

Name of Machine	Specification	A/U	Qty																																																																																										
(a)	(c)	(d)	(e)																																																																																										
4 Axis (3+1) CNC Vertical Milling Machine	4 Axis (3+1) CNC Vertical Milling Machine with all standard and additional accessories as per specification below : <table border="1" data-bbox="240 412 1369 2089"> <tr> <td data-bbox="240 412 304 443">1</td> <td data-bbox="304 412 1369 443">Model No : To be mentioned</td> </tr> <tr> <td data-bbox="240 443 304 506">2</td> <td data-bbox="304 443 1369 506">Purposes/uses of Machine : To be described (Video will have to be provided if available)</td> </tr> <tr> <td data-bbox="240 506 304 537">3</td> <td data-bbox="304 506 1369 537">Specification:</td> </tr> <tr> <td colspan="2" data-bbox="240 537 1369 568">a. Table Size:</td> </tr> <tr> <td data-bbox="240 568 304 600">(1)</td> <td data-bbox="304 568 1369 600">Length (L) : Min 1350 mm</td> </tr> <tr> <td data-bbox="240 600 304 631">(2)</td> <td data-bbox="304 600 1369 631">Wide (W) : Min 600 mm</td> </tr> <tr> <td colspan="2" data-bbox="240 631 1369 663">b. Table travel:</td> </tr> <tr> <td data-bbox="240 663 304 694">(1)</td> <td data-bbox="304 663 1369 694">Longitudinal (X axis) : Min 1140 mm</td> </tr> <tr> <td data-bbox="240 694 304 725">(2)</td> <td data-bbox="304 694 1369 725">Transverse (Y axis) : Min 610 mm</td> </tr> <tr> <td data-bbox="240 725 304 757">(3)</td> <td data-bbox="304 725 1369 757">Vertical (Z axis) : Min 600 mm</td> </tr> <tr> <td colspan="2" data-bbox="240 757 1369 788">c. C or 4th axis (Rotary type):</td> </tr> <tr> <td data-bbox="240 788 304 819">(1)</td> <td data-bbox="304 788 1369 819">Travel of 4th axis : ± 360 degree</td> </tr> <tr> <td data-bbox="240 819 304 851">(2)</td> <td data-bbox="304 819 1369 851">Rotary table size : Min 210 mm</td> </tr> <tr> <td data-bbox="240 851 304 882">(3)</td> <td data-bbox="304 851 1369 882">Spindle bore dia : (45 ~52)mm</td> </tr> <tr> <td data-bbox="240 882 304 913">d.</td> <td data-bbox="304 882 1369 913">Control axis : X, Y, Z & 4th Axis</td> </tr> <tr> <td data-bbox="240 913 304 945">e.</td> <td data-bbox="304 913 1369 945">Spindle taper hole : BT 40</td> </tr> <tr> <td data-bbox="240 945 304 976">f.</td> <td data-bbox="304 945 1369 976">Spindle speed : Min 10,000 rpm</td> </tr> <tr> <td data-bbox="240 976 304 1008">g.</td> <td data-bbox="304 976 1369 1008">Spindle motor power : To be mentioned</td> </tr> <tr> <td data-bbox="240 1008 304 1079">h.</td> <td data-bbox="304 1008 1369 1079">Distance from spindle nose to surface of table : Minimum ≤150 mm & maximum ≥ 740 mm</td> </tr> <tr> <td data-bbox="240 1079 304 1111">j.</td> <td data-bbox="304 1079 1369 1111">Cutting speed : 20,000 mm/min (Min)</td> </tr> <tr> <td data-bbox="240 1111 304 1182">k.</td> <td data-bbox="304 1111 1369 1182">Tool diameter : (60~80) mm (full) & (125~130) mm (Empty)</td> </tr> <tr> <td data-bbox="240 1182 304 1214">l.</td> <td data-bbox="304 1182 1369 1214">Maximum tool length : Up to 300 mm</td> </tr> <tr> <td data-bbox="240 1214 304 1245">m.</td> <td data-bbox="304 1214 1369 1245">Rapid traverse (X, Y, Z) : Min 20 m/min</td> </tr> <tr> <td data-bbox="240 1245 304 1317">n.</td> <td data-bbox="304 1245 1369 1317">Type of control system : Upgraded version of HAAS/SIEMENS/FANUC</td> </tr> <tr> <td data-bbox="240 1317 304 1388">p.</td> <td data-bbox="304 1317 1369 1388">Display monitor : 15 inch LCD Color (min)- adjustable operator panel, adjustable angle and position</td> </tr> <tr> <td data-bbox="240 1388 304 1420">q.</td> <td data-bbox="304 1388 1369 1420">Memory capacity : 2 GB (min)</td> </tr> <tr> <td data-bbox="240 1420 304 1451">r.</td> <td data-bbox="304 1420 1369 1451">Magazine Capacity (Automatic tool changing system): Min 30</td> </tr> <tr> <td data-bbox="240 1451 304 1482">s.</td> <td data-bbox="304 1451 1369 1482">Power Supply : 380 ~420 V, 3 Phase, 50 Hz</td> </tr> <tr> <td data-bbox="240 1482 304 1514">t.