

SCOPE OF WORK

Tender No.: FOSCO-RFQ-19-2024

Description: C&I ENGINEER POSITION – SHORT TERM CONTRACT FOR ENGINEERING SERVICES FROM SYSTEM INTEGRATOR COMPANY

1 INVITATION TO TENDER

This document prescribes the requirements for the onsite maintenance of control systems at Foskor Phalaborwa. Services to be rendered include but is not limited to the maintenance of all PLC's, SCADA's and networks, fault finding and troubleshooting assistance to instrumentation technicians and electricians.

This service rendered must be fast, accurate and effective to ensure plant downtime is kept to the absolute minimum. Relatively small inhouse projects such as the upgrdading of old redundant PLC's (Modicon 984 to Schneider M340) should also run in parallel with the maintenance of the Plant.

2 SCOPE BACKGROUND

The Foskor Instrumentation section currently has 2 vacant C&I Engineer positions. Control systems form an integral and critical part of all processing plants. Foskor requires the services of 2 competent C&I Engineers who are proficient with the following systems to assist in the vacant positions while the recruitment process to identify and appoint permanent personnel, continues to run in parallel.

- SCHNEIDER PLC's – Quantum Series, M340 Series, Momentum and Advantys RIO and Modicon 984 PLC's
- ADROIT SCADA
- SIEMENS S7 PLC and PCS7 Software
- ATWISE SCADA
- VIRTUAL SERVERS – Restore in case of failure (with support from OEM)
- NETWORKS – Ethernet, Modbus, ModbusPlus, Profibus, ASI.
- HISTORIAN – CANARY, SQL



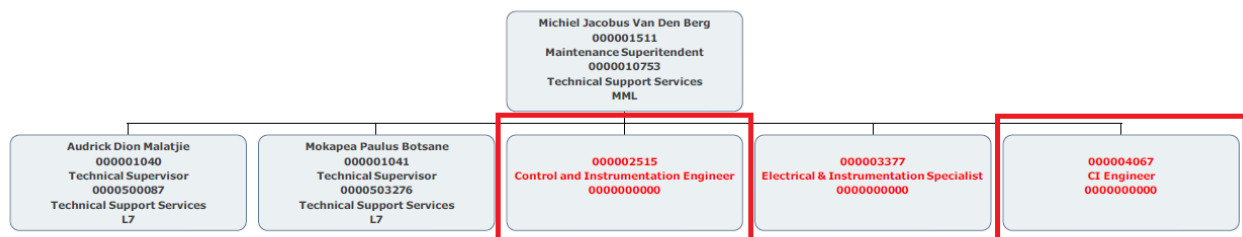
Created By: Nico

Rev: 0

Source: CRS

Date: 11/01/2024

Signature: 



The above organogram shows the senior personnel in the instrumentation section and where the C&I Engineer positions fit in the structure.

The E&I specialist position is also currently vacant but the recruitment process to fill this is underway. The three engineers will work as a team in normal day to day activities as well as standby duties.

3 **COMPANY BACKGROUND**

Foskor is one of the world's largest producers of phosphate rock (concentrate) and phosphoric acid. It is one of the world's few vertically integrated producers of phosphoric acid and is the second largest supplier to India, the world's largest consumer of phosphoric acid.

The Company owns and mines phosphate resources and beneficiates the mined material to produce a phosphate concentrate at Phalaborwa, in the Limpopo Province of South Africa. The phosphate concentrate is sold locally and transported to the Richards Bay plant on the coast of Kwa-Zulu Natal to produce phosphoric acid, sulphuric acid and granular fertilisers MAP and DAP from phosphoric acid and is the leading supplier of fertilisers to South Africa. In all about 95% of the phosphoric acid is exported and the granular sales are divided between exports and local markets. Since 1951 Foskor has supplied more than 95% of South Africa's fertiliser requirements.

4 **SCOPE OF WORK**

4.1 **GENERAL SCOPE CONSIDERATIONS**

- Complete all relevant training and authorizations.
- The service provider shall supply all engineering services, labour, PPE, equipment, vehicles, tools and each item of expense in order for the scope of work to be completed successfully unless otherwise stated taking the following into consideration.
- The successful or appointed service provider shall comply with the latest revisions of Foskor's policies and procedures.
- Critical portions or the full scope of the work may not be subcontracted unless otherwise indicated in the Scope.

