



Specification for Material Handling Robot for Lamination Assembly

Sr. No.	Description	BHEL Specifications	Vendor Confirmation/Remarks
1	Make	ABB/FANUC/KUKA	
2	Type	Six axis articulated robot	
3	Controlled Axes	Six (Axis 1, Axis 2, Axis 3, Axis 4, Axis 5, Axis 6)	
4	Brake	All six axes	
5	Reach	3060 mm approximately. Vendor should verify the reach of the robot with respect to attached diagram and submit the proof of reach of robot through simulation studies or drawing along with the offer.	
6	Payload Capacity at Wrist	100 Kg.	
7	Installation	Floor Mount	
8	Weight	Vendor to Specify	
9	Drive Method	Electric Servo Drive	
10	Operating Temperature	10 Deg C to 45 Deg C	
11	Repeatability	Vendor to specify	
12	Vibration	Vendor to specify	
13	Voltage	3 phase, 415VAC +/-10%, 3 wire without neutral	
14	Protection	IP protection for robot and controller to be specified by vendor	
15	Safety	A. Robot to be manufactured as per latest international standards B. Provision to connect external E-Stop and Fence circuits C. Adjustable hard stops for major axes (J1, J2, J3) D. Software Limits for all axes	
16	Collision Guard	Integral to the robot	
17	End of Arm Tool I/O	At robot wrist - A profinet	

		port or minimum 8 Digital Inputs and 8 Digital outputs to connect EOAT	
18	End of Arm Tool Air	One air port with capacity of 80 psi.	
19	Number of Inputs/Outputs at robot controller	16 Digital Inputs (24VDC sinking) + 16 Digital Outputs (24VDC Sourcing) + 2 Analog (0-10VDC)	
20	Network Interface	Profinet port to connect to external PLC and Ethernet port for connection to plant network.	
21	Remote Diagnostics	Web based software tools for remote connectivity, diagnosis and monitoring.	
22	Calibration Tools	All tools and equipment required for robot calibration to be provided.	
23	Warranty	12 months from date of commissioning or 18 months from date of shipment	
24	Training	Programming, operation and maintenance training for two persons at vendors training centre.	
25	Support	Free after sales and service (on-site and off-site) for 2 years	
26	Spares	To be supplied free of cost for trouble-free operation for one year	
27	Manuals	Two copies of manuals (hard and soft copies) for operation and maintenance of the robot	
28	Pre-dispatch Inspection	Required	
29	Installation and commissioning support	All installation, commissioning and foundation details shall be provided on placement of PO.	
30	Simulation Software	To be quoted separately	
31	Annual Maintenance Contract	To be quoted separately	

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