

Technical Specification for Tool Room Machinery & Software
CNC EDM / CNC EDM Die Sinking Machine

Sl. No.	Specification with Unit	Range/Value
The CNC EDM with C-Axis should capable of wear free ED machining with graphite electrode and copper electrode as per the following detailed specification.		
1	Work Tank Size - mm	(800-1000) X (500- 700) X (250-450)
2	Axis Travel (X x Y x Z) - mm	(350-400) x (250- 350) x (300-400)
3	Measurement resolution - μm	0.1 or better
4	Maximum Job weight - kg	>500
5	Max. electrode weight on automatic chuck - kg	>50
6	Dielectric Unit	Filtration system - 10 μ or better ; Flushing Injections ;
7	Generator	ISPG Integrated or better
8	Max. machining current (Option) - A	80
9	Minimum surface roughness (Ra) - μm	0.1 or better
10	Control System	Latest with complete module CNC controller (or OEM system) and Capable storage to store large part programs for continuous running
11	Essential Accessories	Bidder should quote and supply OEM/well known branded with make, model and major specification
11.1	Automatic Tool Changer Linear	
11.2	Rigid Linear Motor (X, Y, Z)	
11.3	Glass Scale Feedback (X, Y, Z)	
11.4	Rotary Head	
11.5	C Axis	
11.6	Super finish Module	
11.7	Zero Wear Module	
11.8	Flushing system	
11.9	Filter set	
11.10	Servo voltage stabilizer	
11.11	Ultra Isolation transformer	
11.12	Silent operation Air Compressor with drier	
11.13	Chiller Unit	
11.14	Collet holder with collet set	
11.15	3D probe measuring system for Erowa or System 3R	
11.16	Erowa or System 3R electrode holding system kit	
11.17	Remote controller	
11.18	Clamping kit	
11.19	Precision machine vice 4"	
11.20	Ethernet, USB ports, RS-232C Communication Ports	
11.21	Fire Extinguisher	
11.22	Air gun with pipe	
11.23	Machine lamp	
11.24	Dielectric fluid (400 Litre)	

12	Others	Need to specify and quote if any other accessories available /required for smooth running of the machine
15	Terms & Conditions	<p>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.</p> <p>Manufacturer of the supplied equipment must be ISO Certified</p> <p>Authorization Letter from OEM</p> <p>List of clients in last five years to be provided.</p> <p>Manufacture/Supplier should have sizable installations of same model worldwide and at least Fives in India.</p>
16	Scope of supply	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.
17	INSTALLATION, COMMISSIONING AND TRAINING	
	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.
17.2	Training and documentation	<p>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.</p> <p>The vendor should supply the necessary manuals such as</p> <ul style="list-style-type: none"> • Software instruction • Maintenance and trouble manual • Training • Installation and Commissioning • Handling of accessories • Software key (if any) • Software CDs
17.3	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.

17.4	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.
17.5	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

Bandsaw Machine (Hydraulic)

Sl. No.	Specification with Unit	Range/Value
1	Max. Size of material to be cut	
1.1	Cap. Of round bar - mm	150-200
1.2	Cap. Of square bar - mm	200-250
2	Stroke Length - mm	140
3	Blade speed - mtr/min	20-40-60
4	Blade Size - mm	(2800-3800) x (20-30) x (0.5-0.9)
5	Electric Motor:	
5.1	Power - H.P	1.0-1.5
6	Collant Pump - H.P	0.15 -0.25
7	Accuracy	Cutting taper: ± 0.2 mm/ 100 mm diameter, Cutting length ± 0.2 mm Axial play of saw carriage: 0.3 mm
8	Accessories:	
8.1	Set of Blades	Set of accessories suitable to the machine
8.2	Work holding device / V-jaws for Bundle clamping	
8.3	Coolant system / equipment	
8.4	Adjustable Bar Rest / Work rest	
8.5	Adjustable material stop	
8.6	Machine Lamp	
8.7	One set of manual	
8.8	One set of service tools	
9	Others	Bidder to specify and quote if any other accessories available /required for smooth running of the machine

