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

- **Request for information (RFI)** to submit information for the works/goods/services 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: **Upgrade air starting system on EDGs ref. LHJ 13009 (A)**
- Eskom may request indicative prices if so stated in this RFI.

PART A REQUEST FOR INFORMATION(RFI)	
Description of the works/goods/services	**LHJ 13009 (A) Upgrade air starting system on EDGs** Koeberg Power Station has five SEMT Pielstick model 18 PA6 V 280 Emergency Diesel Generators (EDGs). The five Pielstick engines are equipped with identical air starting systems. Each engine is fitted with a cylinder air injection and independent pneumatic starter motor system. The cylinder air injection system is installed on the B bank of the engine – directing air via an air distributer into each of the nine cylinders on bank B, and the pneumatic starter motor drives the engine flywheel ring gear. The Pielstick engines were originally fitted with a Ingersol-Rand Series SM 450 pneumatic air start motor. The Ingersoll-Rand Series SM 450 pneumatic air start motor is obsolete and has been replaced by the Ingersoll-Rand Series SS 810 pneumatic motor under equivalency M003/6E. The new pneumatic motor has however not performed well, with numerous failures reported to date as a result of manufacturing quality defects. The pneumatic starter motor failures and subsequent decreased EDG reliability were, among others, the main focus points in both the 2008 and 2011 WANO reviews. The controls associated with the pneumatic starter motor are also complicated due to the following features, see Appendix A7-A11 page 1 (Before modification): • A 5 rpm threshold relay that prevents start-up of the pneumatic motor if a speed of 5 rpm is detected prior to engine start. • A 10 rpm threshold relay and 2 second timer logic configuration that is meant to shut down the pneumatic motor should a speed of 10 rpm not be detected within 2 seconds after a start order is initiated. • During a failed start scenario, the pneumatic motor remains energised for 7 seconds, provided that the 10 rpm threshold is detected. If 10 rpm is not detected, the start circuit switches off after 2 seconds. • The pneumatic motor circuit is also cut-off at a speed of 110 rpm, leaving the Bank B's air injection system to take the speed up to 450 rpm. The lower speed cut off of the pneumatic motor also results in slower single start times when compared with the direct air injection start times. Therefore, should there be a mechanical fault on the pneumatic motor system, this will result in

slower start speed and times. This then leads to the activation of the threshold protections, leaving the air injection system to start the engine on its own.

Design Change:
The new design removes the pneumatic starter motor currently used to drive Bank A cylinders (Appendix A12 page 1). A direct air injection system shall be installed to drive Bank A cylinders. A new air start distributer LHj 082 VA shall be installed to direct air into Bank A cylinders (Appendix A6 and Appendix A12 page 2). The design entails the modification of both the mechanical air distribution system and electrical and control systems as detailed in Functional Description Section 3.8.

The following modifications shall be carried out on the SEMT Pielstick model 18 PA6 V 280 engines of the EDGs.

1. The existing pneumatic starter motor LHj 012 MO shall be replaced with a new direct air injection starting system.
2. The new direct air injection starting system shall be designed, analysed and manufactured in accordance with the applicable codes, standards and international best practices which shall be justified by the Contractor in collaboration with the Original Equipment Manufacturer (OEM).
3. The new direct air injection starting system shall be similar, and in addition to, the existing direct air injection starting system installed on cylinder banks B of the EDGs.
4. The new direct air injection system shall be designed for a design life of 40 years.

Scope of Supply:
The *Contractor* shall be responsible to verify and implement the detailed design, manufacturing, supply, installation and commissioning of the complete Air starting system on Bank A of each of the Five EDG's

The scope of supply for each of the five EDGs shall be in accordance with the references listed in the attached "Detailed Design". The scope shall comprise of but is not limited to, the following:

1. Supply and installation of a blanking plate to the flywheel housing opening for the air start motor;

2. Removal of the pneumatic starter motor LHj 012 MO, oiler and the air supply line LHj 201 TY;

3. Design, fabrication and installation of new 30 bar air supply line piping from the storage tank to the engine air distributor valve including new pipe supports where required;

