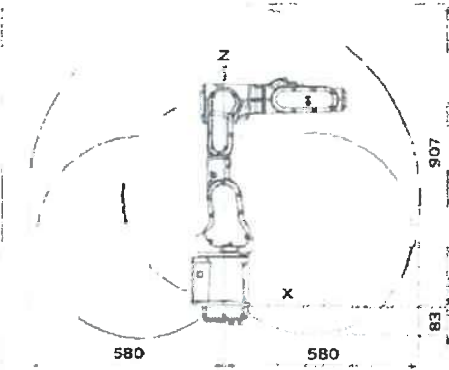




Details Specifications

A. Articulated Robot Station

EXAMPLE	QUANTITY REQUIRED																				
	1x Articulated Robot																				
Articulated Robot Station Specifications																					
Specifications	<table> <tr> <td>Reach</td><td>580mm</td></tr> <tr> <td>Payload</td><td>4kg</td></tr> <tr> <td>Armload</td><td>0.5kg</td></tr> <tr> <td>Number of axes</td><td>6</td></tr> <tr> <td>Protection</td><td>IP40</td></tr> <tr> <td>Mounting</td><td>Any angle</td></tr> <tr> <td>Controller</td><td>Yes with Profinet</td></tr> <tr> <td>Integrated signals</td><td>8 Inputs and 8 Outputs on wrist</td></tr> <tr> <td>Integrated air supply</td><td>2 on wrist</td></tr> <tr> <td>Integrated ethernet</td><td>One 1000 Base T ethernet port</td></tr> </table>	Reach	580mm	Payload	4kg	Armload	0.5kg	Number of axes	6	Protection	IP40	Mounting	Any angle	Controller	Yes with Profinet	Integrated signals	8 Inputs and 8 Outputs on wrist	Integrated air supply	2 on wrist	Integrated ethernet	One 1000 Base T ethernet port
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Robot Tooling	- Gripper 1: Electrical 2 point with 10mm Travel controlled via Profinet. - Gripper 2 : Vacuum gripper with vacuum generator and control valve.																				

A



	All associated equipment required for the operation of the system i.e. Cables, Teach Pendant etc.
Frame	Dimensions (lxbxh): 1500 x 1400x 900mm Robot to be mounted on an extruded aluminum frame with 4 x lockable casters. Extruded aluminum safety enclosure (3 sides) mounted on top of the aluminum frame and CAT 4 light curtains mounted on the front of the safety enclosure. Tower Light (Red/Green/Orange/Blue/Buzzer) IO link type. Pneumatic filter regulator with a manually operated isolating valve (lockable in the exhaust position) fitted with both an analog gauge (0 to 10 bar) and a Digital Pressure Gauge (0 to 10 Bar with a 0 to 10V analog output), a soft startup valve. Robot to be enclosed on three sides.
Control Panel	Control panel to be housed in the frame. Control panel colour RAL7035. Panel doors to be constructed from polycarbonate. Panel to be fitted with an easily accessible mains Isolator.
Control System	• Supply Voltage 220Volt Single phase • Pneumatic supply 5 Bar • PLC with the following base specifications: - Like " Siemens "S 7-1511-1PN 7" HMI KTP700 with Profinet port - o PLC to have 20% spare I/O • 8 port switch 10/100. • E-Stop with safety relay. • 16 Fault simulator switches (lockable). • 24V 120W Power Supply (control voltage). • Wiring to the control panel to be terminated into terminal blocks and not wired directly into the PLC. • Operator panel to include the following functions: Inch Button, Start Button, Auto/Manual Selector switch, Home Button, Control Power on/off button and Emergency switch (rotate to release) button.
Applications	The system is to be supplied with 3 x Robotic training applications.



Application 1 – Glue Bead path Templates training aids

- 5 x Glue bead templates Size 300mm x 300mm x 20mm White nylon.
Glue bead template to have a 1mm wide x 1mm deep slot machined into the nylon.
The slot to be filled with black paint.
Bases to fit into a nest located in front of the robot.
The 5 x Glue bead templates to have different patterns

Application 2 – Material Composition and packing application

- 15 x Bases of size 60mm x 60mm x 20mm (10 off Aluminium and 5 off white nylon)
Two trays with cutouts for the blocks to be supplied.
Blocks to be arranged in a 3 x 5 format.
Trays to be removable from the deck.
Tray to have 2 x handles located on either side of the tray.
The tray is to fit into a nest located on the deck.
The nests are to be located either side of the Robot.
Two proximity sensors to be mounted to the deck.
1 x Inductive (4mm sensing)
1 x Capacitive (4mm sensing)
The robot will present the block to the sensors. The robot will then pack the blocks on the packing tray according to the material composition.