</td> <td data-bbox="304 1482 1369 1514">Each machine must be equipped with the following devices/system/facilities:</td> </tr> <tr> <td data-bbox="240 1514 304 1545">(1)</td> <td data-bbox="304 1514 1369 1545">Surge protection device (integral or separate, to be mentioned)</td> </tr> <tr> <td data-bbox="240 1545 304 1576">(2)</td> <td data-bbox="304 1545 1369 1576">Harmonic filter (integral or separate, to be mentioned)</td> </tr> <tr> <td data-bbox="240 1576 304 1608">(3)</td> <td data-bbox="304 1576 1369 1608">Short circuit protection (integral or separate, to be mentioned)</td> </tr> <tr> <td data-bbox="240 1608 304 1680">(4)</td> <td data-bbox="304 1608 1369 1680">Over Voltage and Under Voltage protection (integral or separate, to be mentioned)</td> </tr> <tr> <td data-bbox="240 1680 304 1751">(5)</td> <td data-bbox="304 1680 1369 1751">Phase sequence and Phase failure system (integral or separate, to be mentioned).</td> </tr> <tr> <td data-bbox="240 1751 304 1783">(6)</td> <td data-bbox="304 1751 1369 1783">Tool measuring probe: Automatic/ manual, to be mentioned</td> </tr> <tr> <td data-bbox="240 1783 304 1814">(7)</td> <td data-bbox="304 1783 1369 1814">Automatic Voltage Regulator (AVR) (integral or separate, to be mentioned)</td> </tr> <tr> <td data-bbox="240 1814 304 1845">(8)</td> <td data-bbox="304 1814 1369 1845">Air dryer with filter (integral or separate, to be mentioned)</td> </tr> <tr> <td data-bbox="240 1845 304 1917">u.</td> <td data-bbox="304 1845 1369 1917">On line diagnosis and troubleshooting option must be available: To be mentioned in details with duration of service support duration and cost involved.</td> </tr> <tr> <td data-bbox="240 1917 304 1948">v.</td> <td data-bbox="304 1917 1369 1948">Items must be in-built in the machines:</td> </tr> <tr> <td data-bbox="240 1948 304 1980">(1)</td> <td data-bbox="304 1948 1369 1980">Tool Changing Arm : 01 No. for each machine</td> </tr> <tr> <td data-bbox="240 1980 304 2011">(2)</td> <td data-bbox="304 1980 1369 2011">Draw Bar Collette BBT40/ BT- 40 : 01 Set for each Machine</td> </tr> <tr> <td data-bbox="240 2011 304 2042">(3)</td> <td data-bbox="304 2011 1369 2042">Water gun : 01 Set for each Machine</td> </tr> <tr> <td data-bbox="240 2042 304 2074">(4)</td> <td data-bbox="304 2042 1369 2074">4th Axis Drive and wiring : 01 Set for each Machine</td> </tr> <tr> <td data-bbox="240 2074 304 2105">(5)</td> <td data-bbox="304 2074 1369 2105">Servo Rotary Table with update software version : 01 Set for each Machine</td> </tr> <tr> <td data-bbox="240 2105 304 2136">(6)</td> <td data-bbox="304 2105 1369 2136">Pneumatic Tail Stock with live center (Morse -3) : 01 Set for each Machine</td> </tr> </table>	1	Model No : To be mentioned	2	Purposes/uses of Machine : To be described (Video will have to be provided if available)	3	Specification:	a. Table Size:		(1)	Length (L) : Min 1350 mm	(2)	Wide (W) : Min 600 mm	b. Table travel:		(1)	Longitudinal (X axis) : Min 1140 mm	(2)	Transverse (Y axis) : Min 610 mm	(3)	Vertical (Z axis) : Min 600 mm	c. C or 4th axis (Rotary type):		(1)	Travel of 4th axis : ± 360 degree	(2)	Rotary table size : Min 210 mm	(3)	Spindle bore dia : (45 ~52)mm	d.	Control axis : X, Y, Z & 4th Axis	e.	Spindle taper hole : BT 40	f.	Spindle speed : Min 10,000 rpm	g.	Spindle motor power : To be mentioned	h.	Distance from spindle nose to surface of table : Minimum ≤150 mm & maximum ≥ 740 mm	j.	Cutting speed : 20,000 mm/min (Min)	k.	Tool diameter : (60~80) mm (full) & (125~130) mm (Empty)	l.	Maximum tool length : Up to 300 mm	m.	Rapid traverse (X, Y, Z) : Min 20 m/min	n.	Type of control system : Upgraded version of HAAS/SIEMENS/FANUC	p.	Display monitor : 15 inch LCD Color (min)- adjustable operator panel, adjustable angle and position	q.	Memory capacity : 2 GB (min)	r.	Magazine Capacity (Automatic tool changing system): Min 30	s.	Power Supply : 380 ~420 V, 3 Phase, 50 Hz	t.	Each machine must be equipped with the following devices/system/facilities:	(1)	Surge protection device (integral or separate, to be mentioned)	(2)	Harmonic filter (integral or separate, to be mentioned)	(3)	Short circuit protection (integral or separate, to be mentioned)	(4)	Over Voltage and Under Voltage protection (integral or separate, to be mentioned)	(5)	Phase sequence and Phase failure system (integral or separate, to be mentioned).	