

Sesona Kibi

From: Feronica de Vos <feronica@emcol.co.za>
Sent: Wednesday, 27 November 2024 09:10
To: Sesona Kibi
Subject: RE: Declaration: RFQ/SCM EMC 25/24 - SOURCING OF SERVICE PROVIDER FOR MECHATRONICS 2CFAS TRAINING SYSTEM

Good day Kibi,

Kindly be advised that I declare to items 1, 2 & 3.

Thank you.

Regards

 <p>higher education & training Department: Higher Education and Training REPUBLIC OF SOUTH AFRICA</p>	 <p>Eastcape Midlands TVET College EMC</p>	<p>Feronica De Vos Senior MIS Officer T: 041 996 1800 E: feronica@emcol.co.za W: www.emcol.co.za</p>
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From: Sesona Kibi <sesona@emcol.co.za>
Sent: Wednesday, 27 November 2024 08:25
To: Lester Moos <lester@emcol.co.za>; Kurt Flanagan <kflanagan@emcol.co.za>; Lungisa Mpati <lungisa@emcol.co.za>; Feronica de Vos <feronica@emcol.co.za>; Thareef Bloew <thareef@emcol.co.za>
Subject: Declaration: RFQ/SCM EMC 25/24 - SOURCING OF SERVICE PROVIDER FOR MECHATRONICS 2CFAS TRAINING SYSTEM

Day Committee Members,

With reference to the BSC meeting held on the 26 November 2024 at 13:00 via SKYPE, attached is the final BSC report for:

RFQ/SCM EMC 25/24 – SOURCING OF SERVICE PROVIDER FOR MECHATRONICS 2CFAS TRAINING SYSTEM

As agreed at the meeting all BSC members are required to do the following:

1. Declaration of Attendance of above-mentioned meeting by responding to this mail
I declare.
2. Declaration of Interest, Confidentiality & Impartiality by responding to this mail
 - I declare that I did not purposefully unlawfully favour prejudice anyone in the procurement process (invitation, evaluation, recommendation or award of bid of the Code of Conduct C4.5 to C4.12 and C5.3 to C5.4 of the Public Service.
 - I, the undersigned, accept that all information, documentation and decisions regarding any matter serving before the Committee are confidential. I, therefore, undertake not to make known anything in this regard.
 - I also declare that I will not purposefully favour or prejudice anybody.**I declare.**

Sesona Kibi

From: Lungisa Mpati <lungisa@emcol.co.za>
Sent: Wednesday, 27 November 2024 21:52
To: Sesona Kibi
Subject: RE: Declaration: RFQ/SCM EMC 25/24 - SOURCING OF SERVICE PROVIDER FOR MECHATRONICS 2CFAS TRAINING SYSTEM

Good Evening

This is to confirm that I have attended the meeting and I had no personal interest on the matters before the committee.

L Mpati
BSC Member

From: Sesona Kibi <sesona@emcol.co.za>
Sent: Wednesday, November 27, 2024 8:25 AM
To: Lester Moos <lester@emcol.co.za>; Kurt Flanagan <kflanagan@emcol.co.za>; Lungisa Mpati <lungisa@emcol.co.za>; Feronica de Vos <feronica@emcol.co.za>; Thareef Bloew <thareef@emcol.co.za>
Subject: Declaration: RFQ/SCM EMC 25/24 - SOURCING OF SERVICE PROVIDER FOR MECHATRONICS 2CFAS TRAINING SYSTEM

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 - *I, the undersigned, accept that all information, documentation and decisions regarding any matter serving before the Committee are confidential. I, therefore, undertake not to make known anything in this regard.*
 - *I also declare that I will not purposefully favour or prejudice anybody.***I declare.**
3. Declaration and Approval that attached BSC reports (minutes & approved Request for Approval) is a true reflection of the meeting held via SKYPE on 26 November 2024.
I declare.

