



**SCOPE OF WORK FOR SUPPLY,
DELIVERY, INSTALLATION, TESTING AND
COMMISSIONING OF 3 OFF ROTARY
SCREW TYPE COMPRESSORS FOR
TRANSNET ENGINEERING.**

**LOCOMOTIVES MAINTENANCE DEPOTS
AT INSEZI LOCOMOTIVES (RICHARDS
BAY), MASONS MILLS
(PIETERMARITZBURG) AND DANKSRAAL
(LADYSMITH).**

REFERENCE NO: OPS_LOC_ MDEL_NCS_ESR_ SOW_111

Scope Revision: 0

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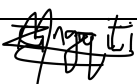
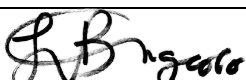


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Signature of Bidder/s: _____ Date: _____

Document Authorities

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Signature & Date	 05/12/2023

Signature of Bidder/s: _____ Date: _____

1. INTRODUCTION / SCOPE OF WORK

This specification is for the:

#	TASK	REQUIRED
1	Design	✓
2	Manufacture	✓
3	Upgrade	
4	Refurbishment	
5	Supply	✓
6	Delivery	✓
7	Installation	✓
8	Documentation	✓
9	Testing	✓
10	Training	✓
11	Commissioning	✓

#	ITEM	REQUIRED
1	Supply, delivery, installation, testing and commissioning of 3 off rotary screw type compressors and suitable air dryers for Transnet Engineering in line with Occupational Health and Safety Act 85 and SANS 347.	✓

- **This specification states the minimum requirements relating to the project and in no way absolves the contractor from the responsibility for sound engineering practice.**
- **Any omissions or sub-standard requirements of this specification must be brought to the attention of Transnet Engineering at tender stage.**

2. SITE INSPECTION

- All prospective Tenderers shall be required to undertake a compulsory site. Inspection to fully acquaint themselves with all aspects involved.
- Arrangements to visit the site and confirmation of the date and time of the site inspection shall be made with the Transnet Engineering Project Manager.
- The site inspection certificate shall be completed and countersigned by the Project Manager on the day of the visit and must be submitted with the tender documents.

Signature of Bidder/s: _____ Date: _____

3. INFORMATION REQUIRED

- Offers will not be considered unless full particulars and sufficient literature is provided at the tendering stage to enable the Transnet Engineering Technical Officers the opportunity to assess each technical offer properly.
- Prospective Tenderers will complete the relevant questionnaire in full and must indicate whether their offer complies with each item of the specification.
- Should there be insufficient space for furnishing full details; Tenderers shall provide the additional details in their covering letter. The additional details shall be numbered in accordance with the applicable clause specified in the specification.
- As prospective Tenderers are considered to be experts in their field, they are obliged to identify any shortcomings, such as omissions or sub-standard requirements, to the completeness of this specification. These must be brought to the attention of Transnet Engineering at tender stage with alternatives to address these shortcomings. However, each offer shall be quoted for separately.

4. TECHNICAL REQUIREMENTS.

The following regulation and codes must be complied with: -

- 4.1.1 Scope of Work for Approved Inspection Authority (AIA) pre-commissioning inspection and dispensation/exemption of pressure vessels (oil separators).
- 4.1.2 The Occupational Health and Safety Act – Act 85 of 1993, PER Regulations.
- 4.1.3 SANS 347.
- 4.1.4 Except where otherwise provided for in the specification, all equipment offered will comply with the requirements of the relevant standard specifications of the SANS, if published, otherwise with the relevant standard of the British Standards Institution in force at the time of tendering.
- 4.1.5 Where equipment offered complies with the recognized standards of the country of manufacture and not specifically with the standards required by this specification, such equipment will be considered at the discretion of Management. In this case, tenders shall state fully all respects in which the equipment departs from the standard laid down in this specification.
- 4.1.6 The successful tenderer will at the conclusion of the installation provide document along the lines “that the installation complies with national/international requirements and that all selected /designed items are compliant with Act 85 of 1995 and SANS practices applicable to the installation. The equipment has been commissioned/ calibrated, and employees as specified have been trained and found competent to operate the plant.”

