

Section V – (C) : Technical Specifications

No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
1	Pressure die casting machine (Brass & Aluminium based)	Make/ Model	Specify		
		Country of manufacture	Specify		
		Technology(Cold chamber/Hot chamber)	Cold chamber		
		Clamping force (ton)	(400-500) ton		
		Clamping stroke (mm)	specify		
		Ejection force (kN)	specify		
		Ejection stroke (mm)	(100-120) mm		
		Mold thickness (min-max) (mm)	(250-700) mm		
		Platen Size (Horizontal x Vertical) (mm)	specify		
		Tie Bar Spacing (Horizontal x Vertical) (mm)	(550-600)mm x (550-600)mm		
		Tie Bar Diameter (mm)	specify		
		Injection Force (Intensified) (kN)	(350-400) kN		
		Injection stroke (mm)	(400-450) mm		
		Plunger Tip Diameter (mm)	specify		
		Injection volume (kg)	(3.0-4.0) kg in Aluminium		

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		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
1	Pressure die casting machine (Brass & Aluminium based)	Casting Pressure (Intensified) (Mpa)	specify		
		Casting area (cm ²)	specify		
		Maximum casting area (40MP) (cm ²)	specify		
		Injection position (mm)	(-125/-140) mm		
		Plunger Tip Protrusion (mm)	specify		
		Shot Sleeve Flange Diameter (mm)	(100-110) mm		
		Shot Sleeve Flange Protrusion From Fixed Platen (mm)	specify		
		System working pressure (Mpa)	specify		
		Motor power/servo motor power (kW)	Specify		
		Hydraulic Oil Filling Volume (L)	Specify		
		Lifting reference weight (T)	Specify		
		Accumulator Pressure	specify		
		Thermo casting unit	Availability		
		Mould cooling system	specify		
		operating system	specify		
		Overall dimension (L × W × H) (mm)	Specify		
		Furnance power type(Electric/furnance oil)	Electric		

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		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
1	Pressure die casting machine (Brass & Aluminium based)	Furnance volume	(75-100) kg in Aluminium		
		Furnance type	Manual/Dosing		
		Melting material types	Brass, bronze, Aluminium,Zinc etc		
		Machine Safety functions/features	Specify		
		Standard Accessories	Specify		

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		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
1	Pressure die casting machine (Brass & Aluminium based)	Optional Accessories	Specify		
		Documentation	Operation Manual, Maintenance Manual, Electrical Circuit Diagrams, Hydraulic Schematics, Spare Parts Catalog, Quality and Inspection Certificates and etc		
		Installation and commissioning	Specify		
		Training	Specify (Including Standard Operating Procedure, Maintenance Procedure and Safety precautions)		

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No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
1	Pressure die casting machine (Brass & Aluminium based)	Warranty	Minimum 02 years warranty period		
		After service and local technical support availability	Specify		
		Supply of spare parts	Specify		
		Must provide 2 Nos. of sample moulds	1. Two Wheeler(Motor cycle) Brake shoe(Material-Aluminium Alloy)- 01 Mould 2. Three Wheeler Brake Shoe(Material-Aluminium Alloy)- 01 Mould (CAD designs of the above two products will be provided in the pre-bid meeting)		
		Client list (supply of simillar machines locally)	Specify		

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No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
2	Surface Grinding Machine	Make/ Model	specify		
		Country of manufacture	specify		
		Machine type	Precision Hydraulic Surface Grinding Machine		
		Grinding method	Peripheral grinding with horizontal spindle		
		Table working area (mm)	(350 - 450)mm × (750-850)mm		
		Maximum grinding capacity (mm)	(350 - 450)mm × (750-850)mm		
		Longitudinal table travel (X-axis)(mm)	Specify		
		Cross table travel (Y-axis)(mm)	Specify		
		Maximum spindle centre to table distance (mm)	(550-650)mm		
		Table load capacity	Specify		
		Table drive	Specify		
		Table longitudinal speed	Specify		
		Automatic cross feed	Specify		
		Vertical feed	Specify		
		Vertical fine-feed resolution	Specify		
		Cross-feed handwheel graduation	Specify		