4. Design, supply and install valves that will be capable of supplying 30 bar air to the engine air distributor, including pressure relieve valves and/or drain valves as required;
5. Supply and installation of a new starting air manifold including safety valve on bank A;
6. Supply and installation of a new air start pilot actuated valve on each of the 9 cylinder heads on Bank A;
7. Supply and installation of the piping from the starting air distributor valve to each air start pilot valves on the 9 cylinder heads;
8. Supply and installation of a new air distributor valve;
9. the removal of the start delay on the existing air start motor circuit;
10. the supply and installation of new logic controls to stop cylinder air injection at 450 rpm;
11. Replacing the original SVEM-AFSEM Tachometric system equipment supplied by Alstom-Atlantique with new equivalent (S.E.MT PIELSTICK) modules;
12. The AFSEM unit shall be specified for 4 speed thresholds with pre-set values 110, 260, 450, and 450 rpm for thresholds 1 – 4 respectively. The SVEM unit shall be specified for Speed Card PA 6 which shall be coded;
13. Supply Installation, and commissioning of two new relay cards, 102 UH and 103 UH, in swap of old relay cards, 101 UR and 102 UR, respectively;
14. Supply, Installation, and commissioning of independent timers for the start-up of each of the two EDG banks; Bank A and Bank B.
15. Integration of the new air start system with the existing logics of the EDG’s
16. the integration of the emergency stop air system including air receiver LHj 003 BA;
17. commissioning and functional testing of the new direct air injection starting system;
18. the qualification, inspection and testing of all supplied and installed components as required by the relevant codes and standards;

19. re-qualification of the EDG in terms of start time requirements as documented in the relevant Koeberg Periodic Tests;

20. a detailed design document according to KAA-815, including all the information, manufacture, supply, installation, testing and commissioning of the new direct air injection starting system in the Works Information for the design;

21. The supply of all relevant new documents and drawings and the updating of all existing documents and drawings affected by this design;

22. The supply of commissioning and start up spares if required

23. Supply a complete spares list for the new direct air injection starting system and associated works;

24. full works report including QA documentation, fabrication drawings, general arrangement drawings and material specifications for all components supplied and installations completed;

25. removal and disposal of existing equipment stripped out during the modification

26. Provide a maintenance strategy for the equipment specified in the solution as well as prices on service parts.

The Detailed design must be seen as a guideline as far as the air supply changes are concerned. The Contractor can propose alternate solutions on the air supply system from Air tank 002BA up to flexible hose connection at the new air start distributor 082VA

The attached Detailed design, document identifier <13009>, describes the client requirements in respect of this modification number 13009. It is intended to describe the functional and technical requirements for the design, supply of material, delivery, storage, removal and disposal of exiting materials, installation, testing and commissioning of the plant change.

The Detailed design includes, amongst others, details on:

- Existing design
- Problems with the existing design
- Proposed design change requirements
- Quality assurance and inspection requirements
- Site work requirements
- Commissioning and performance testing
- Documentation

Based on the considerations provided above; the following information is required:

a) Indicative Pricing with maximum local content and localisation opportunities for the following scope deliverables:

Provide a detailed breakdown of all materials complete with prices for each item indicating supply and installation costs

- Resource/ Manpower costs:
  - Detail Design verification
  - Providing support for regulatory approval (resolution of regulator review comments)
  - Factory acceptance testing if required
  - Seismic qualification and/or other engineering studies required
  - Installation of the new materials and the Installation of the new direct air injection starting systems, including Preliminaries and General and all site costs. Testing and commissioning of the new direct air injection starting systems and all new associated components required to have a fully functional starting system
  - Removal and disposal of the old pneumatic starter motors and associated piping
  - Compile and submit design documents, all revised and new documents and maintenance manuals
  - Other
- Materials:
  - Manufacturing, Procurement and supply of all materials, parts and or components required to execute the works
  - Other
  - Provide a detailed breakdown of all materials complete with detailed descriptions on proposed components.
  - Provide prices for each item. Split prices into supply and installation costs.

- **Transport:**
  - Delivery of all materials, parts, and or components to Koeberg Nuclear Power Station

b) With associated lead times for:

- Detailed design verification
- Support of submittals to the National Nuclear Regulator for detail design approval
- Long lead items
- Manufacturing of materials, parts, and components
- Seismic qualification and/or other engineering studies required
- Factory Acceptance Test
- Delivery of materials to Koeberg Nuclear Power Station
- Installation of the new direct air injection starting systems
- Installation of all new associated components that form part of the complete system e.g. valves, relays, logics, etc.