Kind Regards

SESONA KIBI
SUPPLY CHAIN MANAGEMENT CLERK
Landline: +27 (041) 995 2051 | Fax: 041 995 2047
Email: sesona@emcol.co.za | Web-site: www.emcol.co.za

Sesona Kibi

From: lester moos <lester@emcol.co.za>
Sent: Wednesday, 27 November 2024 01:21
To: 'Sesona Kibi '
Subject: RE: Declaration: RFQ/SCM EMC 25/24 - SOURCING OF SERVICE PROVIDER FOR MECHATRONICS 2CFAS TRAINING SYSTEM
Attachments: MINUTES FOR RFQ-SCM EMC 25-24.pdf

Good day Kibi

Find this email as my declaration as I have nothing to declare

 <p>higher education & training Department: High Education and Training REPUBLIC OF SOUTH AFRICA</p>	 <p>Eastcape Midlands TVET College EMC creating new futures</p>	<p>Lester Moos Campus Manager : Graaff-Reinet Campus T: 049 891 0201 C: 0682728147 E: lester@emcol.co.za W: www.emcol.co.za</p>
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From: Sesona Kibi <sesona@emcol.co.za>
Sent: Wednesday, 27 November 2024 08:25
To: 'lester moos' <lester@emcol.co.za>; 'Kurt Flanagan' <kflanagan@emcol.co.za>; 'Lungisa Mpati' <lungisa@emcol.co.za>; 'feronica@emcol.co.za'; 'Thareef' <thareef@emcol.co.za>
Subject: Declaration: RFQ/SCM EMC 25/24 - SOURCING OF SERVICE PROVIDER FOR MECHATRONICS 2CFAS TRAINING SYSTEM

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RFQ/SCM EMC 25/24 – SOURCING OF SERVICE PROVIDER FOR MECHATRONICS 2CFAS TRAINING SYSTEM

As agreed at the meeting all BSC members are required to do the following:

Sesona Kibi

From: Thareef Bloew <thareef@emcol.co.za>
Sent: Wednesday, 27 November 2024 11:06
To: 'Sesona Kibi '
Subject: RE: Declaration: RFQ/SCM EMC 25/24 - SOURCING OF SERVICE PROVIDER FOR MECHATF

Good day

I declare to points 1, 2 and 3.

Regards

From: Sesona Kibi <sesona@emcol.co.za>
Sent: Wednesday, 27 November 2024 08:25
To: 'lester moos' <lester@emcol.co.za>; 'Kurt Flanagan' <kflanagan@emcol.co.za>; 'Lungisa Mpati' <lungisa@emcol.co.za>
<feronica@emcol.co.za>; 'Thareef' <thareef@emcol.co.za>
Subject: Declaration: RFQ/SCM EMC 25/24 - SOURCING OF SERVICE PROVIDER FOR MECHATRONICS 2CFAS TRAINING SYST

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 - *I, the undersigned, accept that all information, documentation and decisions regarding any matter serving before the Committee are confidential in this regard.*
 - *I also declare that I will not purposefully favour or prejudice anybody.***I declare.**



BID SPECIFICATION COMMITTEE HELD ON TUESDAY, 26 NOVEMBER 2024

VIA SKYPE

AGENDA

1. OPENING AND WELCOME
2. ATTENDENCE
3. DECLARATION OF INTEREST
4. MATTERS TO BE TABLED

4.1 RFQ/SCM EMC 25/24 – SOURCING OF SERVICE PROVIDER FOR MECHATRONICS 2CFAS TRAINING SYSTEM

- 4.1.1 TYPE OF PROJECT
- 4.1.2 CONFIRMATION OF BUDGET
- 4.1.3 ADVERTISEMENT
- 4.1.4 BID SPECIFICATIONS
- 4.1.5 ADDITIONAL REQUIREMENTS

5. RECOMMENDATION

6. CLOSURE

**BID SPECIFICATION COMMITTEE HELD ON TUESDAY, 26 NOVEMBER 2024
VIA SKYPE**

1. OPENING AND WELCOME

2. ATTENDANCE

The confirmation of attendance was done via SKYPE.