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		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
2	Surface Grinding Machine	Grinding spindle speed	Specify		
		Grinding wheel size	Specify		
		Spindle motor	Specify		
		Spindle bearing	Specify		
		Magnetic chuck	(500 × 250) mm electromagnetic chuck, preferably with demagnetization facility		
		Magnetic chuck control	Variable/controlled magnetic clamping and automatic demagnetization		
		Wheel dressing	Diamond wheel dresser with suitable mounting arrangement		
		Waste material removal systems	Both wet and dry material removal system		
		Coolant system	Integral coolant tank, pump, piping and splash guard		

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		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
2	Surface Grinding Machine	Hydraulic system	Separate hydraulic power pack with pressure regulation and filtration		
		Hydraulic motor	Specify		
		Guideways	Precision ground guideways; Turcite-lined or equivalent low-friction precision guideways preferred		
		Table accuracy	Specify		
		Parallelism	Specify		
		Squareness	Specify		
		Spindle run-out	Specify		
		Surface finish	Capable of achieving approximately $Ra \leq 0.4 \mu m$, depending on workpiece, wheel and operating conditions		
		Electrical supply	415 V, 3-phase, 50 Hz		
		Control voltage	Manufacturer-standard industrial control voltage		
		Control system	Electrical control panel with overload protection, emergency stop and safety interlocks		

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		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
2	Surface Grinding Machine	Machine lighting	LED/industrial work lamp		
		Machine Safety functions/features	Grinding-wheel guard, table/travel limits, emergency stop, electrical and hydraulic safety interlocks etc.		
		Standard Accessories	Specify		
		Optional Accessories	Specify(Material clamping kit etc)		
		Documentation	Operation Manual, Maintenance Manual, Electrical Circuit Diagrams, Hydraulic Schematics, Spare Parts Catalog, Quality and Inspection Certificates and etc		

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		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
2	Surface Grinding Machine	Installation and commissioning	Specify		
		Training	Specify (Including Standard Operating Procedure, Maintenance Procedure and Safety precautions)		
		Warranty	Minimum 01 year warranty period		
		After service and local technical support availability	Specify		
		Supply of spare parts	Specify		
		Client list (supply of similar machines locally)	Specify		

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No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
3	Endmill and Drill bit Tool Grinding Machine	Make/ Model	Specify		
		Country of Manufacture	Specify		
		Operated type(Manual/CNC)	Manual		
		Power	(500-800)W		
		Rated Speed	(5000-7000) RPM		
		Supply Voltage	220V/50Hz		
		Applicable Tool types	End Mill, Drill Bit		
		Applicable Tool materials	Tungsten carbide, high-speed steel etc		
		Applicable tool diameters	End Mill - (1-20)mm, Drill Bit - (1-20)mm		
		Applicable flutes	End Mill - 2-flutes,3-flutes,4-flutes Drill Bit -Twist drills(both straight shank and taper shank)		
		Grinding Angles	6° / 20° / 30° etc		
		No. of Grinding Wheels	2 or higher		

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		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
3	Endmill and Drill bit Tool Grinding Machine	Grinding Wheel types	Specify		
		Grinding scope of the apex angle	90°-140°		
		Machine Safety functions/features	Specify		
		Standard Accessories	Specify (Collet set, 2-flutes holder set, 3-flutes holder set, 4-flutes holder set etc)		
		Optional Accessories	Specify		
		Documentation	Operation Manual, Maintenance Manual, Electrical Circuit Diagrams, Spare Parts Catalog, Quality and Inspection Certificates and etc		

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		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
3	Endmill and Drill bit Tool Grinding Machine	Installation and commissioning	Specify		
		Training	Specify (Including Standard Operating Procedure, Maintenance Procedure and Safety precautions)		
		Warranty	Minimum 01 year warranty period		
		After service and local technical support availability	Specify		
		Supply of spare parts	Specify		
		Client list (supply of similar machines locally)	Specify		

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		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
4	Professional 3D Scanner	Make/ Model	Specify		
		Country of manufacture	Specify		
		Product Type	Professional 3D Scanner		
		Scanning Technology	Specify		
		Scanning Modes	Specify		
		Accuracy	(0.02- 0.03) mm		
		Scanning speed	Up to 90 FPS		
		3D Point Distance / Resolution	0.04mm - 2mm		
		Minimum Scan Volume	Approx. 5mm × 5mm × 5mm		
		Working distance	100mm - 1000mm		
		Maximum Recommended Object Size	Approx. 4,000mm × 4,000mm × 4,000 mm		
		Scan objects range	5 mm to 4000 mm		
		Colour mapping	Supported		

