Annex -`A` TO
Tender No. 23.27.0000.167.83(i).4112316.20.21
DT. 14-11-2020

Name of Machine	Specification	A/U	Qty
(a)	(c)	(d)	(e)
Double Spindle 5 axis CNC Turning Center	**Double Spindle 5 axis CNC Turning Center with all standard and additional accessories** as per specification below **:** 1. **Brand & Model** : To be mentioned 2. **Specification:** **a. Travels:** (1) X axis : Minimum 250 mm (2) Y axis : Minimum 200 mm (3) Z axis : Minimum 800 mm (4) Z axis for counter spindle : Minimum 800 mm **b. Working Area:** (1) Max. turning diameter : Not less than 400 mm (2) Swing over bed : To be mentioned (3) Distance between centers/ Spindle noses : Minimum 800 mm **c. Working Accuracy:** : 0.01 or less mm **d. Main Spindle (C- axis):** (1) Spindle speed : Minimum 4000 rpm (2) Chuck diameter : Minimum 250 mm **e. Counter Spindle:** (1) Spindle speed : Minimum 4000 rpm (2) Chuck diameter : Minimum 200 mm **f. Tool Turret:** (1) BMT 55 Type : All tool holders to be supplied along with the machine (2) Total Number of tools : Minimum 12 Nos (3) Number of Driven tools : All tools (4) Spindle speed : Minimum 4000 rpm **g. B – Axis with turning - milling spindle:** (1) Tool holder : HSK – A 63 or HSK – T 63 or Equivalent, all tool holders to be supplied along with the machine (2) Swivel range B-Axis : Minimum ±90 Degree (3) Spindle speed : Minimum 5000 rpm (4) Tool Magazine capacity : Not less than 20 Nos tools **h. Maximum weight of the work piece** : Not less than 100 Kg **j. Operating System:** Siemens 840SL / HAAS / Fanuc 32i or Equivalent (latest version) : To be mentioned **k. Other Software:** Compatible CAD-CAM / Master CAM with Post Processor Software (optional) : To be mentioned **l. Others:** Standard Tool Measuring Probe (laser), Automatic Chips Conveyer, Self-Centered Hydraulic Chuck with Foot Paddle, Electronic Hand Wheel, Parts catcher (optional), Bar loader (optional) & Compatible AVR (optional) to be supplied along with the machine. : To be mentioned **m. Power supply:** : 380-400V, 3ph, 50 Hz (Power supply of BOF is not uninterrupted) **n. Size and weight of the machine:** (1) Size (H × W × L) : To be mentioned (2) Weight without packing : To be mentioned	No	01

(a)	(c)		(d)	(e)
	p. Tool holder to be supplied	**: (BMT 55 Tool Holder & HSK–A 63 or HSK–T 63 or Equivalent)**		
	(1) Turning Tool Holder & Tool (Size 20mm)			
	(a) Turning Tool Holder BMT55 or equivalent OD Cutting (Double) 4 Tool position	: All tool holders to be supplied along with the machine		
	(b) Roughing tool L/H	: 04 Nos.		
	(c) Roughing tool R/H	: 04 Nos.		
	(d) Roughing Insert	: 200 Nos.		
	(e) Finishing tool L/H	: 04 Nos.		
	(f) Finishing tool R/H	: 04 Nos.		
	(g) Finishing Insert	: 200 Nos.		
	(h) BMT55 Parting Blade Holder -26mm (with blade)	: 04 sets		
	(j) Insert for Parting Blade	: 200 Nos.		
	(2) Steady rest for use on BMT55 tool turret	: 01 No.		
	(3) Boring Bar Holder with Boring Bar			
	(a) Shaft Ø 08	: 02 set		
	(b) Shaft Ø 10	: 02 set		
	(c) Shaft Ø 12	: 02 set		
	(d) Shaft Ø 16	: 02 set		
	(e) Shaft Ø 20	: 02 set		
	(f) Shaft Ø 25	: 02 set		
	(g) Insert	: 120 Nos. (20 nos. for each)		
	(4) Spring Collette Tool Holder ER/ESX25	: 10 No.		
	(5) Spring Collette (Ø02mm ~ Ø20mm ER/ESX-25)	: 03 set		
	(6) ER25 BMT55 Axial 'Quick Flex' Driven Tool with coolant supply	: 04 No.		
	(7) ER25 BMT55 Radial (radial double) 'Quick Flex' driven tool with coolant supply	: 04 No.		
	(8) HSK Turning Tool Holder or equivalent for square tool (Size 20)	: 04 Nos.		
	(9) HSK Multipurpose Holder or equivalent for square tool (Size 20×3 position)	: 04 Nos.		
	(10) HSK Turning Tool Holder or equivalent with insert pocket			
	(a) 80°	: 04 Nos.		
	(b) 55°	: 04 Nos.		
	(c) 35°	: 04 Nos.		
	(11) HSK Grooving Tool Holderor equivalent with insert pocket			
	(a) 3 mm	: 04 Nos.		
	(b) 2 mm	: 04 Nos.		
	(c) 1 mm	: 04 Nos.		
	(12) HSK Drill Chuck or equivalent	: 10 Nos.		
	(13) HSKFace or equivalent mill arbor/ adopter with cutter	: 03 Sets.		