Application 3 - Drawing and Writing

- It will include a whiteboard, a pen and a penholder from which the robotic arm will pick and store the pen without human interaction. The user will be able to perform activities related to writing and drawing with the robotic arm
- Station to be supplied with all Mechanical Drawings (both General Arrangement 3D, General Arrangement with exploded 3D views and detailed drawings of all mechanical parts)



Additional Requirements

- Station to be supplied with all Electrical Drawings. All wiring to be numbered and colour coded according to international accepted standards.
- Station to be supplied assembled and including software applicable to the supplied robot.
- All sensors to be of the plugin M8 or M12 type.
- Station to be supplied with an operator's manual in English. Manual to include a FMEA of the equipment, maintenance schedule, and a list of all parts on the station. The list to include the suppliers name, part number and cost.

B. Cobot Station

EXAMPLE	QUANTITY REQUIRED
	1x Cobot Station
Cobot station	
Specifications	Payload 3-4kg Reach 500mm

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	Degrees of freedom Programming Operating temperature range Compliance 10218-1 Typical TCP Speed Repeatability	6 Rotating joints 12" touchscreen with PolyScope graphical user interface 0 - 50°C EN ISO 13849-1 and EN ISO 1m/s +/- 0.03mm
Control box	Digital inputs Digital Outputs Analog Inputs Analog outputs Quadrature Digital Inputs Communication Power Source	16 16 2 2 4 Profinet 100 – 240Vac 50 Hz
Gripper	Electrical 2 point with 10mm Travel controlled via Profinet. All associated equipment required for the operation of the system i.e. Cables, Teach Pendant and etc.	
Frame	Dimensions (lxbxh): 1500 x 1400x 900mm Extruded aluminium frame fitted with 4 x casters of which 2 must be braked casters. Tower Light (Red/Green/Orange/Blue/Buzzer) IO link type. Pneumatic filter regulator with a manually operated isolating valve (lockable in the exhaust position) fitted with both an analog gauge (0 to 10 bar) and a Digital Pressure Gauge (0 to 10 Bar with a 0 to 10V analog output), a soft startup valve. Cobot to be enclosed on three sides.	
Control Panel	Control panel to be housed in the frame. Control panel colour RAL7035. Panel doors to be constructed from polycarbonate. Panel to be fitted with an easily accessible Mains Isolator. • Supply Voltage 220Volt Single phase. • Pneumatic supply 5 Bar. • <u>PLC with the following base specifications:</u>	



Control System

- Working memory 100Kb, CPU processing time 0.085uS/instruction, Supply voltage 24Vdc, Retentive data area 10Kb, with RTC and Profinet interface.
- 7" HMI with Profinet port. PLC to have 20% spare I/O.
- 8 port switch 10/100
- E-Stop with safety relay.
- 16 Fault simulator switches (lockable).
- 24V 120W Power Supply (control voltage).
- Wiring to the control panel to be terminated into terminal blocks and not wired directly into the PLC.
- Operator panel to include the following functions: Inch Button, Start Button, Auto/Manual Selector switch, Home Button, Control Power on/off button and Emergency switch (rotate to release) button.

Application

The system is to be supplied with 3 x Robotic training applications.

Application 1 – Glue Bead path Templates training aids

- 5 x Glue bead templates Size 300mm x 300mm x 20mm White nylon.
Glue bead template to have a 1mm wide x 1mm deep slot machined into the nylon.
The slot to be filled with black paint.
Bases to fit into a nest located in front of the robot.
The 5 x Glue bead templates to have different patterns

Application 2 – Material Composition and packing application

- 15 x Bases of size 60mm x 60mm x 20mm (10 off Aluminium and 5 off white nylon)
Two trays with cutouts for the blocks to be supplied. Blocks to be arranged in a 3 x 5 format.
Trays to be removable from the deck.
Tray to have 2 x handles located on either side of the tray. The tray is to fit into a nest located on the deck.
The nests are to be located either side of the cobot.
Two proximity sensors to be mounted to the deck.
1 x Inductive (4mm sensing)
1 x Capacitive (4mm sensing)

4



Additional Requirements

The cobot will present the block to the sensors. The cobot will then pack the blocks on the packing tray according to the material composition.

