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		Review Date	October 2027		
		EOI/RFI Number	KBG2562		

PART A REQUEST FOR AN REQUEST FOR INFORMATION (RFI)			
Description of the works/goods/services	Refurbishment of 2 x Reactor Protection test bench		
Deadline for submission	6 June 2024	At (South African Standard Time)	10h00
Tender Office address	<p>THE TENDER OFFICE Tender Centre Block 'E' Stores Building Brackenfell Complex Eskom Road Brackenfell (7560) Western Cape, South Africa</p> <p>PLEASE ALLOW SUFFICIENT TIME TO ACCESS THE ESKOM, BRACKENFELL COMPLEX FOR SUBMISSION OF YOUR OFFER. THE PERSON SUBMITTING THE OFFER MUST HAVE A VALID ID BOOK PRESENT.</p> <p><i>LATE RFI'S WILL NOT BE ACCEPTED</i> <i>NO FAX RFI's WILL BE ACCEPTED</i></p>		


Eskom Holdings SOC Ltd ("Eskom") invites you to submit an:

- **Request for information (RFI)** to submit information for the works as stated in the table. This RFI is a stand-alone information-gathering and market-testing exercise, intended only to inform and assist Eskom's further deliberation and development of a strategy for the Refurbishment of 2 x Reactor Protection test bench. Eskom may request indicative prices if so stated in this RFI.

Eskom has delegated the responsibility for this RFI to the signatory of this document, whose details can be found below. **Please note that you need to submit a full copy of the original RFI.**


We look forward to receipt of your response.

Yours faithfully

Name	Designation	Signature	Date
George Patiwe	Snr Procurement Advisor Nuclear Commercial		2024-05-09
Telephone number	021 522 3098	Fax and/or e-mail address	GousAJ@eskom.co.za

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1 Response Format:

All submitted responses must contain all the required information including all RFI forms, duly completed in accordance herewith.

The Respondents must submit their submission as follow:

- File 1: Technical proposal and/or Alternative Solution / Recommendations
- File 2: Indicative Pricing and Timing

An original signed paper version file together with one (1) hardcopy must be submitted and one (1) electronic copy on USB to comprise a complete RFI. The original and hard copy of the RFI must be supplied in a sealed envelope(s).

Submit your response, via the Tender Office address as stated above.

1.1 Clarification Requests

All communication pertaining to this RFI must be sent to the mentioned Employer's Representative. All clarifications are to be submitted in writing to the Eskom Representative using the email address: GousAJ@eskom.co.za

All clarifications must be documented in the template provided as Appendix 1

1.2 Cost of Submission

Costs incurred by Participants in relation to the RFI process are for the Respondents account and under no circumstances will any cost be borne by the *Employer*.

1.3 Confidentiality

Any information disclosed pursuant to this RFI process and any subsequent processes and/or engagement is confidential and may not be divulged by the Respondent to any third parties. All participants responding to this RFI process accept the terms and conditions under which this process is published.

Kindly complete and sign the Non-disclosure Agreement (NDA) and return with your submission document.

2 Description of the works

2.1 Executive Overview

2.1.1 Koeberg Nuclear power station makes use of an analogue control system to perform the reactor protections. Due to various safety requirements, it is mandatory for the reactor protection system itself to be periodically tested and validated to confirm it is functioning as intended.


2.1.2 For this requirement, a purpose-built test bench, referred to as the SIP test bench is used.

2.1.3 The test bench performs two main functions:

- 2.1.3.1 SIP testing - The reactor protection system is tested both on-line and off-line during unit outages,

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- 2.1.3.2 Card testing - Acting as a stand-alone test and calibration bench for individual modules prior to being installed on the plant,
- 2.1.4 The core of the SIP test bench is a National Instruments (NI) PXI system. The detail information regarding the installed modules and version numbers are listed in Appendix 1 – PXI module and software listing.
- 2.1.5 The scope of the works for 2 x SIP test benches include:
 - 2.1.5.1 Migration of the installed PXI system to a current/supported platform of the PXI system,
 - 2.1.5.2 Supply of new interfacing PC,
 - 2.1.5.3 Supply of new RTD calibrators,
 - 2.1.5.4 Upgrade of bench peripherals,
 - 2.1.5.5 Acceptance testing,
 - 2.1.5.6 Training of Maintenance staff and training manuals,
 - 2.1.5.7 As-built documentation,
 - 2.1.5.8 Specialised maintenance tools,
 - 2.1.5.9 Critical spares and accessories.