(a)	(c)	(d)	(e)

3. **Country of Origin** : **Group A**

4. **Country of Manufacturer** : **Group A**

5. **Port of Shipment** : **Group A**

6. **Country of Manufacturer of Main Components** : **Group A**
(Servo Motor, Servo Drive, Spindle Motor, HMI, Control system, Hydraulic Pump, Lead Screw, Main body, Tool Magazine, Chuck)

7. **Terms & Conditions:**

a. All standard and special attachment and accessories must be mentioned in the offer and supplied along with the machine to manufacture different types of tools-cutter, jigs-fixture, die-punch etc. as per sample drawing attached using CAD-CAM. Machine is to be capable of machining materials of Carbon tool steel, Carbon Structural steel, High speed steel, Alloy steel etc. Vibration category of the machine should be mentioned.

b. All additional accessories, attachments to be supplied with the machine and mentioned with price separately in the financial offer which will be certified by the manufacturer of the machine (not by local agent).

c. All optional items with price must be mentioned in the financial offer which will be certified by the manufacturer of the machine not by local agent.

d. List of spare parts with price required for five (05) years operation to be submitted in the financial offer.

e. Machine installation, trial run and operation with maintenance training are to be provided by the certified engineers of machine manufacturer at BOF site. All these works to be completed within 30 days after receiving Machine by BOF.

f. **Pre-shipment Inspection (PSI):**

(i) PSI of the machine will be carried out by 02 (two) BOF persons for 04(four) working days (excluding journey period). All cost of the PSI to be borne by BOF.
(ii) Supplier must submit details plan of PSI (Modus Operandi).
(iii) Supplier must also mention PSI cost to be borne by them at their end.

g. **Foreign Training:** Machine operation with maintenance training for 02 BOF persons for 05 working days (excluding journey period) to be provided before or after PSI at machine manufacturer site. Air ticket & Pocket money (50.00 USD per day) will be borne by BOF. Others costs like Tuition fee for training, food, accommodation, all internal travel & medical (if needed) costs to be borne by the supplier. Supplier must submit foreign trainingplan along with the offer .

h. Local Training: Duration of training (excluding machine installation time) should be at least 15 working days. Following information must be given as under.

Ser	Training	Details
a.	Local Training	Trainer Type (Local/ Foreign)
		Number of Trainers
		<u>Training Schedule</u> a. **Machine Operators Training:** 07working days b. **Machine Maintenance,Trouble Shooting and Repair Training** **:** 08 working days **<u>Topics:</u>** (i) Details operation of electrical, electronics, pneumatic system, hydraulic system and mechanical system with diagrams in details. (ii) Control system: program loading and unloading, debugging, editing and servo drive and servo motors interconnection and parameter setting in details. (iii) Troubleshooting: Artificial problems to be created by removing sensors and changing the parameters of servo drive and servo motors then faults diagnosis and repair procedures. (iv) Safety procedures

(a)	(c)	(d)	(e)
	j. Supplier must submit local training plan along with the offer. k. 1 × **User/** programming manual in English (Hard & Soft copy) must be supplied with the machine. l. 1 × Operation, 1 x Maintenance and Repair manual (Hard & Soft copy) with parts catalogue and circuit diagram of electrical devices in English to be supplied with the machine. These books must contain the following topics/items: (1) Operation manual: Hydraulic, Pneumatic, Electrical, Electronic and Mechanical operational circuit and component diagrams with their detail working principles & description. Simulation/Animation of major items working/operation to be included in the soft copy. (2) Maintenance and Repair Manual: Detail troubleshooting & repair procedure as well as maintenance and safety system. m. All necessary software to handle & maintain the machine must be supplied along with the machine. n. The machine must be capable of making tools by using software with the help of PC. p. Standard Lubricating & Lighting system should be provided with the machine. q. Machine must have Ethernet facilities for online maintenance support. r. Warranty for 01(one) year after acceptance should be provided by the manufacturer. s. Bidder should submit original Leaflet/ Brochure with the offer. t, The service support with spares for minimum 10 years to be provided by the manufacturer. u. Country of manufacture and assembly should be mentioned in the offer. v. Any other points related to do the required job should be mentioned in the offer. w. All drives and motors should be of same control system.		