In addition, committee members were required to confirm attendance via email.

3. DECLARATION OF INTEREST

Committee members were required to formally declare interests via email.

4. MATTERS TO BE DISCUSSED

4.1 TYPE OF PROJECT

**RFQ/SCM EMC 25/24 – SOURCING OF SERVICE PROVIDER FOR
MECHATRONICS 2CFAS TRAINING SYSTEM**

4.2 CONFIRMATION OF BUDGET/FUNDS/APPROVAL

4.2.1. Financial Approval

*The budget was approved and signed by, Mr N Momoza, Deputy Principal
Finance / CFO on 21/11/2024 – see attached appendix.*

4.2.2. Accounting Officer Approval

Mr Van Heerden approved and signed on 22/11/2024 – see attached appendix.

4.2 ADVERTISEMENT

**RFQ/SCM EMC 25/24 – SOURCING OF SERVICE PROVIDER FOR
MECHATRONICS 2CFAS TRAINING SYSTEM**

4.4 BID SPECIFICATIONS

The Bid Specification and evaluation criteria are attached hereto

4.5 ADDITIONAL REQUIREMENTS

NONE

5. RECOMMENDATION

BSC committee approved with no objection.

MINUTES APPROVED BY:



CHAIRPERSON
BID SPECIFICATION COMMITTEE

27/11/2024

DATE

COMMENTS:

BID SPECIFICATION COMMITTEE MEMBERS (RFQ/SCM EMC 25/24)

NAME

SIGNATURE

DATE

NAME

SIGNATURE

DATE

NAME

SIGNATURE

DATE



SCM-022

REQUEST FOR APPROVAL – RFQ / RFP / BID

- Request for Quotation (RFQ) : R2000 – R200 000
Reviewed by AD/ SCM campus/depart manager, end-user RFP
- Request for Quotation (RFQ) : R200 001 – R500 000
Reviewed by BEC/ BAC approval by Accounting Officer
- Competitive bid: R500 001 – R1 000 000
Reviewed by BEC/ BAC approval by Accounting Officer
- Competitive bid: R1 000 000 – And above
Reviewed by BEC/ BAC approval by Accounting Officer

SOURCING OF SERVICE PROVIDER FOR MECHATRONICS 2 FAS SYSTEM

Procurement method: RFQ RFP BID Estimated delivery date: 30 April 2025

Shorter Bidding 3DAY 7DAY

1. BACKGROUND

The merSETA and Eastcape Midlands TVET College (EMC) signed a Memorandum of Understanding (MOU) on October 31, 2018 to establish a 4th Industrial Revolution: Eastcape Midlands TVET College Learning Factory (EMCOL-LF) to support the institutional strategic goal of teaching unemployed youth, semi-skilled and skilled employees in technologies connected to the Fourth Industrial Revolution

2. PURPOSE

To source service provider for the mechatronic training system which includes physical infrastructure, controlling software, mechanical and electrical diagrams supply, data collection, training, installation, maintenance, support and curriculum for technologies.

3. SPECIFICATION(S)

Detailed specifications and conditions attached for: Overall MECH2 FAS SYSTEM

- Station 1: Feeding station
- Station 2: Assembly station
- Station 3: Imaging Station

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13. ACCOUNTING OFFICER/AUTHORISED DELEGATE

(copy of delegation to be attached)

Based on the above background approval is requested for the **Request for Bid:**

NOT APPROVED / APPROVED BY:



**ACCOUNTING OFFICER or
AUTHORISED DELEGATE**

DATE

25/11/2024

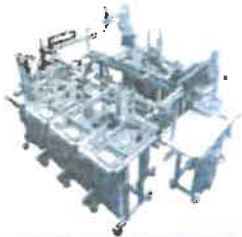
COMMENTS:

AA



Details Specifications

A. MECH2 FAS SYSTEM

EXAMPLE	QUANTITY REQUIRED
	<p>1 x MECH2 FAS SYSTEM</p> <p>Breakdown of System</p> <ul style="list-style-type: none">1x Feeding Station (Station No.1)1x Assembly Station (Station No. 2)1x Imaging Station (Station No. 3)1x Collaborative Robot Station (Station No. 4)1x Packing Station (Station No. 5)1x Server Station (Station No. 6)

MECH2 FAS SYSTEM Specifications

Overall MECH2 FAS SYSTEM

Overview of the FAS

This system will be used to train student in the following fields.