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3 Contractors works

3.1 Existing System overview

3.1.1 The SIP test bench System Architecture is as follows:

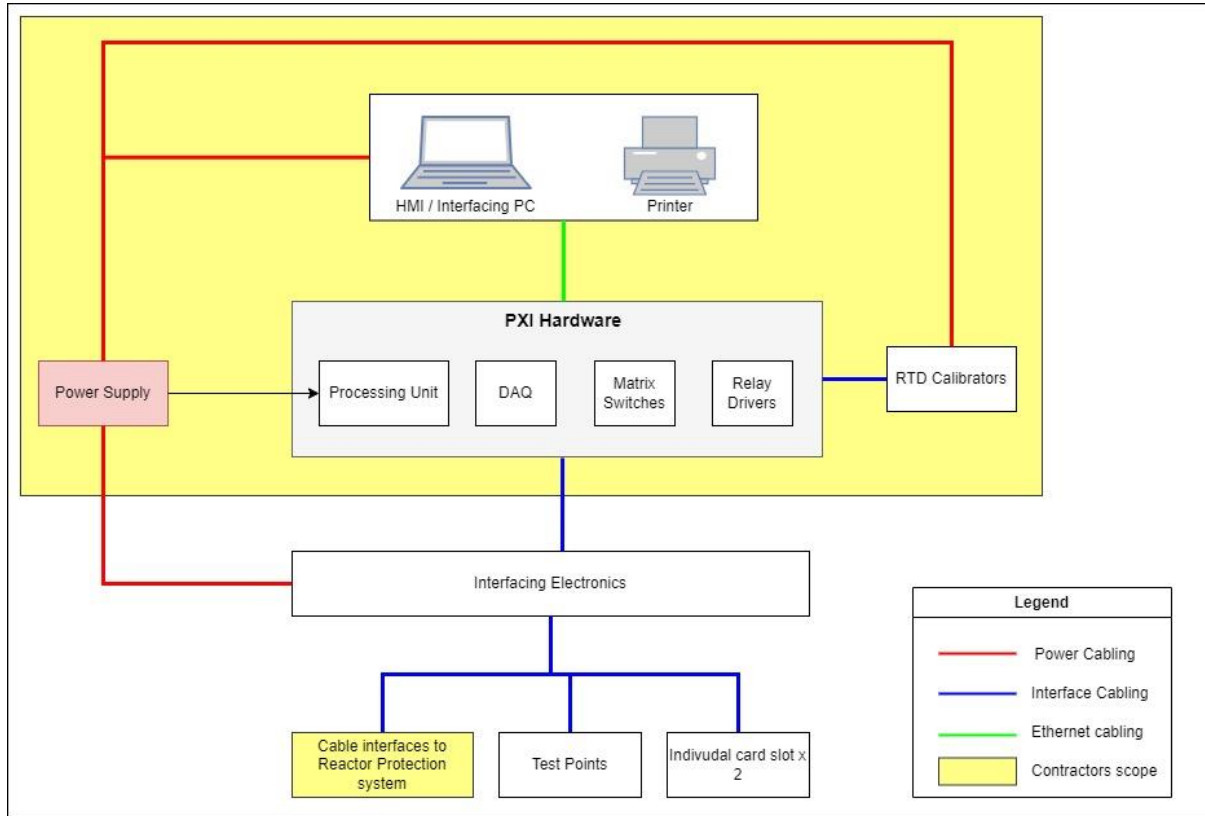



Figure 1 SIP Test Bench Architecture

3.1.2 The SIP test Bench consists of the following sub-systems:

- 3.1.2.1 PXI hardware consisting of Processing Unit, Data acquisition (DAQ), Matrix switches and Relay drivers,
- 3.1.2.2 HMI (Human Machine Interface)/Interfacing PC and Printer,
- 3.1.2.3 Interfacing electronics,
- 3.1.2.4 Resistance Temperature Detector (RTD) Calibrators – Serial interfaces to the PXI,
- 3.1.2.5 Cable interfaces to the reactor protection system using specialised plugs,
- 3.1.2.6 Test Points,
- 3.1.2.7 Two individual card slots,
- 2.1.2.8 Power supply