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		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
4	Professional 3D Scanner	Alignment Modes(Marker/global marker/geometry/texture alignment)	Specify		
		Wireless Scanning facility/accessory	Enable		
		Communication method	Both wired and wireless		
		Scanning Software/software functions/support OS	Specify		
		Professional Software Compatibility	SolidWorks,Autodesk Fusion,CATIA,Blender,PolyWorks,Creo,Rhino and etc		
		Applications	Automotive scanning, Reverse engineering, Dimensional inspection, Product development, Replacement-part reproduction, Quality control, Human-body scanning, Art and antique preservation, CAD modelling, Digital archiving, 3D printing and etc		
		Equipment Safety functions/features	Specify		

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		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
4	Professional 3D Scanner	Standard Accessories	Specify		
		Optional Accessories	Specify		
		Documentation	Operation Manual, Maintenance Manual, Spare Parts Catalog, Quality and Inspection Certificates and etc		
		Installation and commissioning	Specify		
		Training	Specify (Including Standard Operating Procedure, Maintenance Procedure and Safety precautions)		

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		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
4	Professional 3D Scanner	Warranty	Minimum 02 years warranty period		
		After service and local technical support availability	Specify		
		Supply of spare parts	Specify		
		Client list (supply of similar equipment locally)	Specify		
		Demonstration facility	Equipment and its functional demonstration should be provided (using a equipment from the client list/field visit etc) before awarding		

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No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
5	Industrial Bench drill machine (Chuck Size-16mm)	Make/ Model	Specify		
		Country of manufacture	Specify		
		Duty Type	Medium-Duty		
		Phase	Three phase		
		Motor Power	3/4 HP - 1 HP		
		Motor speed	(1400-1800) rpm		
		Maximum Chuck Size	16 mm		
		Chuck locking method	Specify (C-spanner model preferred)		
		Drill diameter range (Ø)	0mm to 16mm		
		Spindle Taper	MT2/MT3		
		No. of Speeds	12		
		Speed Range	Approx. 150rpm to 2800rpm		
		Table shape	Square		

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		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
5	Industrial Bench drill machine (Chuck Size-16mm)	Table Size	(290mm x 290mm) to (360mm x 360mm)		
		Machine Safety functions/features	Specify		
		Standard Accessories	Specify		
		Optional Accessories	Specify ((Include Drill Press Machine Vise-(4-6)' & (100-150)mm))		
		Documentation	Operation Manual, Maintenance Manual, Spare Parts Catalog, Quality and Inspection Certificates and etc		
		Installation and commissioning	Specify		

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No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
5	Industrial Bench drill machine (Chuck Size-16mm)	Training	Specify (Including Standard Operating Procedure, Maintenance Procedure and Safety precautions)		
		Warranty	Minimum 01 year warranty period		
		After service and local technical support availability	Specify		
		Supply of spare parts	Specify		
		Client list (supply of similar machines locally)	Specify		

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No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
6	Industrial Bench drill machine (Chuck Size-20mm)	Make/ Model	Specify		
		Country of manufacture	specify		
		Duty Type	Medium-Duty		
		Phase	Three phase		
		Motor Power	3/4 HP - 1 HP		
		Motor speed	(1400-1800) rpm		
		Maximum Chuck Size	20 mm		
		Chuck locking method	C-spanner model		
		Drill diameter range(Ø)	3mm to 20mm		
		Spindle Taper	MT2/MT3		
		No. of Speeds	12		
		Speed Range	Approx. 150rpm to 2800rpm		
		Table shape	Square		

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No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
6	Industrial Bench drill machine (Chuck Size-20mm)	Table Size	(290mm x 290mm) to (360mm x 360mm)		
		Machine Safety functions/features	Specify		
		Standard Accessories	Specify		
		Optional Accessories	Specify ((Include Drill Press Machine Vise-(4-6)' & (100-150)mm))		
		Documentation	Operation Manual, Maintenance Manual, Spare Parts Catalog, Quality and Inspection Certificates and etc		
		Installation and commissioning	Specify		