- Electrical Panel Building
- Mechanical Assembly and Disassembly
- PLC Programming
- Fault Tracing
- Machine Vision
- Data collection
- Automation and Control
- Robotics (including Robotic Programming)
- Pneumatics
- Mechanical and Electrical drawing interpretation

The Flexible Assembly System is to consist of the following stations.

- a) Station 1: Feeding station
- b) Station 2: Assembly station
- c) Station 3: Imaging Station
- d) Station 4: Robotic Assembly Station
- e) Station 5: Packing or Warehouse Station
- f) Station 6: Server Station

The line is required to assemble the following products.

AA



- a) Product 1. A Base into which a bearing and a shaft is inserted, a lid is then placed on top of the base.
- b) Product 2. A Base into which a Bearing and 2 x ball bearings are placed, a lid is then placed on top of the base.

Students must be able to assemble and disassemble the stations, this includes the extruded frame. Cupboards must be provided for the storage of the different stations. Each station to have its own cupboard. The student will also be required to wire up the electrical panel from the drawing supplied for the station.

Additional Requirements and Specifications:

1. Curriculum content to be developed together with EMC for a period of 6 months after installation.
2. Station frames to be constructed from 45mm x 45mm aluminium profile with a 10mm slot
3. All major mechanical and electrical components of the stations to be fitted with a QR code which will point to the manufactures data sheet of the component.
4. All assemblies to have a QR code pointing to a media file showing how it is assembled. Media files to reside on a file management system.
5. All valve banks, sensors, pneumatic cylinders, geared motors, plc's etc. to be standard industrial components that are available "off the shelf".
6. The 5 stations must be able to operate as standalone stations and also be integrated to function as a continuous assembly line together with the other stations.
7. A PLC Master Program for the equipment must be supplied for both continuous and single station operation. All programs are to be well commented and supplied with the source code for each station including the server.
8. The company will provide support to EMC for a duration of 6 months post-installation, with the following personnel.
 - a. PLC Programmer to assist with training of EMC lecturers
 - b. Mechanical artisan to assist EMC staff with assembly and disassembly Training.
9. Data sheets of all Electrical components used on the FAS stations to be supplied on a memory stick.
10. PLC Memory cards

Feeding Station (Station No.1)

Short description of Operation



This station feeds the pallets onto a conveyor belt. The conveyor belt then moves the pallet from the point of entry to the end of the conveyor. At the end of the conveyor a profile sensor will determine if the base is orientated correctly and if the bearing pocket is the correct size. If the base is incorrectly orientated or the bearing pocket is over or under size the base is to be rejected into the reject chute. An inductive proximity sensor to be located at the end of the conveyor. This sensor determines the material of the base. If the material is Nylon the base must be ejected from the conveyor. Technical Specifications

Magazine (Base Holder)

Bases are to be fed pneumatically from the magazine onto the conveyor i.e. fed onto the conveyor by a pneumatic cylinder.

Station to be supplied with 3 x feeding magazines holding 10 bases each for feeding of bases onto the conveyor.

Each magazine to be fitted with the following sensors that will determine the number of bases in each magazine.

1 x Magazine to be fitted with an ultrasonic distance sensor with IO Link output.

1 x Magazine to be fitted with a PDM Time of Flight sensor with IO link output.

1 x Magazine to be fitted with an ultrasonic distance sensor with a 0 to 10V analog output.