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3.2 Scope requirements

3.2.1 PXI System

- 3.2.1.1 The current installed modules and versions of the PXI hardware is listed in Appendix 1 - PXI module and software listing,
- 3.2.1.2 The Contractor is to replace the PXI hardware with the latest generation of PXI hardware to ensure maintainability and supportability of the system,
- 3.2.1.3 The newly selected hardware is to maintain the IO capability of the existing system as per the currently installed modules,
- 3.2.1.4 The complete functionality of the system including logics, sequences, HMI, reporting etc. is to be migrated to the newer PXI / Labview platform without the loss or modification of existing functionality,
- 3.2.1.5 Where the migration process requires modification of the VI's (Virtual Instrument), extensive simulations and acceptance testing is required to ensure the functionality of the system is maintained exactly,

3.2.2 HMI /Interfacing PC

- 3.2.2.1 The Contractor supplies a new HMI/Interfacing PC,
- 3.2.2.2 This PC is a laptop that is removeable from the SIP test bench,
- 3.2.2.3 The PC:
 - 3.2.2.3.1 Provides the user interface to the system, manages the test sequences and stores the historical test information,
 - 3.2.2.3.2 Makes use of Labview,
 - 3.2.2.3.3 Is capable of storing historical test data for at least 5 years,
 - 3.2.2.3.4 Is to communicate with the PXI using ethernet.
- 3.2.2.4 The PC is specified such that it exceeds the minimum requirements for all software installed on the PC.

3.2.3 RTD Calibrators

- 3.2.3.1 RTD calibrators are used for generating resistance values,
- 3.2.3.2 The RTD calibrators are interfaced to the PXI system using a suitable communications protocol,
- 3.2.3.3 The Contractor installs 2 RTD calibrators per SIP test bench.

3.2.4 Printer


- 3.2.4.1 A colour laser printer is provided for printing of test results and reports from the HMI/Interfacing PC.

3.2.5 Power supplies

- 3.2.5.1 The input supply to the SIP test bench is 220Vac,
- 3.2.5.2 The test bench is to make use of a 500W isolation transformer,
- 3.2.5.3 The existing loads are as follows:
 - 3.2.5.3.1 PXI System – 136W,

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3.2.5.3.2 DC Power Supplies – 136W,

3.2.5.3.3 RTD calibrators – 40W,

3.2.5.3.4 Laptop – 50W,

3.2.5.4 Should the Contractors design requirements exceed the 500W including safety margins, the Contractor installs a new isolation transformer

3.2.6 Interfacing cables to Reactor protection

3.2.6.1 The cables and connectors used to connect to the reactor protection are to be replaced,

3.2.6.2 The connectors are to be of a quick disconnect type and not a screw-type,

3.2.6.3 The connectors are to be 40- pin connectors.

3.2.7 Cooling

3.2.7.1 The SIP test benches are highly sensitive to temperature,

3.2.7.2 An active cooling system using fans is required to maintain the optimal temperature of within the bench,

3.2.7.3 The temperature control must be automatic and not require human intervention.

3.2.8 Physical Requirements

3.2.8.1 The SIP test bench is a self-contained cabinet on wheels that is able to be moved around the plant as required,

3.2.8.2 The PXI hardware is to maintain a similar footprint to the existing hardware to ensure fitting within the existing test bench cabinet.

3.2.9 Safety

3.2.9.1 No fault on the test bench will endanger the safety of people or plant,

3.2.9.2 The test bench does not erroneously inject signals into the reactor protection system,

3.2.9.3 The test bench operates in fail safe manner,

3.2.9.4 The earthing concept applied by the supplier will be based on recognised best engineering practices and will ensure the safe and reliable operation of the test bench and the protection of the electronic equipment (Reactor protection system and SIP test bench) against damaging transients.