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No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
6	Industrial Bench drill machine (Chuck Size-20mm)	Training	Specify (Including Standard Operating Procedure, Maintenance Procedure and Safety precautions)		
		Warranty	Minimum 01 year warranty period		
		After service and local technical support availability	Specify		
		Supply of spare parts	Specify		
		Client list (supply of similar machines locally)	Specify		

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No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
7	NC Lathe Machine	Make/Model	Specify		
		Country of manufacture	specify		
		Type	Numerical Control(NC)		
		Swing over head (mm)	600-700		
		Swing over cross slide (mm)	420 - 450		
		Distance between centers (mm)	1800-2400		
		Bed width (mm)	350 - 450		
		Spindle bore (mm)	110 - 125		
		Spindle speed	Specify		
		Spindle taper/nose	Specify		
		Bed length (mm)	Specify		
		Power	Specify		
		Electrical supply	415V/ 50 Hz		

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No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
7	NC Lathe Machine	Feed range	Specify Longitudinal & cross-feed rates		
		Thread cutting	Metric, Inch & specify other		
		Lead screw	Specify		
		Tail stock	Specify		
		Accuracy	Specify		
		Chuck	Specify ((3-Jaw(self centering) and 4-Jaw(Independent centering) chuck is preferred))		
		Tool post	Standard, quick change & specify number of tool position		
		Machine Safety functions/features	Emergency stop, chuck guard, lead screw guard, over load protection and specify others		
		Standard Accessories	Steady rest, Follow rest, face plate, center, Digital read out and specify		

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		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
7	NC Lathe Machine	Optional Accessories	Specify		
		Documentation	Operation Manual, Maintenance Manual, Spare Parts Catalog, Quality and Inspection Certificates and etc		
		Installation and commissioning	Specify		
		Training	Specify (Including Standard Operating Procedure, Maintenance Procedure and Safety precautions)		
		Warranty	Minimum 01 year warranty period		

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		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
7	NC Lathe Machine	After service and local technical support availability	Specify		
		Supply of spare parts	Specify		
		Client list (supply of similar machines locally)	Specify		

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No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
8	Computer Control Safety Valve Test Bench	Make/ Model	Specify		
		Country of manufacture	Specify		
		Test pressure	0-15MPa		
		Valve size	DN10-DN150		
		Valve Type	Flange or threaded		
		Test medium	Nitrogen, Air or Water (Optional)		
		Test port	Minimum 1port		
		Clamping Method	Hydraulic cylinder with 3claws station		
		Pressure precision	0.4 class pressure gauge (Optional)		
		Pressure Transducer	Minimum 0.5% accuracy		
		Driven air	6-15bar (workshop air)		
		Power supply	415V AC, 50Hz (Optional)		
		Pressure gauge callibration certificate	Available		

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		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
8	Computer Control Safety Valve Test Bench	Applications	Safety Valve Performance Testing, Sealing Performance & Leak Detection, Valve Calibration and Adjustment, Industrial Quality Control & Manufacturing, Routine Maintenance & Statutory Inspection etc		
		Equipment Safety functions/features	Specify		
		Standard Accessories	Specify		
		Optional Accessories	Specify		

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		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
8	Computer Control Safety Valve Test Bench	Documentation	Operation Manual, Maintenance Manual, Spare Parts Catalog, Quality and Inspection Certificates and etc		
		Installation and commissioning	Specify		
		Training	Specify (Including Standard Operating Procedure, Maintenance Procedure and Safety precautions)		
		Warranty	Minimum 02 years warranty period		
		After service and local technical support availability	Specify		
		Supply of spare parts	Specify		
		Client list (supply of simillar equipment locally)	Specify		

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No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
9	Flue Gas Analyzer and Printer Kit	Make/ Model	Specify		
		country of manufacture	Specify		
		Measured parameters	O ₂ , CO, ambient CO, flue-gas temperature, ambient temperature, draught and differential pressure		
		Calculated parameters	CO ₂ , excess air, combustion efficiency and flue-gas loss		
		CO measuring range	0–4,000 ppm		
		CO accuracy	±20 ppm up to 400 ppm; ±5% from 401–2,000 ppm; ±10% above 2,000 ppm		
		Draught measuring range	–20 to +20 hPa		
		Draught accuracy	±0.02 hPa to ±1.5% of measured value, depending on range		
		Flue-gas temperature range	0–400 °C		
		Temperature accuracy	±1 °C up to 100 °C; ±1.5% above 100 °C		