10	General features :	
10.1	The specification of feed drive motors with make, model no., max. & nominal torque	
10.2	Preferably the guideways of all axes should have telescopic type protective covers with adequate sealing on joints to prevent seepage of dust & coolant oil inside. Guide ways should be of hardened steel with hardness HRC60 or more	
10.3	The machine must have rigid streamlined and vibration free construction. All gears must be case hardened and ground and all the slides should be rigid to withstand heavy stock removal. It should have independent main drive and feed drive motors. Anti-vibration pad is to be provided for reach leg of the machine.	Bidder to specify the features of the machine
10.4	Each axis should have electrical limit switches interlocked with feed/ rapid drive as well as mechanical stopper	
10.5	Arm movement (Hydraulic)	
10.6	Feed Control (Speed , Feed control by lever)	
10.7	Auto Lift movement	
11	Any Others Acessories	Bidder to specify and quote if any other accessories available /required for smooth running of the machine.
12	Terms & Conditions	<p>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</p> <p>Equipment should be CE certified</p> <p>Authorization Letter from OEM</p> <p>List of clients in last five years to be provided.</p>
13	Scope of supply	Bidder should submit complete scope of supply (Machine, standard acessories, Optional Acessories 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.
14	INSTALLATION, COMMISSIONING AND TRAINING	

14.1	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.
14.2	Training and documentation	<p>Training shall be provided at the times of installation. 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.</p> <p>The vendor should supply the necessary manuals such as</p> <ul style="list-style-type: none"> • Software instruction • Maintenance and trouble manual • Training • Installation and Commissioning • Handling of accessories
14.3	Warranty	The whole system and its accessories should be given two years warranty for the machine and three years for the spindle replacement and service against any design, manufacturing and workmanship defects from the date of installation and commissioning.
14.4	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.
14.5	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

Conventional Lathe Machine

Sl. No.	Specification with Unit	Range/Value
1	Height of the Center -mm	300-350
2	Centre distance - mm	2000-3000
3	Maximum Swing over bed - mm	550-650
4	Swing over cross slide - mm	350-420
5	Carriage	
5.1	Cross slide travel - mm	300-400
5.2	Dial Graduation of Cross slide - mm	0.05
5.3	Top slide travel - mm	150-200
5.4	Dial Graduation of Top slide - mm	0.05
5.5	Angular Swivel graduation - deg.	45 (Plus & Minus)
5.6	Maximum Tool Section - mm	16x16
6	Tailstock	
6.1	Spindle travel - mm	150-250
6.2	Spindle dia. - mm	60-70
6.3	Taper in spindle	MT3
6.4	Scale of Spindle graduation - mm	1
6.5	Hand wheel dia graduation - mm	0.05
6.6	Set-over adjustments - deg.	45
7	Spindle	
7.1	Spindle bore dia. - mm	60-80
7.2	Collect capacity - mm	32
7.3	Spindle speed - rpm	50-3000 or better
7	Spindle	
7.1	Spindle bore dia. - mm	60-80
7.2	Collect capacity - mm	32
7.3	Spindle Power - Kw	Minimum 7.5
7.4	Spindle speed - rpm	50-2000 or better
8	Feeds & Threads	
8.1	Longitudinal feeds - Mm/min // mm/Rev	60 /0.04-2.24
8.2	Cross feeds - Mm/min //mm/rev	60/0.2-1.12
8.3	Metric threads - mm	48/0.15-20
8.4	US & Whitworth threads - TPI	60/56-1
8.5	Module threads - mm	40/0.25 to 14
9	Accessories	
9.1	Ø160 mm x 3jaw self center chuck	
9.2	Four Jaw chuck (ø 160 mm) with Adapter	
9.3	MT5 – MT3 center sleeve	
9.4	MT3 – male center	
9.5	Quick change tool post	
9.6	Electric coolant system with splash guard	
9.7	4 way Tool post	
9.8	5c Quick acting collet attachment	
9.9	Hand wheel type collet attachment	
9.1	Set of collets -size 5 mm to 20 mm -step of 1 mm	