3.2.10 Life Expectancy

3.2.10.1 The PXI including software will be supported and maintainable for a minimum of 18 years,

3.2.10.2 All equipment is in the active state of its product life cycle when supplied,


3.2.10.3 All network, computer equipment and interfacing electronics will be available in South Africa as commercially- off- the-shelf (COTS) products,

3.2.10.4 Computer hardware will be supported for a minimum of 6 years,

3.2.10.5 Operating systems such as windows are the latest available stable versions and are supported for at least 10 years.

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3.2.11 Standardisation

3.2.11.1 Similar components within the design are standardised by the Supplier as far as reasonably possible to ensure a reduced life cycle cost.

3.2.12 Testing

3.2.12.1 The SIP test bench is used on a production Reactor Protection system, safety of plant and personnel is critical,

3.2.12.2 The SIP test bench is to undergo a set of baseline tests performed by the Contractor to Benchmark the existing response of the bench,

3.2.12.3 The refurbished unit is to undergo the following tests at minimum:

3.2.12.3.1 Unit tests – Ensuring the migrated VI's function without any errors,

3.2.12.3.2 Integration tests – Checking the new PXI (Hardware and software) interface correctly with the existing interfacing hardware,

3.2.12.3.3 Functional tests – Test each function and compare the expected response to that measured in the baseline tests,

3.2.12.3.4 Acceptance Testing – This will include final end-to-end testing with the reactor protection system.

4 Request for Information

Requirements for submission

4.1.1 The Contractor is a locally based organisation that is able to provide spares and technical support as required,

4.1.2 If the Contractor is internationally based, a maintenance company that is based locally is available to provide the required spares and technical support,

4.1.3 Acceptance testing will take place at Koeberg Power Station,

4.1.4 The Contractor submits a proposal for the scope highlighted in Section 3.

4.2 Returnables

4.2.1 The Contractor returns the following information:

4.2.1.1 A narrative of the proposed system including:

4.2.1.1.1 A description of the proposed refurbishment modifications,


4.2.1.1.2 Proposed parts lists with mapping from the existing component to the replacement component,

4.2.1.1.3 Migration methodology for the PXI hardware and software,

4.2.1.1.4 Potential risks,

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4.2.1.1.5 High level planning – durations for major tasks, procurement durations etc.,

4.2.1.1.6 Testing methodology detailing all tests to be completed,

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3.2.1.2 Proposed high level isometric and physical layout drawings of the PXI,

4.2.1.3 A software list including versions and release dates:

4.2.1.3.1 Operating systems,

4.2.1.3.2 All application software,

4.2.1.3.3 Development languages,

4.2.1.3.4 Databases,

4.2.1.4 Power supply sizing calculations,

4.2.1.5 A budget quote,

4.2.1.6 Two reference projects with PXI migration or new PXI systems including:

4.2.1.6.1 Name and description of the project,


4.2.1.6.2 Hardware - models and quantities,

4.2.1.6.3 Date of commercial operation of the project,

4.2.1.6.4 The projects should have contactable references available on request.

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PART B RESPONSE SHEET IN TERMS OF A REQUEST FOR INFORMATION To be completed by the supplier			
To	Eskom Holdings SOC Ltd	Date	<i>[insert today's date]</i>
Attention	<i>[insert name of Procurement Practitioner as it appears in Part A]</i>		
Tel no	<i>[insert your tel number]</i>	Fax no and /or e-mail address	<i>[insert your fax number and/or e-mail address]</i>
From	<i>[insert the registered full legal name of the company]</i>	Address	
Address	<i>insert the physical address of the company]</i>		
Sender	<i>[insert the full name of the sender at the company]</i>		
Description of the works/goods/services	<i>[insert a description of the works as per part A]</i>		

Please find below our response to Eskom's questions:

No.	Question	Please indicate your response in this column
1.	<i>[your contact name and contact details]</i>	

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2.	<i>[Company registration number]</i>	
3.	<i>[brief description of previous experience and Description of the solution that you can offer]</i>	
4.	<i>Indicative prices (optional and only for use of RFI's)</i>	
5.	<i>[Add applicable questions]</i>	

Yours faithfully

Name	Designation	Signature	Date
<i>[insert your full name/s]</i>	<i>[Insert your full designation]</i>		
Telephone number		Fax and/or e-mail address	

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