy certification should be done at on site.
20	Curve Bases Analysis	Should be able to do character curve and curvature analysis
21	GD&T Form Deviation	Color plot presentation of form error feature of GD&T (flatness.roundness etc) on points and mesh data
22	User Reference	The supplier should have supplied similar systems to at least 5 premier government organizations like ISRO, HAL,DRDO, CIPET,CTTCs, NITs& Central Universities.
		Software should be parametric. Software should be capable of 3D data acquisition, processing and 3D color comparison as well as 2D comparison

		System should be capable to do large size part
		Import /Export of scan data in ST ,ASCll,POL etc
		Complete geometric measurement such as point, line, circle, slot, rectangle, vector, plane, cylinder, sphere, cone etc.
		Fitting elements feature (maximum inscribed and minimum circumscribed elements, Gaussian and Chebyshev methods) should be possible
		Tracing and evaluation of curvatures and character lines
		Silhouette section facility for 2D inspection
23	Features of the Parametric Design and Inspection Software	Multisections (axis parallel, radial, along curves and in viewina direction)
		Distance measurement using virtual caliper shall be poossible.
		The measuring software shall provide complete set of indirect measurement for intersection
		Curve base analysis like flush and gap,curvature etc
		Evaluation of GD&T according to International Certified Specification should be possible in software,
		The software shall provide polygonization of random point clouds into polygon meshes.
		Multiple alignment with hierarchical order in same project should be possible
		Parametric Design and Inspection professional Software with Lifetime Perpetual License each one (International Certified Software)

24	Computer	Latest configuration LAPTO w, XEON processor minimum 64GB RAM, 12 GB Graphics CARD , 4TB with Additonal 27inch monitor /Key board Mouse , WEBcam , Wifi ,Speaker , Microsoft XL Word , PDF editor , Remote Assitance Ready - Large display
25	Technical updates	Availability of information on technical update such as updated software, case studies, feedback from other customers etc. for effective utilization of the system on a regular basis.
26	Documentation	Operational Manual (User Manual)
		Software Instruction Manual for Parametric Design and Inspection Software
		Maintenance and troubleshooting Manual
		Training Manual
		Installation and Commissioning
		Handling of accessories
		Software perpetual License key
		Software CDs/ USB drive
27	Calibration Plates	Calibration Plate with International STD VDI Certification for all FoV
		Periodic calibration process of the artefact during and subsequent to expiry of warranty
28	Software capability	Software should be capable of Reverse Engineering, Parametric Design and multi part Inspection

29	Accessories	Antivirus, Webcam, Consumable Spray, UPS 3 KVA etc should be quoted. Any other Accessories, if available for better utilization , Bidder to specify and quote
30	System	The System shall be catalogued items from a company. All the relevant catalogues shall be enclosed in the technical bid.
31	Scope of supply	Attach list for scope of supply
32	Installation requirements	Bidder to specify , pre-installation requirement
33	Installation &Training	Basic and Advanced training should be provided for 6 days
34	Technical support and service	Availability of technical support in the area of application and service both within the country.
35	Manufacturer's credential	Should have installations of same model worldwide and at least Three similar model sold in Private and Government sectors, Attached OLD PO's for Rerefernce
36	Warranty and guarantee	The machine shall be guaranteed for at least Three years for replacement and service against any design, manufacturing and workmanship defects , PARTS AVALIBILITY/ SUPPLY 07 Years Assurance under AMC Post warrenty