Application 3 - Drawing and Writing

- It will include a whiteboard, a pen and a penholder from which the robotic arm will pick and store the pen without human interaction. The user will be able to perform activities related to writing and drawing with the robotic arm
- Station to be supplied with all Mechanical Drawings (both General Arrangement 3D, General Arrangement with exploded 3D views and detailed drawings of all mechanical parts)
- Station to be supplied with all Electrical Drawings. All wiring to be numbered and colour coded according to international accepted standards.
- Station to be supplied assembled.
- Station must be able to be disassembled and stored in a cabinet or cabinets (to be supplied).
- All pneumatic cylinders to be fitted with flow control valves. All cylinders to be fitted with sensors for detection of forward and reverse stroke.
- Station to be supplied with master program for control of the station. Program to be well commented explaining the action of each line of code.
- All sensors to be of the plugin M8 or M12 type.
- Station to be supplied with an operator's manual in English. Manual to include a FMEA of the equipment, maintenance schedule, and a list of all parts on the station. The list to include the suppliers name, part number and cost.

H



Annexure A: Mandatory Requirements

Description of Appendix	Requirement	Circle yes if submitted	
		Yes	No
RFQ Document	Submission of a detailed and signed quotation	Yes	No
Technical specifications and pricing	Pricing according to the technical specification	Yes	No
Proof of Bank Account	Signed letter from the Bank (not older than 3 Months)	Yes	No
Company registration documents	Supply Company registration documents	Yes	No
Tax PIN	PIN Status certificate	Yes	No
BBBEE certification	A valid BBBEE certificate / An original Sworn-In Affidavit	Yes	No
Declaration of Interest	SBD 4 SBD 6.1 SBD 6.2 SBD 8 SBD 9	Yes	No
CSD	Supply proof of registration with the National Treasury	Yes	No
ID Copy of Company's director(s)	Supply with certified copy of IDs	Yes	No
Complete and sign the official document	Request for proposal form to be completed, signed and email back	Yes	No
Eligible Companies	OEM's or authorised resellers or distributors. Must provide sign letter that you are an authorised reseller/distributor of the product in South Africa	Yes	No

Annexure B: Functional criteria

Articulated Robot Station

Functional/Technical criteria	Weighting	0	5	7	10
Main Specifications - Reach 580mm - Payload 4kg - Armload 0.5kg - Number of axes 6 - Protection IP40 - Mounting Any angle - Controller Yes with Profinet - Integrated signals 8 inputs and 8 Outputs on wrist - Integrated air supply 2 on wrist - Integrated ethernet One 1000 Base T ethernet port Performance - PR 0.01mm - PS time 0.19 Seconds - Path repeatability 0.05mm Robot Tooling - Gripper 1: Electrical 2 point with 10mm Travel controlled via Profinet. - Gripper 2 : Vacuum gripper with vacuum generator and control valve. - All associated equipment required for the operation of the system i.e. Cables, Teach Pendant etc. Control Systems - Supply Voltage 220Volt Single phase - Pneumatic supply 5 Bar - PLC with the following base specifications: - Like "Siemens "S 7-1511-1PN 7" HMI KTP700 with Profinet port - PLC to have 20% spare I/O 8 port switch 10/100. - E-Stop with safety relay. 16 Fault simulator switches (lockable).	40%	Meeting no machine specifications	Meets only <50% of the machine specifications	Meets > 50% of the machine specifications, but not all	Meets all of the machine specifications

- 24V 120W Power Supply (control voltage).
- Wiring to the control panel to be terminated into terminal blocks and not wired directly into the PLC.
- Operator panel to include the following functions: Inch Button, Start Button, Auto/Manual Selector switch, Home Button, Control Power on/off button and Emergency switch (rotate to release) button.

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Safety Systems Specifications	20%	Meeting no Safety specifications	NA	NA	Meets all of the safety specifications
Frame • Dimensions (lxbxh): 1500 x 1400x 900mm • Robot to be mounted on an extruded aluminum frame with 4 x lockable casters. • Extruded aluminum safety enclosure (3 sides) mounted on top of the aluminum frame and CAT 4 light curtains mounted on the front of the safety enclosure. • Tower Light (Red/Green/Orange/Blue/Buzzer) IO link type. • Pneumatic filter regulator with a manually operated isolating valve (lockable in the exhaust position) fitted with both an analog gauge (0 to 10 bar) and a Digital Pressure Gauge (0 to 10 Bar with a 0 to 10V analog output), a soft startup valve. • Robot to be enclosed on three sides.					
Control Panel • Control panel to be housed in the frame. Control panel colour RAL7035. • Panel doors to be constructed from polycarbonate. • Panel to be fitted with an easily accessible mains isolator.					
Educational Material The system is to be supplied with 3 x Robotic training applications. • Application 1 – Glue Bead path Templates training aids ○ 5 x Glue bead templates Size 300mm x 300mm x 20mm White nylon. ○ Glue bead template to have a 1mm wide x 1mm deep slot machined into the nylon. ○ The slot to be filled with black paint. ○ Bases to fit into a nest located in front of the robot. ○ The 5 x Glue bead templates to have different patterns • Application 2 – Material Composition and packing application ○ 15 x Bases of size 60mm x 60mm x 20mm (10 off Aluminium and 5 off white nylon) ○ Two trays with cutouts for the blocks to be supplied. Blocks to be arranged in a 3 x 5 format. ○ Trays to be removable from the deck. ○ Tray to have 2 x handles located on either side of the tray. The tray is to fit into a nest located on the deck. ○ The nests are to be located either side of the Robot	20%	No educational material are provided	NA	NA	All educational and materials are provided