9.11	Collet Holders	Set of accessories suitable to the machine
9.12	Dog carriers dia. 20 mm , dia. 30 mm	
9.13	Splash Guards	
9.14	Revolving Center	
9.15	Drill Chuck	
9.16	Reduction sleeve- MT3-MT2, MT2-MT1	
9.17	Fixed & Traveling steady rest	
9.18	Extra change gears –for inches,module&DP threads	
9.19	Face plate(200mm)	
9.2	Driver plate	
9.21	Service tools	
9.22	Machine Lamp	
9.23	Live & Dead Center	
9.24	Foot Brake	
9.25	Chuck guard	
9.27	Tools kit	
9.26	One set of manuals	
9.27	Coolant Pump (0.25 - 0.5 HP)	
9.28	Anti vibration pads	
10	Others	
11	General features :	
11.1	The specification of feed drive motors with make, model no., max. & nominal torque	Bidder to specify the features of the machine
11.2	Preferably the guideways of all axes should have telescopic type protective covers with adequate sealing on joints to prevent seepage of dust & coolant oil inside. Guide ways should be of hardened steel with hardness HRC60 or more	
11.3	The machine must have rigid streamlined and vibration free construction. All gears must be case hardened and ground and all the slides should be rigid to withstand heavy stock removal. It should have independent main drive and feed drive motors. Anti-vibration pad is to be provided for reach leg of the machine.	
11.4	Each axis should have electrical limit switches interlocked with feed/ rapid drive as well as mechanical stopper	
12	Any Others Acessories	Bidder to specify and quote if any other accessories available /required for smooth running of the machine.

13	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
		Equipment should be CE certified
		Authorization Letter from OEM
		List of clients in last five years to be provided.
14	Scope of supply	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.
15	INSTALLATION, COMMISSIONING AND TRAINING	
15.1	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.
15.2	Training and documentation	Training should be provided during installation. 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
15.3	Warranty	The whole system and its accessories should be given two years warranty for the machine and three years for the spindle replacement and service against any design, manufacturing and workmanship defects from the date of installation and commissioning.

15.4	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.
15.5	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

Radial Drilling Machine

Sl. No.	Specification with Unit	Range/Value
1	Max. Drilling Capacity in Steel & CI - mm	50 & 65
2	Drilling Radius Max./ Min. - mm	(1200-1500) / (450– 600)
3	Vertical Traverse of Arm - mm	1000-1200
4	Horizontal Traverse of Arm - mm	800-1000
5	Column Diameter - mm	400-500
6	Cross travel - mm	1000-1200
7	Morse Taper in Spindle - MT-5	MT-5
8	Number of Speeds	12 orr better
9	Range of Speed - RPM	40-1800
10	Angle of Arm Rotation - deg.	360
11	Angle of Drill Head Rotation - deg.	360
12	Base working surface - mm	(1200- 1500) x (800-1000)
13	Spindle Travel - mm	300-500
14	Motor - HP	2.25 HP or better
15	Feed	Manual & Auto feed Both type
16	Accessories	
16.1	Box Shape Worktable	Set of accessories suitable to the machine
16.2	Machine Vise 8"	
16.3	Taper / Reduction sleeves	
16.4	Quick Change Drill Chuck	
16.5	Coolant Equipment	
16.6	Machine Lamp	
16.7	Drifts	
16.8	One set of manuals	
16.9	One set of Service Tools, Keys	

17	Others	Bidder to specify and quote if any other accessories available /required for smooth running of the machine
18	General features :	Bidder to specify the features of the machine
18.1	The specification of feed drive motors with make, model no., max. & nominal torque	
18.2	Preferably the guide ways of all axes should have telescopic type protective covers with adequate sealing on joints to prevent seepage of dust & coolant oil inside. Guide ways should be of hardened steel with hardness HRC60 or more	
18.3	The machine must have rigid streamlined and vibration free construction. All gears must be case hardened and ground and all the slides should be rigid to withstand heavy stock removal. It should have independent main drive and feed drive motors.	
18.4	Each axis should have electrical limit switches interlocked with feed/ rapid drive as well as mechanical stopper	
19	Any Others Acessories	Bidder to specify and quote if any other accessories available /required for smooth running of the machine.
20	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
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22.3	Warranty	The whole system and its accessories should be given two years warranty for the machine and three years for the spindle replacement and service against any design, manufacturing and workmanship defects from the date of installation and commissioning.
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Pedestal Grinder (Double ended)