Station to be fitted with a Profinet profile sensor at the end of the conveyor to ensure correct orientation and profile of the base.

Each base to have an embedded RFID tag.

Bases to be ejected by means of a pneumatic cylinder onto the reject chute if the orientation, profile or material of the base is incorrect.

The bases are to be supplied as follows.

27 x Aluminium Bases (2 x with incorrect bearing pocket size)

3 x Black Nylon bases

Size of base to be at least 70mm x 70mm x 30mm

Frame

Minimum frame size deck 900mm wide x 800mm deep

Height of frame 1000mm (deck to floor)

Frame to be constructed from 45mm x 45mm extruded aluminium with 10mm profile slot, fitted with 4 x casters of which two must be braked casters

Tower Light (Red/Green/Orange/Blue/Buzzer) Discrete I/O

Pneumatic filter regulator with a manually operated isolating valve (lockable in the exhaust position) fitted with both an analogue gauge (0 to 10 bar) and a



Digital Pressure Gauge (0 to 10 Bar with a 0 to 10V analogue output), a soft startup valve.

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

Transport System

1 x Conveyor driven by a geared 24Vdc motor. Conveyor speed to be controlled from the PLC via a 0 to 10V signal or PWM. Conveyor to be fitted with a sensor for stopping of base at the end of the conveyor. Speed of conveyor must be adjustable from between 0 to 250mm per second via the HMI
A pneumatically operated reject chute to be located at the end of the conveyor for ejection of reject assemblies.

Control System

Supply Voltage 220Volt Single phase
Pneumatic supply 5 Bar
Like " Siemens PLC" S7-1215C DC/DC/DC
Like " Siemens " 7" HMI KTP700 with Profinet port.
8 port switch 10/100
E-Stop with safety relay
32 Fault simulator switches (lockable)
RFID reader/writer fitted to the conveyor (I/O link)
Profinet I/O link master (8 Port)
24V 120W Power Supply (control voltage)
24V 150W Power Supply (Conveyor)
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.
All I/O points, even if not in use, from the PLC to be terminated inside the electrical panel into terminal blocks. All digital outputs from PLC are to be buffered via a relay. The 24V supplied through the relay to be fused.

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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).

A digital media library to be supplied and must contain the following files and media:

- 3D drawings of the station
- An STP file of all mechanical parts on the station
- A media file showing how the different modules are assembled.
- 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)

Valve bank to control pneumatic cylinders (Valve bank controlled via Profinet from the PLC)

All pneumatic cylinders to be fitted with flow control valves. All cylinders to be fitted with sensors for detection of forward and reverse stroke.

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.

Data to be collected from this station and stored in SQL database

- a) RFID Serial Number of the tag
- b) Cycle time of the station
- c) Supplied Air pressure to the station at the start of the cycle
- d) Did the base pass the profile test or was it rejected from the station
- e) Did the base pass the material test or was it rejected from the station
- f) Material of the base
- g) Time stamp

Assembly Station (Station No. 2)

Specifications

The station is to place a bearing onto the palette. A ball is to be placed in the middle of the bearing.

The Station must be able to operate as a standalone station and be able to integrate into a line consisting of other stations.

At



- Product 1. Insert bearing and shaft into base
- Product 2. Insert bearing and 2 x balls into base

Frame

Minimum frame size deck 900mm wide x 800mm deep
Height of frame 1000mm (deck to floor)
Frame to be constructed from 45mm x 45mm extruded aluminium with 10mm profile slot, fitted with 4 x casters of which two 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 analogue gauge (0 to 10 bar) and a Digital Pressure Gauge (0 to 10 Bar with a 0 to 10V analogue output), a soft startup valve.

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

Transport System

1 x Conveyor driven by a geared 24Vdc motor. Conveyor speed to be controlled from the PLC via a 0 to 10V signal or PWM. Conveyor to be fitted with a sensor for stopping of part at the end of the conveyor. Speed of conveyor must be adjustable from between 0 to 250mm per second via the HMI
A pneumatically operated reject chute to be located at the end of the conveyor for ejection of reject assemblies.