	• Testing and commissioning of the proposed new direct air injection starting systems including all valves, relays, and logics • Compile and submit design documents and all new documents as stated in the scope of the RFI • Any other activities important to note for the design manufacture and installation of the new direct air injection starting systems. Clearly indicate which parts of the works are excluded from the proposal / estimate. Provide reasons for exclusions. **<u>Clearly indicate associated risks with the scope involved e.g. interfaces with existing systems, manufacturing lead time, delivery, resource availability, future support of components etc.</u>**		
Deadline for submission	**20 July 2023**	**At (South African Standard Time)**	**10H00**
Tender Office address	THE TENDER OFFICE ATT: Tender Centre Block 'E" Stores Building Brackenfell Complex Eskom Road Brackenfell (7560) Western Cape, South Africa		

Eskom has delegated the responsibility for this **RFI** to the signatory of this document, whose details can be found below.

The Eskom Representative
Name: **Mariaan Thom**
Tel no: (021) 522 3172
E-mail: **Thomma@eskom.co.za**
We look forward to receipt of your response.

Yours faithfully

Name	Designation	Signature	Date
George Patiwe	**Senior Advisor Procurement**		2020/07/03
Telephone number	**021 522 1149**	**Fax and/or e-mail address**	PatiweMG@eskom.co.za

Attached as a separate word document to be completed by Supplier

PART B RESPONSE SHEET IN TERMS OF A REQUEST FOR AN EXPRESSION OF INTEREST/ REQUEST FOR INFORMATION To be completed by the supplier			
To	Eskom Holdings SOC Ltd	**Date**	**3 July 2023**
Attention	**Mariaan Thom**		
Tel no	**021 021 522 3172**	**Fax no and /or e-mail address**	**Thomma@eskom.co.za**
From	***[insert the registered full legal name of the company]***	**Address**	***[insert the business address of the company]***
Address	***insert the physical address of the company]***		
Sender	***[insert the full name of the sender at the company]***		
Description of the works/goods/services	For the detailed design, manufacturing, supply, installation and commissioning of the complete Air starting system on Bank A of each of the Five EDG's		

Please find below our response to Eskom's questions:

No.	Question	Please indicate your response in this column
1.	***[Company contact name and contact details]***	
2.	***[Company registration number]***	
3.	***[brief description of previous experience and Description of the solution that you can offer]***	
4.	***Indicative prices (optional and only for use of RFI's)***	
5.	***[Add applicable questions]***	

Yours faithfully

Name	Designation	Signature	Date
[insert Company's representative full name/s]	***[Insert your full designation]***		
Telephone number		**Fax and/or e-mail address**	

ANNEXURE B
Base date of indicative pricing:

Scope deliverable	Indicative Price	Currency	Applicable CPA formulae and associated Indices	Local Content %

Please state the applicable currency for all expenditure that will likely be invoiced in a foreign amount and state the Indicative price in the foreign amount and not South African Rands.
The above indicative pricing must include project management, quality management, human performance, safety management as well as all overheads to provide the works.

ANNEXURE C

Supplier to provide estimated lead times as per the list below:

Scope deliverable	Estimated lead time
Detailed design verification	
Support of submittals to the National Nuclear Regulator for detail design approval	
Long lead items (list of items)	
Manufacturing of materials, parts, and components	
Seismic qualification and/or other engineering studies required	
Factory Acceptance Test	
Delivery of materials to Koeberg Nuclear Power Station	
Installation of the new direct air injection starting systems	
Installation of all new associated components that form part of the complete system e.g., valves, relays, logics, etc.	
Testing and commissioning of the proposed new direct air injection starting systems including all valves, relays, and logics	
Compile and submit design documents and all new documents as stated in the scope of the RFI	
Any other activities important to note for the design manufacture and installation of the new direct air injection starting systems.	