[Signature]

- o Two proximity sensors to be mounted to the deck.
 - 1 x Inductive (4mm sensing)
 - 1 x Capacitive (4mm sensing)
- o The robot will present the block to the sensors. The robot will then pack the blocks on the packing tray according to the material composition.
- Application 3 - Drawing and Writing
 - o It will include a whiteboard, a pen and a penholder from which the robotic arm will pick and store the pen without human interaction. The user will be able to perform activities related to writing and drawing with the robotic arm

Additional Requirements	15%	None of the Additional Requirements are met	Meets only <50% of the additional requirements	Meets > 50% of the additional requirements	Meets all of the additional requirements
- Station to be supplied with all Mechanical Drawings (both General Arrangement 3D, General Arrangement with exploded 3D views and detailed drawings of all mechanical parts) - Station to be supplied with all Electrical Drawings. All wiring to be numbered and colour coded according to International accepted standards. - Station to be supplied assembled and including software applicable to the supplied robot. - All sensors to be of the plugin M8 or M12 type. - Station to be supplied with an operator's manual in English. - Manual to include a FMEA of the equipment, maintenance schedule, and a list of all parts on the station. The list to include the suppliers name, part number and cost.	15%				
Local service and support capability	5%	Sales only	Limited local technical support. Experts needs to be flown in from overseas for complex problems	NA	On-site service support. Full capable local team with a track record

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Cobot Station

Functional/Technical criteria	Weighting	0	5	7	10
Main Specifications • Payload 3-4kg • Reach 500mm • Degrees of freedom 6 Rotating joints • Programming Touchscreen with PolyScope graphical user interface • Operating temperature range 0 - 50°C • Compliance EN ISO 13849-1 and EN ISO 10218-1 • Typical TCP Speed 1m/s • Repeatability +/- 0.03mm Control box • Digital inputs 16 • Digital Outputs 16 • Analog Inputs 2 • Analog outputs 2 • Quadrature Digital Inputs 4 • Communication Profinet • Power Source 100 - 240Vac 50 Hz Robot Tooling - Gripper • Electrical 2 point with 10mm Travel controlled via Profinet. • All associated equipment required for the operation of the system i.e. Cables, Teach Pendant and etc. Control Systems • Supply Voltage 220Volt Single phase. • Pneumatic supply 5 Bar. • PLC with the following base specifications: ◦ Working memory 100Kb, CPU processing time 0.085us/instruction, Supply voltage 24Vdc, Retentive data area 10Kb, with RTC and Profinet Interface. ◦ 7" HMI with Profinet port. PLC to have 20% spare I/O. • 8 port switch 10/100	40%	Meeting no machine specifications	Meets only <50% of the machine specifications	Meets > 50% of the machine specifications, but not all	Meets all of the machine specifications

- E-Stop with safety relay.
- 16 Fault simulator switches (lockable).
- 24V 120W Power Supply (control voltage).
- Wiring to the control panel to be terminated into terminal blocks and not wired directly into the PLC.
- Operator panel to include the following functions: Inch Button, Start Button, Auto/Manual Selector switch, Home Button, Control Power on/off button and Emergency switch (rotate to release) button.

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Safety Systems Specifications	20%	Meeting no Safety specifications	NA	NA	Meets all of the safety specifications
Frame - Dimensions (lxbxh): 1500 x 1400x 900mm - Extruded aluminium frame fitted with 4 x casters of which 2 must be braked casters. - Tower Light (Red/Green/Orange/Blue/Buzzer) IO link type. - Pneumatic filter regulator with a manually operated isolating valve (lockable in the exhaust position) fitted with both an analog gauge (0 to 10 bar) and a Digital Pressure Gauge (0 to 10 Bar with a 0 to 10V analog output), a soft startup valve. - Cobot to be enclosed on three sides Control Panel - Control panel to be housed in the frame. Control panel colour RAL7035. - Panel doors to be constructed from polycarbonate. - Panel to be fitted with an easily accessible Mains Isolator.	20%	Meeting no Safety specifications	NA	NA	Meets all of the safety specifications
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- The nests are to be located either side of the cobot.
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Local service and support capability					

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