Sl. No.	Specification with Unit	Range/Value
1	Wheel Size (Outer dia. x width x bore dia.) - mm	(250-300) x (25-40) x (25.4 - 31.75)
2	Wheel Centre Distance - mm	600 – 650
3	Distance between base and wheel spindle - mm	800 - 950
4	Motor Power - HP	1 or better
5	Speed of motor - rpm	1400 or better
6	Accessories	
6.1	One set of wheels	Set of accessories suitable to the machine
6.2	Wheel guard	
6.3	Tool Rest	
6.4	One set of Service Tools , spanners	
7	Others	Bidder to specify and quote if any other accessories available /required for smooth running of the machine
8	General features :	Bidder to specify the features of the machine
8.1	The specification of feed drive motors with make, model no., max. & nominal torque	
8.2	Preferably the guideways of all axes should have telescopic type protective covers with adequate sealing on joints to prevent seepage of dust & coolant oil inside. Guide ways should be of hardened steel with hardness HRC60 or more	
8.3	The machine must have rigid streamlined and vibration free construction. All gears must be case hardened and ground and all the slides should be rigid to withstand heavy stock removal. It should have independent main drive and feed drive motors.	
8.4	Each axis should have electrical limit switches interlocked with feed/ rapid drive as well as mechanical stopper	
8	Any Others Acessories	Bidder to specify and quote if any other accessories available /required for smooth running of the machine.
9	Terms & Conditions	<p>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</p> <p>Equipment should be CE certified</p>

		Authorization Letter from OEM
		List of clients in last five years to be provided.
10	Scope of supply	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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11.5	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
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Power Hacksaw Machine (Hydraulic)

Sl. No.	Specification with Unit	Range/Value
1	Max. Size of material to be cut	
1.1	Cap. Of round bar- mm	250-300
1.2	Cap. Of square bar -mm	200-250
2	Stroke Length- mm	140
4	Stroke per min - mm	80-100
5	Blade Size -inch	16-18
6	Electric Motor:	
6.1	Power - H P	2
6.2	Speed -RPM	1400
7	Accuracy	Accuracy: As per IS Standard 3405;Cutting taper: ± 0.1 mm/ 100 mm diameter Axial play of saw carriage: 0.3 mm
8	Accessories:	
8.1	Set of Blades	Set of accessories suitable to the machine
8.2	Work holding device / V-jaws for Bundle clamping	
8.3	Coolant system / equipment	
8.4	Adjustable Bar Rest / Work rest	
8.5	Adjustable material stop	
8.6	Machine Lamp	
8.7	One set of manual	
8.8	One set of service tools	
9	Others	Bidder to specify and quote if any other accessories available /required for smooth running of the machine
10	General features :	
10.1	The specification of feed drive motors with make, model no., max. & nominal torque	
10.2	Preferably the guideways of all axes should have telescopic type protective covers with adequate sealing on joints to prevent seepage of dust & coolant oil inside. Guide ways should be of hardened steel with hardness HRC60 or more	

10.3	The machine must have rigid streamlined and vibration free construction. All gears must be case hardened and ground and all the slides should be rigid to withstand heavy stock removal. It should have independent main drive and feed drive motors.	Bidder to specify the features of the machine
10.4	Each axis should have electrical limit switches interlocked with feed/ rapid drive as well as mechanical stopper	
10.5	Arm movement (Hydraulic)	
10.6	Feed Control (Speed , Feed control by lever)	
10.7	Auto Lift movement	
11	Any Others Acessories	Bidder to specify and quote if any other accessories available /required for smooth running of the machine.
12	Terms & Conditions	<p>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</p> <p>Equipment should be CE certified</p> <p>Authorization Letter from OEM</p> <p>List of clients in last five years to be provided.</p>
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		<ul style="list-style-type: none"> Software instruction Maintenance and trouble manual Training Installation and Commissioning Handling of accessories
14.3	Warranty	The whole system and its accessories should be given two years warranty for the machine and three years for the spindle replacement and service against any design, manufacturing and workmanship defects from the date of installation and commissioning.
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Universal Milling Machine