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		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
9	Flue Gas Analyzer and Printer Kit	Temperature resolution	0.1 °C		
		Display	Illuminated graphical display showing multiple readings		
		Connectivity	Bluetooth or equivalent wireless connectivity		
		Power supply	Rechargeable battery with USB-C charger		
		Charger input	Suitable for 230 V, 50 Hz AC supply		
		Battery capacity	Minimum 1,500 mAh		
		Power rating	Approximately 4 W		
		Environmental Protection Rating	Minimum IP40		
		Probe	Stainless-steel flue-gas probe, minimum 180 mm, with cone and temperature sensor		
		Certification	EN 50379 Parts 1 and 3 or equivalent		

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		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
9	Flue Gas Analyzer and Printer Kit	Calibration method and calibration period	Specify		
		Applications	Combustion Efficiency Checks, Draft and Pressure Measurement, Boiler Servicing and Commissioning, Carbon Monoxide (CO) Safety Testing, On-Site Documentation etc		
		Equipment Safety functions/features	Specify		
		Standard Accessories	Specify(Probe, silicone hose, charger, USB-C cable, mobile Bluetooth printer, minimum five particle filters and carrying case etc)		

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		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
9	Flue Gas Analyzer and Printer Kit	Optional Accessories	Specify		
		Documentation	Operation Manual, Maintenance Manual, Spare Parts Catalog, Quality and Inspection Certificates and etc		
		Installation and commissioning	Specify		
		Training	Specify (Including Standard Operating Procedure, Maintenance Procedure and Safety precautions)		
		Warranty	Minimum 01 year warranty period		

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		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
9	Flue Gas Analyzer and Printer Kit	After service and local technical support availability	Specify		
		Supply of spare parts	Specify		
		Client list (supply of similar equipment locally)	Specify		
		Demonstration facility	Equipment and its functional demonstration should be provided (using a equipment from the client list/field visit etc) before awarding		

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No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
10	Industrial Sound level tester	Make/ Model	specify		
		Country of manufacture	specify		
		Applicable standard	IEC 61672-1:2013, Class 1		
		Display	2.4-inch or higher full-colour display or specify		
		Display resolution	Specify		
		Display features	Specify (Adjustable brightness; backlight can be switched off)		
		Measurement resolution	0.1 dB		
		Refresh rate	Specify		
		Main measurement parameters	Specify (LXYp, LXYmax, LXYmin, LXeq, LXeq,T, LXeq,t, LXpeak, L5, L10, L50, L90, L95, SD, Ld, Ln, Ldn, SEL, LXE, E, TWA, Lex,8h, LAVG DOSE etc)		
		Frequency weighting	Specify		

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		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
10	Industrial Sound level tester	Time weighting	Specify		
		Measurement range	25–140 dB		
		Peak measurement range	Up to 143 dB(C) Peak		
		Accuracy	±0.5 dB		
		Frequency range	10 Hz–20 kHz		
		Integration time	Specify		
		Audio recording	MP3 and WAV formats		
		Recording modes	Specify		
		Audio sampling rates	Specify		
		Audio resolution	16-bit and 24-bit		
		Internal storage	Minimum 4 GB		
		External storage	Supports SD cards up to 64 GB		
		Analogue output	AC/DC signal output		

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No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
10	Industrial Sound level tester	Serial interface	UART serial interface (RS-232)		
		USB interface	USB Type-C; structured data output in JSON format		
		Wireless interface	Bluetooth connectivity for a portable printer		
		Battery supply	Specify		
		External power supply	Specify		
		Environmental protection(IP) rating	Specify		
		Calibration method and calibration period	Specify		
		Applications	Occupational and Industrial Noise Monitoring, Environmental Noise Assessments, Construction and Public Infrastructure Monitoring, Regulatory Compliance and Auditing etc		

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No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
10	Industrial Sound level tester	Equipment Safety functions/features	Specify		
		Standard Accessories	Specify (Windscreen, USB-C to USB cable, USB power adapter, Serial to RS232 cable, Serial to USB cable, AA batteries, Waterproof carrying case etc)		
		Optional Accessories	Specify		
		Documentation	Operation Manual, Maintenance Manual, Spare Parts Catalog, Quality and Inspection Certificates and etc		
		Installation and commissioning	Specify		