(6)	Tool measuring probe: Automatic/ manual, to be mentioned	(7)	Automatic Voltage Regulator (AVR) (integral or separate, to be mentioned)	(8)	Air dryer with filter (integral or separate, to be mentioned)	u.	On line diagnosis and troubleshooting option must be available: To be mentioned in details with duration of service support duration and cost involved.	v.	Items must be in-built in the machines:	(1)	Tool Changing Arm : 01 No. for each machine	(2)	Draw Bar Collette BBT40/ BT- 40 : 01 Set for each Machine	(3)	Water gun : 01 Set for each Machine	(4)	4th Axis Drive and wiring : 01 Set for each Machine	(5)	Servo Rotary Table with update software version : 01 Set for each Machine	(6)	Pneumatic Tail Stock with live center (Morse -3) : 01 Set for each Machine	No	01
1	Model No : To be mentioned																																																																																												
2	Purposes/uses of Machine : To be described (Video will have to be provided if available)																																																																																												
3	Specification:																																																																																												
a. Table Size:																																																																																													
(1)	Length (L) : Min 1350 mm																																																																																												
(2)	Wide (W) : Min 600 mm																																																																																												
b. Table travel:																																																																																													
(1)	Longitudinal (X axis) : Min 1140 mm																																																																																												
(2)	Transverse (Y axis) : Min 610 mm																																																																																												
(3)	Vertical (Z axis) : Min 600 mm																																																																																												
c. C or 4th axis (Rotary type):																																																																																													
(1)	Travel of 4th axis : ± 360 degree																																																																																												
(2)	Rotary table size : Min 210 mm																																																																																												
(3)	Spindle bore dia : (45 ~52)mm																																																																																												
d.	Control axis : X, Y, Z & 4th Axis																																																																																												
e.	Spindle taper hole : BT 40																																																																																												
f.	Spindle speed : Min 10,000 rpm																																																																																												
g.	Spindle motor power : To be mentioned																																																																																												
h.	Distance from spindle nose to surface of table : Minimum ≤150 mm & maximum ≥ 740 mm																																																																																												
j.	Cutting speed : 20,000 mm/min (Min)																																																																																												
k.	Tool diameter : (60~80) mm (full) & (125~130) mm (Empty)																																																																																												
l.	Maximum tool length : Up to 300 mm																																																																																												
m.	Rapid traverse (X, Y, Z) : Min 20 m/min																																																																																												
n.	Type of control system : Upgraded version of HAAS/SIEMENS/FANUC																																																																																												
p.	Display monitor : 15 inch LCD Color (min)- adjustable operator panel, adjustable angle and position																																																																																												
q.	Memory capacity : 2 GB (min)																																																																																												