Universal Milling Machine with Horizontal Spindle and additional Vertical milling head attachment		
Sl. No.	Specification with Unit	Range/Value
1	Work Table Area - mm	(1100 – 1400) x (200 – 300)
2	Swivel range of table to both sides - deg	45
3	Longitudinal movement - mm	600-800
4	Cross (Transverse) movement - mm	250 – 300
5	Vertical movement - mm	300 – 400
6	Spindle	
6.1	Spindle Speed range - rpm	45 – 1800 or better
6.2	Spindle Taper	ISO-40
6.3	Nos./ progression	12/ 1.4
7	Feed	

7.1	Nos. of feed	18
8	Feed Range (Progression 1.25)	
8.1	Longitudinal mm/min	16 - 800 or better
8.2	Vertical - mm/min	4-200 or better
9	Rapid Transverse	
9.1	Longitudinal - mm/min	2500 or better
9.2	Traverse - mm / min	2500 or better
9.3	Vertical mm / min	630 or better
10	Milling spindle motor kW	5.5 or better
11	Feed motor - kW	1.5 or better
12	Safe load on table - kg	300 or better
13	Accessories	
13.1	Collet Holders ISO -40	
13.2	Morse Taper Adapter	
13.3	End Mill Holder	
13.4	Face Mill Arbor	
13.5	Shell End Mill Arbor	
13.6	Drill chuck arbor	
13.7	Set of Collet (3-25mm)	
13.8	Precision Machine Vice 6"	
13.9	Clamping Kit	
13.10	Coolant System with splash guard	
13.11	Machine Lamp	
13.12	Oil gun	
13.13	One set of manuals	
13.14	Vice without swivel base	
13.14	Universal Dividing Head with Chuck & Tailstock	
13.15	Vice with swivel base	
13.16	Hydraulic Vice	
13.17	Hand Operated Circular Table	
13.18	Vertical Indexing head	
13.19	Set of T-Bolt and Clamp	
13.20	One set of Service Tools, Keys	
14	Others	
15	General features :	
15.1	The specification of feed drive motors with make, model no., max. & nominal torque	
15.2	Preferably the guideways of all axes should have telescopic type protective covers with adequate sealing on joints to prevent seepage of dust & coolant oil inside. Guide ways should be of hardened steel with hardness HRC60 or more	

15.3	The machine must have rigid streamlined and vibration free construction. All gears must be case hardened and ground and all the slides should be rigid to withstand heavy stock removal. It should have independent main drive and feed drive motors.
15.4	Each axis should have electrical limit switches interlocked with feed/ rapid drive as well as mechanical stopper

3D printer - High Temperature Materials

1.1	Technology	Solid based production additive manufacturing system based on Material Extrusion technology, capable of producing parts for high temperature and strength application.
1.2	Machine Capability	Should be able to build high strength, high performance and high temperature and medical grade materials. Provision for inclusion of new materials developed by R&D.
1.3	Minimum Build Volume (X, Y, Z)	200 mm x 170 mm x 150 mm (maximum allowable deviation 10%)
1.4	Layer Thickness	Minimum horizontal build layer thickness 0.1 mm or better Greater/lesser than 0.1 mm can be quoted as additional features.
1.5	Part accuracy (in all three directions)	+/- 0.1 mm or better
2	Material Handling	Material handling systems should be part of the Printer with automatic material loading, feeding and storage management system. At any instance of the machine operation during idle or run time, the machine shall indicate the quantity of material available in the spool / cartridge for optimizing the material consumption.
3	Operation and Process	Controlled Chamber temperature Material extruding nozzles should have self-cleaning mechanism Auto calibration of build platform for coordinates. Auto and manual calibration of offset between model and support nozzle.
4	Display Feature	Printing status, Material in cartridge, Temperature of chamber and print head/nozzle etc..
5	Part building	Direct printing on base plate