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No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
10	Industrial Sound level tester	Training	Specify (Including Standard Operating Procedure, Maintenance Procedure and Safety precautions)		
		Warranty	Minimum 01 year warranty period		
		After service and local technical support availability	Specify		
		Supply of spare parts	Specify		
		Client list (supply of similar equipment locally)	Specify		
		Demonstration facility	Equipment and its functional demonstration should be provided (using a equipment from the client list/field visit etc) before awarding		

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No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
11	Thermal Camera (for non-contact thermal inspection)	Make/ Model	specify		
		Country of manufacture	specify		
		Equipment type	Handheld thermal imaging camera		
		Infrared detector resolution	Minimum 256 × 192 pixels		
		Total IR pixels	49,000 pixels or higher		
		Thermal sensitivity (NETD)	40 mK (0.04 °C) or better		
		Temperature measurement range	−20 °C to +550 °C		
		Temperature measurement accuracy	±2 °C or ±2% of reading, whichever is greater		
		Spectral range	Approximately 8–14 μm, long-wave infrared		
		Spatial resolution (IFOV)	1.91 mRad or lower		
		Field of view	Approximately 28° × 20° or wider		
		Minimum focus distance	0.15 m		
		Focus system	Manual focus		

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No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
11	Thermal Camera (for non-contact thermal inspection)	Image refresh rate	Minimum 9 Hz; 27 Hz preferred		
		Visible-light camera	Integrated 5 MP or greater digital camera		
		Thermal/visible image fusion	Continuous IR/visible image blending, including Picture-in-Picture (PIP)		
		Display	Minimum 3.5-inch colour touchscreen LCD, 640 × 480 or better resolution		
		Temperature measurement functions	Centre spot plus minimum 3 user-selectable measurement points		
		Area measurement	Minimum 3 adjustable measurement boxes with minimum/maximum/average temperature		
		Emissivity adjustment	User-selectable emissivity, approximately 0.01–1.00, with material presets		

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No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
11	Thermal Camera (for non-contact thermal inspection)	Temperature alarms	Configurable high/low temperature colour alarms		
		Thermal image scaling	Automatic and manual level/span adjustment		
		Radiometric image storage	Ability to save fully radiometric thermal images for later temperature analysis		
		Image storage capacity	Internal memory for 500 images plus removable memory card		
		Memory card	4 GB or higher microSD/SD card supplied		
		Image formats	Radiometric format plus standard JPEG/BMP/PNG/TIFF or equivalent		
		Wireless connectivity	Built-in Wi-Fi and/or Bluetooth for wireless transfer to PC/mobile device		

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No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
11	Thermal Camera (for non-contact thermal inspection)	Inspection documentation	Voice annotation, text annotation and visible-light reference/asset photograph capability		
		Data-analysis software	PC software for radiometric image analysis, temperature measurement and professional report generation		
		Battery	Field-replaceable rechargeable Li-ion battery, minimum 3.5 hours continuous operation		
		Environmental protection/ruggedness rating	Minimum IP54, with 2 m drop resistance		
		Safety & EMC compliance	IEC 61010-1 and applicable IEC 61326-1 electromagnetic compatibility requirements		
		Calibration method and calibration period	Specify		

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No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
11	Thermal Camera (for non-contact thermal inspection)	Applications	Electrical Troubleshooting, Mechanical Maintenance, HVAC/R Inspections, Preventive and Predictive Maintenance, Building Diagnostics etc		
		Equipment Safety functions/features	Specify		
		Standard Accessories	Specify(Thermal camera, rechargeable lithium-ion battery, AC adapter with universal adapters, USB cable, 4 GB micro- SD card, rugged hard carrying case, soft transport bag and adjustable hand strap etc)		
		Optional Accessories	Specify		
		Documentation	Operation Manual, Maintenance Manual, Spare Parts Catalog, Quality and Inspection Certificates and etc		

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Company Seal :

No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
11	Thermal Camera (for non-contact thermal inspection)	Installation and commissioning	Specify		
		Training	Specify (Including Standard Operating Procedure, Maintenance Procedure and Safety precautions)		
		Warranty	Minimum 01 year warranty period		
		After service and local technical support availability	Specify		
		Supply of spare parts	Specify		
		Client list (supply of similar equipment locally)	Specify		
		Demonstration facility	Equipment and its functional demonstration should be provided (using a equipment from the client list/field visit etc) before awarding		