Control System

Supply Voltage 220Volt Single phase
Pneumatic supply 5 Bar
Like " Siemens PLC" S7-1215C DC/DC/DC
Like " Siemens " 7" HMI KTP700 with Profinet port.
8 port switch 10/100
E-Stop with safety relay
32 Fault simulator switches (lockable)
RFID reader/writer fitted to the conveyor (I/O link) supplied with Profinet I/O link master (8 Port)

AK



24V 120W Power Supply (control voltage)

24V 150W Power Supply (Conveyor)

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

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).

A digital media library to be supplied and must contain the following files and media:

- 3D drawings of the station
- A STP file of all mechanical parts on the station
- A media file showing how the different modules are assembled.
- 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.

Valve bank to control pneumatic cylinders (Valve bank controlled via Profinet from the PLC)

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.

Data to be collected from this station and stored in SQL database

- a) RFID Serial Number of the tag
- b) Cycle time of the station
- c) Supplied Air pressure to the station at the start of the cycle
- d) What parts were placed into the base
- e) Time stamp

Imaging Station (Station No. 3)

Specifications

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The Station must be able to operate as a standalone station and be able to integrate into a line consisting of other stations.

The camera system will verify the parts located inside the base. i.e. if all parts are present.

Vision System

Keyence V2-G500CA Sensor Head

Keyence IV2-G30F Sensor Amplifier with Profinet interface

Keyence IV2—CP50 Monitor

Keyence IV2-H1 PC Software

All associated equipment required for the operation of the system i.e. Cables and etc

Frame

Minimum frame size deck 900mm wide x 800mm deep

Height of frame 1000mm (deck to floor)

Frame to be constructed from 45mm x 45mm extruded aluminium with 10mm profile slot, fitted with 4 x casters of which two must be braked casters

Tower Light (Red/Green/Orange/Blue/Buzzer) Discrete I/O Type

Pneumatic filter regulator with a manually operated isolating valve (lockable in the exhaust position) fitted with both an analogue gauge (0 to 10 bar) and a Digital Pressure Gauge (0 to 10 Bar with a 0 to 10V analogue output), a soft startup valve.

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

Transport System

1 x Conveyor driven by a geared 24Vdc motor. Conveyor speed to be controlled from the PLC via a 0 to 10V signal or PWM. Conveyor to be fitted with a sensor for stopping of part at the end of the conveyor. Speed of conveyor must be adjustable from between 0 to 250mm per second via the HMI

A pneumatically operated reject chute to be located at the end of the conveyor for ejection of reject assemblies.

HA



Control System

Supply Voltage 220Volt Single phase

Pneumatic supply 5 Bar

Like " Siemens PLC" S7-1215C DC/DC/DC

Like " Siemens " 7" HMI KTP700 with Profinet port.

8 port switch 10/100

E-Stop with safety relay

32 Fault simulator switches (lockable)

RFID reader/writer fitted to the conveyor (I/O link) supplied with Profinet I/O link master (8 Port)

24V 120W Power Supply (control voltage)

24V 150W Power Supply (Conveyor)

Wiring to the control panel to be terminated into terminal blocks and not wired directly into the PLC

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- A STP file of all mechanical parts on the station
- A media file showing how the different modules are assembled.
- Station to be supplied with all Electrical Drawings. All wiring to be numbered and colour coded accorded 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.

Discrete I/O valve bank

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.

Data to be collected from this station and stored in SQL database



- a) RFID Serial Number of the tag
- b) Cycle time of the station
- c) Supplied Air pressure to the station at the start of the cycle
- d) An image of the part to be stored in the SQL database
- e) If the part was rejected – the reason why i.e. missing bearing etc.
- f) Time stamp

Collaborative Robot Station (Station No. 4)

The Station must be able to operate as a standalone station and be able to integrate into a line consisting of other stations.