6	Facility Requirements	Machine compatible of working in office/lab environments setup.
		Noise level of the machine at the lowest level preferably 70 decibels. Relevant documentation/test results to be provided.
7	MATERIAL	
7.1	Model Material	<p>Suitable Materials for medical, aerospace and other high performance engineering application.PEEK, Medical grade PEEK, CFR PEEK, PEI and metals.</p> <p>Medical grade material should be biocompatibility and sterilisation properties and Confirming ISO 10993 or equivalent standard.</p>
8	SOFTWARE	
8.1	Slicing and control	Software should capable to edit the internal structure of each layer and/or group of layers of the CAD model.
		Software should generate customizable build styles
		Software should provide real time part build status, time etc.
		Software should have capability to section large parts which does not fit into the build volume
		Software should be able to create stabilizing structures to support build of thin and tall geometries. And ability to put supporting structures to prevent warpage in case of large flat and bulky parts.
		Software allow the user to add various jobs to a queue for sequencing and job management
		Software should have ability to pre-program pauses on any layer of the generated slice file to add metal inserts, change color of filament.
		Software and its support/updates/upgrades should be from OEM/manufacture of the offered machine.
8.2	License	License must be perpetual
9	Networks Connectivity	10/100 base T connection. Ethernet protocol
10	Workstation Compatibility	Compatible with latest Windows OS
11	Regulatory Compliance	Machine should be Regulatory Compliance - CE / FCC Relevant documentation to be attached.

12	Safety	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. Operations of machine should be in closed chamber with necessary safety measures. Chamber door must auto lock during part building.
13	Essential Accessories	
13.1	Support removing system	Bidder should specify and quote as per the requirement
13.2	Consumables	Bidder should supply minimum quantities of consumables like build platforms, wiper blade, brush etc., required for 6 months. Also bidder should supply minimum quantity of model material each type 10 Canisters and support material each type 05 Canisters. Minimum two sets of Nozzles for different layer thickness minimum to maximum for all types of materials.
13.3	Compressor	Bidder should supply suitable compressor with dryer and filter units along with the machine, the compressor should have an air storage capacity that support the machine and its accessories for at least 1 hr at the time of power failure.
13.4	De-humidifier	Vendor should supply suitable de-humidifier to maintain room humidity level within suitable range for machine operation.
13.5	Filament Dryer	Bidder to specify and quote suitable system for drying the filament
13.6	Sintering & De-binding station	Bidder to specify and quote suitable system for printing of metal parts
13.7	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.
13.8	Workstation with accessories	Bidder should supply suitable latest model OEM workstation with complete accessories and UPS for handling large size stl data (128 GB RAM, i7 or higher processor, Hard disk 5TB, 4GB dedicated Graphics card)
13.9	Tool kit	Bidder should supply standard tool kit for startup, removal of parts and cleaning (list to be attached).
13.10	Any other accessories required	Bidder should quote and supply any other accessories for high speed printing, material transport trolleys / carts and spares required for effective and better utilization of machine.

14	Scope of supply	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 including material necessary to prove the machine and provide training.
15	Terms & Conditions	<p>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.</p> <p>Manufacturer of the supplied equipment must be ISO Certified</p> <p>Authorization Letter from OEM</p> <p>List of clients in last five years to be provided.</p> <p>Manufacturer/Supplier should have sizable installations of same model worldwide and at least Fives in India.</p>
16	INSTALLATION, COMMISSIONING AND TRAINING	
16.1	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.
16.2	Training and documentation	<p>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.</p> <p>The vendor should supply the necessary manuals such as</p> <ul style="list-style-type: none"> • Software instruction • Maintenance and trouble manual • Training • Installation and Commissioning • Handling of accessories • Software key (if any) • Software CDs
16.3	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.

CREO (PRO-E) Software

1	Latest version of PTC CREO (PRO-E) software with complete module of 2D, 3D Modeling, programming and FE analysis capabilities for product design, Engineering and manufacturing process.	20 users
<u>2 GENERAL TERMS & CONDITIONS</u>		
a	The Software should be supplied with latest version.	
b	The quote shall be supplied with reference to the module.	
c	Please mention the quote for Educational Bundle.	
d	The Software should be supplied in DVD / CD media for windows 8 or higher	
e	The license must be Network Perpetual License	
f	Warranty : Five years from the date of acceptance of installation.	
g	The Installation and training will be the responsibility of the supplier.	
h	During the above period of maintenance, any upgrades released will be supplied free of cost.	
j	Annual Maintenance Contract charges in terms of percentage on the basic price for a period of FIVE years after the completion of Warranty period need to be quoted separately.	
3	Any Others Accessories	Bidder to specify and quote if any other accessories available /required for smooth running of the Software.
4	Terms & Conditions	<p>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</p> <p>Equipment should be CE certified</p> <p>Authorization Letter from OEM</p> <p>List of clients in last five years to be provided.</p>