4.2 **SAFETY**

- The contractor and subcontractors need to comply with the Mine Health and Safety act at all times. All Foskor COP's Policies and procedures needs to be adhered to.
- Medical, Induction, Foskor ID Card, etc. is charged a fee (contact the clinic/security for exact amounts). Exit medicals need to be done at termination of contract.
- All vehicles and other TMM's to be inspected before entering Foskor Premises.
- All person competencies to be verified before being allowed to work on Foskor premises for a specific task.
- All the required PPE and Safety Equipment are for the contractor's account (refer to Foskor's PPE COP – including but not limited to sections referring to electrical substations).
- Timeous submission of invoices is the responsibility of the service provider (ANNEXURE C)

Training and authorisations - Summarised - Typical but not limited to:

1. Basic Health and Safety – Mandatory Training
2. First aid – Mandatory Training
3. HIRA – Mandatory Training and Authorisation
4. TMM – Foskor driving licence and Authorisation.
5. Conveyors – Authorisation
6. Lock out – Authorization
7. Site specific induction for each department
8. Other – as and when as per Foskor COP's

4.3 SCOPE OF WORK

BACKGROUND

Foskor Mining division operations consist of two open pit mining areas and several processing plants. This a 24/7 business and control systems are a critical part of all processes.

Working hours are:

- Monday to Thursday: 07h00 to 16h00
- Friday: 07h00 to 13h30.

Senior standby will be shared by 3 engineers (one engineer on standby at all times) and typically runs from Friday to Thursday, including weekends.

Foskor Instrumentation has a licensed TeamViewer package which allows engineers to assist mostly from home (remotely).

For the majority of calls, this remote support is sufficient to assist technicians and other to solve the issue at hand, but if not and the Plant is down, it will be required from the engineer to come to site to assist further. Typical examples would be in case of a network failure, (Profibus or Ethernet), PLC failure, conveyors not starting etc.

MAINTENANCE ON CONTROL SYSTEMS

The main function will be the maintenance of all current control systems on a 24/7 basis, including standby duties after hours and over weekends for all Plants at Foskor Phalaborwa Mining Division which is based in Phalaborwa.

This in brief can be summarised as:

- Fault finding and maintenance on all control systems – PLC's, SCADA's, Networks, field interfacing with Electrical Systems. All hardware and software which are used as part of the control systems.
- Small and temporary modifications to PLC/SCADA software – i.e., force or overriding of PLC inputs or outputs to allow for abnormal operations, such as emptying hoppers and bins to prepare for maintenance.
- Assist other sections with RCA investigations by extracting Plant data from Historian and make it available in Excel to engineers and Superintendents.

Note. Hardware will be supplied by Foskor and licensed software will be made available to the contractor.

SUMMARY OF PLANTS AND WHAT CONTROL SYSTEMS ARE BEING USED:

Crushing Plants:

- Primary South Crusher – Schneider PLC (Quantum and Advantys RIO), Control Expert software, ADROIT SCADA, Ethernet network with HIRSCHMAN switches. Intelligent conveyor belt protection system – Conscan/Beltscan
- Primary East Crusher – Schneider PLC (M340 series with RIO), Control Expert Software, ADROIT SCADA and Ethernet network with EXTREME switches.
- Primary North Crusher Plant – Schneider PLC (M340 series with RIO), Control Expert Software, ADROIT SCADA and Ethernet network with EXTREME switches.
- Secondary West Crusher - Schneider PLC (M340 series with RIO), Control Expert Software, ADROIT SCADA and Ethernet network with EXTREME switches.
- Secondary East Crusher - Schneider PLC (M340 series with RIO), Control Expert Software, ADROIT SCADA and Ethernet network with EXTREME switches.

Milling Plants:

- Bigmills section - Schneider PLC (Combination of Quantum PLC, momentum RIO and M340 series), Control Expert Software, ADROIT SCADA and Ethernet network with HIRSCHMAN switches.
- Smallmills section - Schneider PLC (Combination of Quantum PLC, momentum RIO and M340 series), Control Expert Software, ADROIT SCADA and Ethernet network with HIRSCHMAN switches.