This station consists of a pneumatically operated lid feeding magazine that presents the lid to the robot. The lid is collected by the robot and presented to a barcode scanner which will scan a barcode label on the inside of the lid, the lid is then placed on top of the base. The robotic arm to be fitted with a suction cup. The lid feeding magazine to hold 30 lids. An IO link ultrasonic distance sensor must be fitted to the magazine to detect the number of lids in the magazine. The station will reject the part at the end of the conveyor if the part has the incorrect Nylon lid. Detection of the lid by means of proximity sensors.

Supply scope of lids

27 off material Aluminium

3 off Material Black Nylon

Specifications

Cobot	Like "ABB CRB 1100-4/0.58"	
Payload	4kg	
Reach	500mm	
Degrees of freedom	6 Rotating joints	
Programming	12" 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	

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Communication	Profinet
Power Source	100 – 240Vac 50 Hz

All associated equipment required for the operation of the system i.e. Cables, Teach Pendant and etc.

Frame

Minimum frame size deck 900mm wide x 800mm deep
Height of frame 1000mm (deck to floor)
Frame to be constructed from 45mm x 45mm extruded aluminium with 10mm profile slot, fitted with 4 x casters of which two 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.

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

Transport System

1 x Conveyor driven by a geared 24Vdc motor. Conveyor speed to be controlled from the PLC via a 0 to 10V signal or PWM. Conveyor to be fitted with a sensor for stopping of part at the end of the conveyor. Speed of conveyor must be adjustable from between 0 to 250mm per second via the HMI
A pneumatically operated reject chute to be located at the end of the conveyor for ejection of reject assemblies.

Control System

Supply Voltage 220Volt Single phase
Pneumatic supply 5 Bar
Like " Siemens PLC" S7-1215C DC/DC/DC

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Like " Siemens " 7" HMI KTP700 with Profinet port.

8 port switch 10/100

E-Stop with safety relay

32 Fault simulator switches (lockable)

RFID reader/writer fitted to the conveyor (I/O link) supplied with Profinet I/O link master (8 Port)

24V 120W Power Supply (control voltage)

24V 150W Power Supply (Conveyor)

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

Fixed barcode scanner mounted on the deck of the station

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).

A digital media library to be supplied and must contain the following files and media:

- 3D drawings of the station
- A STP file of all mechanical parts on the station
- A media file showing how the different modules are assembled.
- Station to be supplied with all Electrical Drawings. All wiring to be numbered and colour coded accorded 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.

Discrete I/O valve bank.

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.

Data to be collected from this station and stored in SQL database

- a) RFID Serial Number of the tag
- b) Cycle time of the station
- c) Supplied Air pressure to the station at the start of the cycle
- d) Lid serial Number

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e) What assemblies passed and what assemblies were rejected

f) Time stamp

Packing Station (Station No. 5)

Specifications

The Station must be able to operate as a standalone station and be able to integrate into a line consisting of other stations.

This station consists of a 3-axis gantry for picking the base up from the conveyor and placing in the packing area with a return linear conveyor. A label with a DMC code to be printed and placed manually on the lid of the base. A barcode reader to read the contents of the DMC code to verify that the label has printed correctly.

Gantry Specifications

3 Axis Gantry with Gripper

Technology type	Combination of Servo and Stepper Motors interfaced to PLC via Profinet
X Axis travel	600mm (Stepper Motor)
Y Axis travel	600mm (Servo Motor)
Z Axis Movement	150mm (Stepper Motor)
Gripper	Electrical 2 point with 10mm Travel controlled via Profinet
Encoder type	Absolute on all axis's

All associated equipment required for the operation of the system i.e. Cables and etc.

Printer Specification

Like "Zebra ZT411" communication via a RS232 interface to the PLC

Frame

Minimum frame size deck 900mm wide x 800mm deep
Height of frame 1000mm (deck to floor)
Frame to be constructed from 45mm x 45mm extruded aluminium with 10mm profile slot, fitted with 4 x casters of which two must be braked casters
Tower Light (Red/Green/Orange/Blue/Buzzer) IO link type

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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.