5	Scope of supply	Bidder should submit complete scope of supply (Software, 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.
6	INSTALLATION, COMMISSIONING AND TRAINING	
6.1	Installation and commissioning requirements	Bidder should state the space required and condition of floor and any other requirements for installation of the Software. State clearly the specifications of electrical requirement. Vendor should carry out installation and commissioning of the machine and its accessories on a turnkey basis.
6.2	Training and documentation	<p>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.</p> <p>The vendor should supply the necessary manuals such as</p> <ul style="list-style-type: none"> • Software instruction • Maintenance and trouble manual • Training • Installation and Commissioning • Handling of accessories • Software key (if any) • Software CDs
6.3	Warranty	5 Years Onsite Warranty
6.4	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.

Solid Edge Software

1	Latest version of Solid Edge software with complete module of 2D, 3D Modeling, programming and FE analysis capabilities for product design, Engineering and manufacturing process.	20 Users
<u>2 GENERAL TERMS & CONDITIONS</u>		
a	The Software should be supplied with latest version.	
b	The quote shall be supplied with reference to the module.	
c	Please mention the quote for Educational Bundle.	
d	The Software should be supplied in DVD / CD media for windows 8 or higher	
e	The license must be Network Perpetual License	
f	Warranty : Five years from the date of acceptance of installation.	
g	The Installation and training will be the responsibility of the supplier.	
h	During the above period of maintenance, any upgrades released will be supplied free of cost.	
j	Annual Maintenance Contract charges in terms of percentage on the basic price for a period of FIVE years after the completion of Warranty period need to be quoted separately.	
3	Any Others Accessories	Bidder to specify and quote if any other accessories available /required for smooth running of the Software.
4	Terms & Conditions	<p>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</p> <p>Equipment should be CE certified</p> <p>Authorization Letter from OEM</p> <p>List of clients in last five years to be provided.</p>
5	Scope of supply	Bidder should submit complete scope of supply (Software, 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.
6	INSTALLATION, COMMISSIONING AND TRAINING	

6.1	Installation and commissioning requirements	Bidder should state the space required and condition of floor and any other requirements for installation of the Software. State clearly the specifications of electrical requirement. Vendor should carry out installation and commissioning of the machine and its accessories on a turnkey basis.
6.2	Training and documentation	<p>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.</p> <p>The vendor should supply the necessary manuals such as</p> <ul style="list-style-type: none"> • Software instruction • Maintenance and trouble manual • Training • Installation and Commissioning • Handling of accessories • Software key (if any) • Software CDs
6.3	Warranty	5 Years Onsite Warranty
6.4	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.

Solid works Software

1	Latest version of Solid works software with complete module of 2D, 3D Modeling, programming and FE analysis capabilities for product design, Engineering and manufacturing process.	
<u>2 GENERAL TERMS & CONDITIONS</u>		
a	The Software should be supplied with latest version.	
b	The quote shall be supplied with reference to the module.	
c	Please mention the quote for Educational Bundle.	

	d The Software should be supplied in DVD / CD media for windows 8 or higher	
	e The license must be Network Perpetual License	
	f Warranty : Five years from the date of acceptance of installation.	
	g The Installation and training will be the responsibility of the supplier.	
	h During the above period of maintenance, any upgrades released will be supplied free of cost.	
	j Annual Maintenance Contract charges interms of percentage on the basic price for a period of FIVE years after the completion of Warranty period need to be quoted separately.	
3	Any Others Acessories	Bidder to specify and quote if any other accessories available /required for smooth running of the Software.
4	Terms & Conditions	<p>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</p> <p>Equipment should be CE certified</p> <p>Authorization Letter from OEM</p> <p>List of clients in last five years to be provided.</p>
5	Scope of supply	Bidder should submit complete scope of supply (Software, standard acessories, Optional Acessories 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.
6	INSTALLATION, COMMISSIONING AND TRAINING	
6.1	Installation and commissioning requirements	Bidder should state the space required and condition of floor and any other requirements for installation of the Software. State clearly the specifications of electical requirement.Vendor should carry out installation and commissioning of the machine and its accessories on a turnkey basis.