Flotation Plants:

- DSF Plant – Schneider PLC (Combination of Quantum PLC with drop IO (Quantum series and M340 series), ADROIT SCADA and Ethernet network with HIRSCHMAN switches.
- F-Bank – Schneider PLC (984 Compact series PLC with Modsoft software), ADROIT SCADA and a combination of Ethernet and ModbusPlus networks.

Ext8 Plant:

- Dry Section – SIEMENS S7 PLC with PCS7 software and Profibus networks
- Wet section - SIEMENS S7 PLC with PCS7 software and Profibus networks
- Flotation - SIEMENS S7 PLC with PCS7 software and Profibus networks.

Filtration Plants:

- Bospombe – Schneider PLC (984 Compact series PLC with Modsoft software), ADROIT SCADA and a combination of Ethernet and ModbusPlus networks
- Filters - Schneider PLC (M340 series PLC with Control Expert software), ADROIT SCADA and a combination of Ethernet and ModbusPlus networks.

Drying Plants:

- Driers 4,5,6,7,8 and 9 - Schneider PLC (984 Compact series PLC with Modsoft software), ADROIT SCADA and a combination of Ethernet and ModbusPlus networks
- Dispatch – combination of rail and road scales, LMI weigh indicators and WAYWARE software.

Tailings Plants:

- TTPS - Schneider PLC (Combination of Quantum PLC, momentum RIO and M340 series), Control Expert Software, ADROIT SCADA and Ethernet network with HIRSCHMAN switches
- RWPS - Schneider PLC (Combination of Quantum PLC, momentum RIO and M340 series), Control Expert Software, ADROIT SCADA and Ethernet network with HIRSCHMAN switches
- Weir pump stations – Motorola ACE Telemetry system with ADROIT SCADA and Ethernet network.

General:

- Virtual server – Dell Series with EXTREME core switches – full redundancy. All SCADA Servers are housed on the Virtual servers with backup servers in each section.
- Domain – INSTRU is a standalone domain with several users.
- Operator station PC's – Replace faulty PC, assist operator/supervisor with login. Process controller uses 'operator' as standard login to their respective SCADA machines. Production supervisors have individual login details. After three unsuccessful attempts to login, the user will be blocked and login details must be reset on the Domain.
- ATWISE SCADA – OPC UA based SCADA used for Management (VIEW Only)
- Several weighbridges (road and rail) - Combination of LMI hardware and software and WAYWARE software.
- Other systems which form part of the current control system framework not mentioned above, typical historian data (SQL) for data logging and MES reporting purposes.

IN-HOUSE PROJECTS

- The instrumentation section executes various smaller projects, Plant modifications and changes in-house.
- Typical example of such project is the upgrade/replacement of old PLC's which is part of the section's long-term strategy.

- The section is currently busy with PLC replacement for F-Bank, tasks involved with this includes:

ACTIVITY	CURRENT STATUS
Procurement of new PLC hardware	Completed
Building of PLC panels including wiring of cards etc.	Completed
Software conversion – Modsoft to Control Expert	Not done – need C&I Engineer for this.
FAT testing	Not done – need C&I Engineer for this.
Installation and commissioning when Plant is available (typical during annual shutdown).	Not done – need opportunity and C&I Engineer

- Projects initiated by other section, typical upgrading of redundant equipment and process improvements which involve changes to the control philosophy/functional specification.

The tasks and involvement from an instrumentation section perspective (C&I Engineer), would in general be as listed below:

- Compile budget for instrumentation requirements (based on functional specification and P&ID (if available))
- Generate relevant drawings required on FDES – typical would be - cable schedules and loop drawings.
- Assist with specification and procurement of instruments and control system requirements.
- Perform FAT on PLC's – in case of new PLC's.
- PLC and SCADA coding and programming.
- Commissioning

AD-HOC TASKS

- Ad-hoc tasks as and when required and requested from the various Plant section through the Instrumentation Superintendent, must also be handled by the C&I Engineers as part of this contract.

5 TENDER DELIVERABLES

The deliverables will include: -

- Complete Foskor pricing schedule (BOQ)
- Tax Clearance
- Letter of Good standing (Workman compensation)
- BEE Certificate
- Commercial documents requested by Procurement.
- Not submitting the required documentation or not completing the documentation (Pricing Schedule) correctly will lead to a disregard of the tender.
- Take note of the tender evaluation documents that needs to be submitted.