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

Transport System

1 x Conveyor driven by a geared 24Vdc motor. Conveyor speed to be controlled from the PLC via a 0 to 10V signal or PWM. Conveyor to be fitted with a sensor for stopping of part at the end of the conveyor. Speed of conveyor must be adjustable from between 0 to 250mm per second via the HMI
A pneumatically operated reject chute to be located at the end of the conveyor for ejection of reject assemblies.

Part Return Conveyor.

This conveyor is used to transfer the assembled part from the last station back to the start of the assembly line. The conveyor is to be located behind the assembly line.

Specifications

Flat belt conveyor with containment barriers mounted on the side of the conveyor

Belt width 150mm

Motor size 0.18 KW with VSD

To be manufactured from extruded aluminum profile.

Safety pull switch to be located over the entire length of the conveyor

Thru Beam sensor to be located at the end of line to ensure the parts do not fall off the conveyor. The conveyor must stop when a part reached the end of the line and restart only the part has been removed to take the next part to the end of the conveyor.

Electrical enclosure to be mounted underneath the conveyor.



Control System

Supply Voltage 220Volt Single phase
Station to operate at 5 bar air pressure
PLC with the following base specifications
Like " Siemens PLC" S7-1215C DC/DC/DC
Like " Siemens " 7" HMI KTP700 with Profinet port.
8 port switch 10/100
E-Stop with safety relay
32 Fault simulator switches (lockable)
RFID reader/writer fitted to the conveyor (I/O link) supplied with Profinet I/O link master (8 Port)
24V 150W Power Supply (control voltage)
24V 150W Power Supply (Conveyor)
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

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).

A digital media library to be supplied and must contain the following files and media.

- 3D drawings of the station
- A STP file of all mechanical parts on the station
- A media file showing how the different modules are assembled.
- Station to be supplied with all Electrical Drawings. All wiring to be numbered and colour coded accorded 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.

Discrete I/O valve bank

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.

Data to be collected from this station and stored in SQL database

- a) RFID Serial Number of the tag
- b) Cycle time of the station
- c) Supplied Air pressure to the station at the start of the cycle
- d) Location of stored assembly and barcode information
- e) Time stamp

Server Station (Station No. 6)

Server to be mounted in a 38 U 19" rack cabinet.

To be supplied with the following:

Computer System Requirements:

Personal I7 Computer mounted in a 19" rack mount enclosure

32 Gigabyte RAM

Operating System Windows 11

Full HD or better Monitor for inside the rack

Keyboard, mouse

2 TB SSD Drive

16 Port Rack mounted switch 10/100/1000

Latest Microsoft SQL Server Express.

User SQL interface program developed together with EMC for displaying of data collected by SQL database. Program to be well commented and supplied with source code.

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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 signed letter that you are an authorised reseller/distributor of the product in South Africa	Yes	No

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Costing Proposal	Detail quote separating Labour from Equipment costs	Yes	No
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Annexure B: Functional criteria

MECH2 FAS SYSTEM

Functional/Technical criteria	Weighting	0	5	7	10
<p>Technical review. Provide detail technical proposal for a Mech FAS System</p> <p>Technical Capability Organisation should demonstrate experience in constructing similar equipment, providing case studies or references for similar projects.</p> <p>Concept Design Provide a concept design of the training desk through a CAD drawing or rendering. This should provide the evaluator with a view of how the equipment is going to look like once completed.</p>	<p>50%</p> <p>40%</p> <p>10%</p>	<p>Meeting not all of the requirements</p> <p>No experience or capability are demonstrated</p> <p>No design</p>	<p>NA</p> <p>Limited experience and capabilities demonstrated</p> <p>Poor design</p>	<p>NA</p> <p>NA</p> <p>NA</p>	<p>Meets all of the requirements</p> <p>Relevant capabilities and experience are demonstrated</p> <p>Good design</p>

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