6.2	Training and documentation	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
		• Handling of accessories
		• Software key (if any)
		• Software CDs
6.3	Warranty	5 Years Onsite Warranty
6.4	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.

MOLDEX 3D Software

1	Latest version of MOLDEX 3D software with complete module of Modeling , various CAE analysis and Simulation capabilities for al injection moulding ,compression moulding and transfer moulding process in Plastic Engineering .	20 Users
<u>2 GENERAL TERMS & CONDITIONS</u>		
a	The Software should be supplied with latest version.	
b	The quote shall be supplied with reference to the module.	
c	Please mention the quote for Educational Bundle.	
d	The Software should be supplied in DVD / CD media for windows 8 or higher	
e	The license must be Network Perpetual License	
f	Warranty : Five years from the date of acceptance of installation.	
g	The Installation and training will be the responsibility of the supplier.	
h	During the above period of maintenance, any upgrades released will be supplied free of cost.	

	j	Annual Maintenance Contract charges in terms of percentage on the basic price for a period of FIVE years after the completion of Warranty period need to be quoted separately.	
3		Any Others Accessories	Bidder to specify and quote if any other accessories available /required for smooth running of the Software.
4		Terms & Conditions	<p>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</p> <p>Equipment should be CE certified</p> <p>Authorization Letter from OEM</p> <p>List of clients in last five years to be provided.</p>
5		Scope of supply	Bidder should submit complete scope of supply (Software, 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.
6		INSTALLATION, COMMISSIONING AND TRAINING	
6.1		Installation and commissioning requirements	Bidder should state the space required and condition of floor and any other requirements for installation of the Software. State clearly the specifications of electrical requirement. Vendor should carry out installation and commissioning of the machine and its accessories on a turnkey basis.
6.2		Training and documentation	<p>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.</p> <p>The vendor should supply the necessary manuals such as</p> <ul style="list-style-type: none"> • Software instruction • Maintenance and trouble manual • Training • Installation and Commissioning • Handling of accessories • Software key (if any) • Software CDs
6.3		Warranty	5 Years Onsite Warranty

6.4	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.
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DelcamSoftware

1	Latest version of Delcam software with complete module of CAD & CAM programming for CNC controller. The software capable for 2-axis, 3-axis, simultaneous 4-axis & 5-axis milling, multi axis lathe, Mill-Turn, Wire EDM etc.	10 users
<u>2 GENERAL TERMS & CONDITIONS</u>		
a	The Software should be supplied with latest version.	
b	The quote shall be supplied with reference to the module.	
c	Please mention the quote for Educational Bundle.	
d	The Software should be supplied in DVD / CD media for windows 8 or higher	
e	The license must be Network Perpetual License	
f	Warranty : Five years from the date of acceptance of installation.	
g	The Installation and training will be the responsibility of the supplier.	
h	During the above period of maintenance, any upgrades released will be supplied free of cost.	
j	Annual Maintenance Contract charges in terms of percentage on the basic price for a period of FIVE years after the completion of Warranty period need to be quoted separately.	
3	Any Others Accessories	Bidder to specify and quote if any other accessories available /required for smooth running of the Software.

4	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
		Equipment should be CE certified
		Authorization Letter from OEM
		List of clients in last five years to be provided.
5	Scope of supply	Bidder should submit complete scope of supply (Software, 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.
6	INSTALLATION, COMMISSIONING AND TRAINING	
6.1	Installation and commissioning requirements	Bidder should state the space required and condition of floor and any other requirements for installation of the Software. State clearly the specifications of electrical requirement. Vendor should carry out installation and commissioning of the machine and its accessories on a turnkey basis.
6.2	Training and documentation	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
		• Handling of accessories
		• Software key (if any)
		• Software CDs
6.3	Warranty	5 Years Onsite Warranty

6.4	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>
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