ANNEXURE D

1. INTRODUCTION

Eskom Holdings SOC Limited ("Eskom") – Request for information (RFI) for the Upgrade of air starting system on EDGs ref. LHJ 13009 (A)

2. BACKGROUND

Refer to the attached Detailed design 13009

3. SUBMISSION GUIDELINES

To ensure the receipt of communication with regard to this request for information process, kindly complete Annexure A – Acknowledgement Form and return it by email as indicated on the form within 3 days of receiving invitation

Clarification Meeting

Post RFI closing, respondents are to present information to the Eskom team to allow for a clarification. The clarification session will be scheduled via virtual plat form using Teams. The date of the meeting and A link will be sent out to all respondents declaring their interest to submit a proposal on the scope in the RFI.

4. METHOD OF DELIVERY

The RFI submissions must be sealed and delivered to the Tender Office Box located at the following address:

THE TENDER OFFICE
ATT: Tender Centre
Block 'E" Stores Building
Brackenfell Complex
Eskom Road
Brackenfell (7560)
Western Cape, South Africa

All submission responses must be clearly marked as follows:

- Offer Confidential Enquiry Reference No: **KBG2470**
- **Closing date: 1 August 2023**
- **Closing time: 10H00 South African Time**

5. HANDLING OF CORRESPONDENCE AND DOCUMENTS

Without limitation, Eskom takes no responsibility for any delays in any courier or postal system or any delays in transit within or between Eskom offices. Eskom likewise takes no responsibility for offers delivered to a location other than the tender box at the tender office stated in the tender. Proof of posting or of courier delivery will not be taken by Eskom as proof of delivery.

Any documentation required that are not submitted in the tender box at the deadline will be
considered late. The tenderer accepts that Eskom will not assume any responsibility for the
misplacement or premature opening of the tender if the outer package is not sealed and marked as stated.

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.

6. FORMAT OF SUBMISSION

Each RFI shall be supplied in printed and electronic format. All printed and electronic copies of each shall be identical to the original submission identified as follows:

- 1 x original RFI
- 1 x Copy of original RFI
- 1 x Electronic Copy of RFI – CD-R or Memory stick

All submitted responses must be typed in the English language, should contain all the required information including all RFI forms, duly completed in accordance herewith.

7. QUERIES AND QUESTIONS

No questions, during the RFI period will be answered telephonically. Questions must be submitted in writing, via e-mail to:

Attention: Mariaan Thom
E-mail: Thomma@eskom.co.za

8. REQUIREMENTS OF YOUR SUBMISSION

The submission will not be considered unless it is:

- Received on or before the closing date and time as indicated.
- Sealed and signed by person(s) duly authorised to act on behalf of your company
- Received in full.

Eskom is not bound to accept any of the submissions, nor give reasons for any decisions in this respect.

The information provided below may be used when going out on enquiry for a request for proposal or a quotation.

9. IMPORTANT NOTES

9.1 Please note that this enquiry is not a Request for Quotation/Proposal but a Request for Information only and therefore non-committal and does not constitute a guarantee of business or an agreement to negotiate a binding agreement.

9.2 Due to the specific need that this RFI has to fulfil, Eskom wished to clarify that this invitation is not intended to impede, amend or replace any current or future procurement process that Eskom has engaged in or will engage in.

9.3 The RFI is a stand-alone information-gathering and market-testing exercise, intended only to inform and assist Eskom's further decisions. No respondent, through submission of information will gain any right to participate in any further process, and participate herein on a basis that it is providing information voluntarily to strengthen a potentially beneficial process for all stakeholders. In addition, no participant shall be prevented or excluded from participation in the bidding process due to submission of information in response to this RFI.

9.4 Any information provided pursuant to this RFI process and any subsequent processes and/or engagement is not confidential but Eskom will use the information only in the course of its process for a strategy for Analytics Software and Services.

9.5 Through making a submission, a respondent accepts the terms and conditions which govern this process.

9.6 All participants responding to this RFI process need to ensure that they have received all information and remain solely responsible for satisfying themselves

as to the information required in responding hereto and are fully responsible for all costs incurred in relation hereto and under no circumstances will any resultant cost be borne by Eskom.

9.7 Eskom reserves the right not to proceed with any further engagements on the requirements presented.

9.8 Please complete the attached Acknowledgement Form and return it by e-mail as indicated on the form within 3 days of receiving this invitation.