4.2 LEGAL REQUIREMENTS

(As per Occupational Health and Safety Act 85 of 1993) All pressure equipment shall comply with the Pressure. Equipment Regulations, selected Health and Safety Standard (design code) and contractual requirements.

The certificate of manufacture required by the Regulations (including verification signature by an inspection

Signature of Bidder/s: _____ Date: _____

body when so required) and relevant conformity assessment module (if applicable) in the case of equipment may not refer to more than one piece of equipment.

4.2.3 DESIGN CODE REQUIREMENTS

4.2.3.1 The ASME Code and the applicable referenced sections have been selected as the Transnet preferred HSS as a basis for design and fabrication of equipment covered by the Pressure Equipment Regulations (PER) of the OHSA.

4.2.3.2 All the applicable construction and documentation requirements of the ASME Code, as enlarged on or as modified by the specifications, shall be met.

4.3 OTHER DESIGN CODES/STANDARDS

4.3.1 The use of design code other than the ASME Code for the construction of equipment shall be subjected to approval by Transnet and shall be stated in the engineering contractor's request for quotation. Approval to use such code shall be obtained from Transnet's representative prior to placing any orders or the start of any detail engineering work and all additional contractual requirements shall be met.

4.3.2 No mixing of design codes is permitted. However, when specifically addressed / permitted by the applicable code, design methods from other codes may only be used with Transnet prior approval. The basic requirements of the approved design code shall be maintained and the level of safety and integrity of the equipment shall not be limited by such design rules or criteria.

5. SPECIFIC REQUIREMENTS

Any person with the intention of tendering shall ensure that the information below is complied with.

5.1 Loads and Duty Cycles

- The compressors shall be suitable to operate 18 hours a day for 11 months/ year.

5.2 Environment

- Workshop with dust and grease.

Signature of Bidder/s: _____ Date: _____

5.3 Scope of work -

	REQUIREMENTS	Details of Offer Comply (Yes) Does not Comply (No)
	This scope of work covers the minimum requirements.	
5.3.1	This scope of work document shall be read with annexure 1. Please note that all pressurized equipment (oil separators, air dryers, etc.) documentation to be sent to the Inspector Pressurized Equipment (Omesh Beeharie, 031 361 5200 or 083 286 4294), prior to compressors being delivered to Transnet Engineering.	
5.3.2	<u>Supply 1 off Compressor – Insezi</u> Working pressure: 7,5 bar (adjustable) Capacity: 500 CFM Size: 90 KW Rotary screw type compressor.	
5.3.3	<u>Supply 2 off Compressor – Danskraal and Mason Mill</u> Working pressure: 7,5 bar (adjustable) Capacity: 375 CFM Size: 55 KW Rotary screw type compressor	
5.3.4	Bidders shall accurately measure on site the required materials to start and complete this project. Transnet Engineering will not approve the variation order(s) to compensate for inaccurate measurements.	
5.3.5	Power supply: 400v or 230v $\pm 5\%$ 50hz AC.	
5.3.6	Shall have LCD touch controller; this high-tech controller includes warning indications, compressor shutdown, and maintenance scheduling	
5.3.7	<u>Electrical installation</u> The contractor shall supply and install the power cables fused isolators, connect to the nearest supply point, complete the installation and issue a certificate of compliance in accordance with SAN10142.	
5.3.7	The noise level for compressors shall not to exceed 74dB.	
5.3.8	Shall have IE3/NEMA premium efficiency electrical motor.	
5.3.9	Starting method: Any safe, energy saving and technically proven starting technique. Details shall be provided.	
5.3.10	Shall use VSD drives to enable energy savings.	