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No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
12	Power Quality and Energy Analyzer	Make/ Model	specify		
		Country of manufacture	specify		
		Instrument type	Portable 3-phase Power Quality & Energy Analyzer		
		Power quality standard	IEC 61000-4-30 Class A compliant		
		Voltage inputs	Minimum 4 inputs – 3 phase + neutral		
		Voltage measurement range	1 V to 1,000 V RMS phase-to-neutral		
		Maximum voltage measurement	1,000 V RMS		
		Voltage accuracy	±0.1% of nominal voltage or better		
		Voltage transient capability	Transient measurement up to 6 kV peak		
		Current inputs	Minimum 4 inputs – 3 phase + neutral		

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No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
12	Power Quality and Energy Analyzer	Current measurement range	At least 0.5 A to 6,000 A, using suitable flexible current probes		
		Current accuracy	±0.5% of reading + 5 counts or better, excluding probe error		
		Frequency measurement	42.5–57.5 Hz and 51–69 Hz, with 50/60 Hz systems		
		Frequency accuracy/resolution	Resolution 0.001 Hz or better		
		Active power measurement	W / kW / MW measurement for individual phases and total system		
		Reactive & apparent power	Measurement of VAR/kVAR and VA/kVA		
		Energy measurement	kWh, kVAh and kVARh measurement		
		Power factor	True power factor, displacement PF and $\cos \varphi$		
		Harmonic analysis	Voltage and current harmonics with THD measurement		

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No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
12	Power Quality and Energy Analyzer	Harmonic measurement range	At least up to the 50th harmonic		
		Voltage/current unbalance	Measurement of positive, negative and zero sequence/unbalance		
		Dips, swells & interruptions	Automatic detection, recording and analysis		
		Flicker measurement	Pst, Plt, Pst(1 min) and Pinst		
		Transient capture	Automatic transient detection with waveform capture; minimum 5 μ s transient capability		
		Inrush current	Inrush current and duration measurement/recording		
		Mains signalling	Measurement of relative and absolute signalling voltage, with programmable frequencies		
		Event waveform capture	Voltage and current waveform capture associated with PQ events		

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No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
12	Power Quality and Energy Analyzer	Data logging	Simultaneous logging of multiple power-quality parameters with configurable recording intervals		
		Data storage	Minimum 8 GB removable SD/SDHC memory or equivalent		
		Display	Colour LCD, minimum approximately 6-inch class, with waveform, trend, phasor and numerical displays		
		PC/data interface & software	USB/isolated PC interface with PC software for data download, analysis and report generation		
		Safety & environmental rating	Minimum CAT III 1,000 V / CAT IV 600 V, rugged portable construction, IP51 or better		
		Analysis software	Manufacturer-provided data analysis and reporting software		
		Flexible current probes	Four flexible current probes, minimum 610 mm length		
		Environmental protection rating	Minimum IP51		

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No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
12	Power Quality and Energy Analyzer	Applications	Energy Loss Quantification, Power Inverter Efficiency Measurement, System Dynamics and Fast Event Capture (PowerWave), Harmonic Analysis, Troubleshooting Dips, Swells, and Transients etc		
		Equipment Safety functions/features	Specify		
		Standard Accessories	Specify(AC adapter, international plug set, rechargeable battery, voltage test leads, alligator clips, four flexible current probes, colour-coding clips, minimum 8 GB SD card, USB cable, analysis software, English manual and carrying case etc)		
		Optional Accessories	Specify		

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No.	Description of Goods	Technical Specifications and Standards			
		Purchaser's requirements		Bidder's offer	
		Detail	Priority	Yes / No	Specify/Remarks
12	Power Quality and Energy Analyzer	Documentation	Operation Manual, Maintenance Manual, Spare Parts Catalog, Quality and Inspection Certificates and etc		
		Installation and commissioning	Specify		
		Training	Specify (Including Standard Operating Procedure, Maintenance Procedure and Safety precautions)		
		Warranty	Minimum 01 year warranty period		
		After service and local technical support availability	Specify		
		Supply of spare parts	Specify		
		Client list (supply of similar equipment locally)	Specify		
		Demonstration facility	Equipment and its functional demonstration should be provided (using a equipment from the client list/field visit etc) before awarding		

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