6 PRICING SCHEDULE

Tender No.: FOSCO-RFQ-19-2024

Description: **C&I ENGINEER ASSISTANCE (LABOUR HIRE – 4 MOTNH CONTRACT)**

All items of expense to be Included in Pricing Schedule, including but not limited to:

- All expertise, skill and technical support, Supervision, Administration, Safety, Accommodation, Travel etc.
- Cost for any subservice providers/service providers used.
- Cost and supply of all tools

- d. All Safety Related items required to execute the task (Work Permit, PPE, Training, Medicals, etc)

Payments will be made monthly and not as a once off lump sum. Exclusions must be clearly stated.

BOQ

Item	UOM	Rate per month
Engineer on site to perform duties in line with scope requirements, all inclusive	Each	R
Total Cost		

7 LEGISLATIVE REQUIREMENTS – SUMMARY

7.1 MINIMUM LEGISLATIVE REQUIREMENTS:

The successful or appointed service provider shall comply with:

- i. The Mines Health and Safety Act with Regulations (Latest revision)
- ii. The National Road Traffic Act with Regulations (Latest revision)
- iii. All applicable national and international legislative requirements and regulations.
- iv. Foscort (Pty) Ltd. COP (Code Of Practise) No. 25 for Service provider Control (Available on request)
- v. Foscort (Pty) Ltd. COP (Code Of Practise) No. 59 for Trackless Mobile Machinery (Available on request)
- vi. All Foscort (Pty) Ltd. safety, health, quality and environmental procedures applicable to the successful application of the contract. (Available on request)
- vii. All Foscort procedures and policies applicable to the successful application of the contract. (Available on request)

8 ACCEPTANCE

The conditions and requirements as stated in this "Scope of Work" are accepted with the following **exceptions / exclusions**:-

The conditions and requirements as stated in this "Scope of Work" are accepted with the following **inclusions**:-

Sub-contractor (Please provide list and function)

Failure to complete this form will lead to disqualification – Please do not leave blanks!

BBBEE Level	<input type="text"/>	Black Ownership	<input type="text"/> %	Black Woman Ownership	<input type="text"/> %
Tender Validity	<input type="text"/> Days	Manufacturing Period	<input type="text"/> Days	Installation Period	<input type="text"/> Days
Guarantee	<input type="text"/> Months	Commencement after receipt of official purchase order	<input type="text"/> Days		
Payment terms	<input type="text"/>				

Price Basis for the duration of the contract / till supply of goods (Please tick):

Fixed	<input type="checkbox"/>	Duration of fixed price	<input type="text"/> 12 Months <input type="checkbox"/>	<input type="text"/> 24 Months <input type="checkbox"/>
Variable	<input type="checkbox"/>	Price Base Date	<input type="text"/>	

If variable provide price variation factors, percentages and formula in cover letter. (Please specify indices to be used)

Price variation factors & percentages (e.g. material, labour, fuel, overheads, admin etc)

Factor	%	Factor	%	Factor	%	Factor	%	Factor	%
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Where prices include a foreign currency rate please provide:

% of price subject R O E	<input type="text"/> %	ROE	<input type="text"/> = ZAR
ROE Base Date	<input type="text"/>		

Note: If the above fields are not completed, it is confirmed that the quoted price/s are valid for the entire contract period mentioned and no escalation in the price is allowed under any circumstances.

I, _____ in my capacity as _____ for and on behalf of _____ hereby acknowledge that I have read and understand the Instruction to Tender and the Scope of Work as detailed in this document and accept all the Terms and Conditions of Tender FOSCO-RFQ-19-2024.

Signed at _____ on this the _____ day of _____ 2024

Signature: _____

Witnesses:

1. _____ Name: _____

2. _____ Name: _____

For and on behalf of Foskor (Pty) Limited

Name: _____ Signature: _____

Designation: _____ Date: _____

Note: It is imperative to complete this schedule in full where applicable, marked "N/A" where not applicable and signed off in full, **unsigned bids will not be accepted**. All the supporting documentation requested with the tender document, scope of work and evaluation criteria need to be submitted with the tender. Tenders received without supporting documentation requested for the tender evaluation **will not be considered**.