Signature of Bidder/s: _____ Date: _____

5.3.11	Shall have pre -filter, supply details.	
5.3.12	Cooling method: Air cooling.	
	<p style="text-align: center;">REQUIREMENTS</p> <p>This scope of work covers the minimum requirements.</p>	<p>Details of Offer Comply (Yes) Does not Comply (No)</p>
5.3.13	<p>Suitable air dryers shall be included.</p> <ul style="list-style-type: none"> • 1 off for Insezi air dryers classified as pressure equipment shall comply to Occupational Health and Safety Act – Act 85 of 1993, PER Regulations and SANS 347. • All Manufacturer's/Importers documents pertaining to pressure equipment shall comply to the Occupational Health and Safety Act – Act 85 of 1993, PER Regulations & SANS 347. • Pre-commissioning inspection and dispensation/exemption to be carried out by an Approved Inspection Authority (AIA). Pre-commissioning inspection report, certificate of continuance, etc. to be issued by AIA (must be Transnet approved AIA). • Safety valves to be tested and sealed (test certificates to be issued/supplied). 	
5.3.14	<p>Suitable oil separators shall be included.</p> <ul style="list-style-type: none"> • All oil separators shall comply to Occupational Health and Safety Act – Act 85 of 1993, PER Regulations and SANS 347. • Pre-commissioning inspection and dispensation/exemption to be carried out by an Approved Inspection Authority (AIA). Pre-commissioning inspection report, certificate of continuance, etc. to be issued by AIA (must be Transnet approved AIA). • All Manufacturer's/Importers documents pertaining to pressure equipment shall comply to the Occupational Health and Safety Act – Act 85 of 1993, PER Regulations & SANS 347. 	
5.3.15	<ul style="list-style-type: none"> • All new piping works shall comply to The Occupational Health and Safety Act – Act 85 of 1993, PER Regulations and SANS 347. • Safety valves to be tested and sealed (test certificates to be issued/supplied). <p>All works (piping, welding, installation, etc.) shall comply to The Occupational Health and Safety Act – Act 85 of 1993, PER Regulations and SANS 347.</p>	

Signature of Bidder/s: _____ Date: _____

5.3.16	<u>Air Receiver:</u> The existing air receivers shall be used. There is no requirement to supply new air receiver. <ul style="list-style-type: none"> • Safety valve to be tested and sealed (test certificate to be issued). • Pressure gauge to be calibrated and must be in KPA. - The SANAS issued certificate to be provided. 	
	<p style="text-align: center;">REQUIREMENTS</p> <p>This scope of work covers the minimum requirements.</p>	Details of Offer Comply (Yes) Does not Comply (No)
5.3.17	All equipment shall comply with Occupational Health and Safety Act- Act 85 of 1993 and regulation, SANS 347 and comply with the attached Transnet air receiver specification. <ul style="list-style-type: none"> • All documents pertaining to pressure equipment shall comply to the Occupational Health and Safety Act – Act 85 of 1993, PER Regulations. SANS 347. 	
5.3.18	Bidders shall attach the product literature in the bid documents.	
5.3.19	<p>The successful bidder shall supply the following documents in 1 set of PDF files in a USB memory stick and 3 sets of hard copies.</p> <p>Operation Operation Manual</p> <p>Maintenance Maintenance Manual Greasing Intervals with Locations Oil checking intervals with locations Trouble shooting guide and solutions. Critical Spares List</p> <p>Electrical Electrical Schematics Electrical parts lists (including manufacturer and supplier part numbers)</p> <p>Mechanical Mechanical Assembly drawings Mechanical Parts Lists (including manufacturer and supplier part numbers).</p>	

5.4 Quality Controls and Monitoring

- All machinery/equipment shall come equipped with panel profile or analogue time/hour meter counting running time of the machine. The hour meter shall be manipulation proof, Records time 0 to 99,999.9 hours with minimum accuracy of ± 0.02 %.

Signature of Bidder/s: _____ Date: _____

- The Hour meter shall be of Polycarbonate, shock resistant, with tamper-proof case, totally sealed, single phase with synchronous, permanently lubricated motor design.
- This must also include backup and emergency systems.

5.5 Markings

- Safety, operation, technical data, dates of manufacture, manufacturer's details etc. markings shall be displayed and be visible on the equipment.