r.	Magazine Capacity (Automatic tool changing system): Min 30																																																																																												
s.	Power Supply : 380 ~420 V, 3 Phase, 50 Hz																																																																																												
t.	Each machine must be equipped with the following devices/system/facilities:																																																																																												
(1)	Surge protection device (integral or separate, to be mentioned)																																																																																												
(2)	Harmonic filter (integral or separate, to be mentioned)																																																																																												
(3)	Short circuit protection (integral or separate, to be mentioned)																																																																																												
(4)	Over Voltage and Under Voltage protection (integral or separate, to be mentioned)																																																																																												
(5)	Phase sequence and Phase failure system (integral or separate, to be mentioned).																																																																																												
(6)	Tool measuring probe: Automatic/ manual, to be mentioned																																																																																												
(7)	Automatic Voltage Regulator (AVR) (integral or separate, to be mentioned)																																																																																												
(8)	Air dryer with filter (integral or separate, to be mentioned)																																																																																												
u.	On line diagnosis and troubleshooting option must be available: To be mentioned in details with duration of service support duration and cost involved.																																																																																												
v.	Items must be in-built in the machines:																																																																																												
(1)	Tool Changing Arm : 01 No. for each machine																																																																																												
(2)	Draw Bar Collette BBT40/ BT- 40 : 01 Set for each Machine																																																																																												
(3)	Water gun : 01 Set for each Machine																																																																																												
(4)	4th Axis Drive and wiring : 01 Set for each Machine																																																																																												
(5)	Servo Rotary Table with update software version : 01 Set for each Machine																																																																																												
(6)	Pneumatic Tail Stock with live center (Morse -3) : 01 Set for each Machine																																																																																												

(a)	(c)	(d)	(e)
	<p>(7) 3 jaw chuck (machine standard but size to be mentioned) : 01 Set for each Machine</p> <p>(8) 30 pull studs (as per spindle taper) : 01 Set for each Machine</p> <p>(9) Multi auger Chip Conveyor System (Belt type/Screw type Chip Auger) : 01 Set for each Machine</p> <p>(10) Control Cabinet cooler (AC Unit for cooling) : 01 Set for each Machine</p> <p>(11) Air Gun : 01 No. for each Machine</p> <p>(12) CNC 4 Axis MPG pendant Hand wheel controller</p>		
	4 Country of Origin : Group - A		
	5 Country of Manufacturer : Group - A		
	6 Country of Assembling : Group - A		
	7 Port of Shipment : Group - A		
	8 Country of Major Component : Group - A (All Servo motors, Spindle Motor, Control system including servo drives, Hydraulic Pump, Lead Screw, Main body, Tool Magazine, Pneumatic actuators, Vector drive if available and electronics PCB cards)		
	9 Percentage (%) of spares other than the machine manufacturing country with their list and country of origin to be mentioned		
	10 Conditions:		
	a. The Machine must be able to perform the following operations: (1) Milling, (2) Drilling, (3) Reaming etc.		
	b. All standard accessories and attachments including cooling, lighting, lubrication & control system (Software & Hardware) must be provided with the machines and list with prices of the same must be provided separately. In addition if the Item(s) mentioned in item(s) at 3t(1) to 3t(8) are separate than prices need to be mentioned separately. These prices will be included in the total price of the machine for price comparison.		
	c. Manual Work/Tool offset measuring device must be supplied with each Machine.		
	d. 1 x User/ programming manual in English (Hard & Soft copy) must be supplied with the machine.		
	e. 1 x 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.		
	f. Machine installation, commissioning & trial run must be completed by the supplier within one month (30 days) from the date of arrival of the machines at BOF.		
	g. Local Training: Duration of training should be at least 15 working days. Following information must be given as under.		
	(1) Details (Local Training after installation of Machine)		
	(a) Trainer Type (Local/Foreign) : To be mentioned		
	(b) Number of Trainer: At least 01 foreign expert. Trainer must be expert on operation/application and repair & maintenance on Electrical, Mechanical & Hydraulic system		
	(2) Training:		
	(a). Machine operation training : 05 working days.		
	(b) Machine Maintenance, trouble shooting and repair training : 10 working days.		
	(3) Topic:		
	(a) Details operation of electrical, electronics, pneumatic system, hydraulic system and mechanical system with diagrams in details.		
	(b) Control system: Program loading and unloading, debugging, editing and servo drive and servo motors interconnecting and parameter setting in details.		
	(c) 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.		
	(d) Safety procedures.		
	(4). Supplier must submit Local training plan along with the offer.		

RESTRICTED

(a)	(c)	(d)	(e)
	<p>h. Foreign training proposal: A 02 (Two) Members BOF Team would go for operation and maintenance training to the supplier's factory for a duration of 03 (Three) working days. Cost of Air Ticket, Pocket money, food, accommodation & medical (if needed) will be borne by BOF.</p> <p>j. Pre-Shipment Inspection:</p> <p>(1) Pre-shipment Inspection (PSI) will be carried out by BOF at the discretion of BOF authority and all cost will be borne by BOF The team may be comprised of 02 (Two) BOF personnel for a period of 02 (Two) working days excluding journey period.</p> <p>(2) Supplier must submit details plan of PSI (Modus Operandi)</p> <p>k. Warranty for one year after acceptance.</p> <p>l. List of fast and slow moving spares with quoted price are to be given with the tender including yearly escalation minimum for 10 (ten) years (only for reference purpose).</p> <p>m. The supplier should give Service support for 10 (ten) years after installation of the machines.</p> <p>n. Original brochure and catalogue must be supplied with the offer.</p> <p>p. Upgraded version of HAAS/ SIEMENS/ FANUC control system with manual guide-i/ equivalent (upgraded version) must be provided.</p> <p>q. Basic axes X, Y & Z must be dedicated/ integral to the machines (no additional /optional attachments/ items to be used as any of the basic axes) and 4th Axis may be arranged with additional /optional attachments/ items.</p> <p>r. All machines' electrical cabinet must be equipped with Air condition system.</p> <p>s. Tool Box and Chip Conveyor Trolley must be supplied with each machine.</p>		