5.6 Safety Features

- The minimum safety features shall be according to statutory and industry rules.

5.7 Supply, delivery and installations

- The required equipment shall be supplied, delivered and installed at Transnet Engineering, Danskraal, Ladysmith.

5.8 Testing

- All prescribed tests shall be carried out on equipment.
- Transnet also reserves the right to carry out any check tests on the equipment and installation.
- Notwithstanding the successful completion of tests, the contractor will still be responsible for the efficient operation of the equipment and the installation.

5.9 Commissioning

- **A testing period of 1 month (744 hours for 24/7 shifts and 248 hours for 8-hour shifts) this shall depend on what shift the business requiring this service.**
- **No machinery/equipment will be accepted by Transnet without the satisfaction of the conditions above.**
- **Complete compressor data pack shall be supplied.**

5.12 Maintenance

- The maintenance shall be for 2 years. The tenderers shall include the maintenance plan.
- The equipment shall come with detailed standard maintenance procedures manual and standard operating procedure (SOP), all in three copies.
- The quote for maintenance plan shall be added on the Schedule of prices.

5.11 Warranty

- The warranty shall be for 2 years.
- A maintenance contract for the warranty period shall be included in the quoted price and shall involve at least four Transnet employees to learn and declare them proficient in the operation and the use of the specified tools.
- Any latent defects that become apparent during the guarantee period shall be rectified to the satisfaction of Transnet Engineering at the cost of the supplier.
- Specify when the system becomes fully operational and when the warranty period takes effect.

5.12 Spares

Signature of Bidder/s: _____ Date: _____

- The tenderers to indicate the spares considered to be critical for the successful operation of the equipment, the availability and required lead times.

6. OTHER INFORMATION RELATED TO THE SCOPE

- 6.1. Any matter relating to this work, which requires a decision from Transnet Engineering shall be presented to the Project Manager in charge.
- 6.2 All offers shall be completed in every respect with this specification. Only complete tenders shall be considered.
- 6.3 The Technical Officer reserves the right to have the proposal checked independently by a third party.
- 6.4 Tenders must allow for monthly progress and clarification meetings on site initially and after commissioning for defect meetings when required. A meeting will be held after issuing of the tender to establish the exact scope and magnitude of the Project.
- 6.5 No tender will be considered unless the Site Inspection Certificate has been signed by the Engineer. or his representative.

7. HEALTH AND SAFETY REQUIREMENTS

- 7.1 All equipment and installation whether detailed in this specification or not shall comply with the requirements of the Occupational Health and Safety Act 85 of 1993 as amended and all other applicable legislation including specific set of regulations and local authority bylaws where applicable. All equipment shall be designed **to be fail safe.** Sudden power losses must not have an adverse effect on equipment and shall not unduly delay return to operation after power is restored.
- 7.2 All the necessary safety equipment such as guards over rotating equipment shall be supplied and the equipment shall comply fully with all the requirements of the South African Occupational Health and Safety Act, Act 85 of 1993 and all other applicable legislation including specific set of regulations and local authority bylaws where applicable. At all times during the manufacture, assembly and testing of the equipment the contractor will be responsible for the safety of all persons. on site and the equipment.

7.3 SHE SPECIFICATION

Prior to commencement of contract, the contractor shall be issued with a SHE specification in order to compile a SHE files in line with TE requirements.

Prior to establishing on site, it is an explicit requirement of this contract that all of the Contractor's personnel directly involved with this contract, including those of sub-contractors, attend a **Safety induction course**. Transnet will provide the course free of charge and attendance is compulsory for all personnel under the control of the Contractor who, during the duration of the contract, will be present on site whether on a full time or ad hoc basis.

Signature of Bidder/s: _____ Date: _____

The contractor must allow for all additional charges because of these requirements as no claims for extras will be accepted in connection with the foregoing.

7.4 As **part of the legislative and TE SHE requirements.**

The successful contractor is required to conduct a Risk assessment to ascertain all potential risks associated with this project. The completed risk assessment is to be formally submitted to the Risk department via the project manager at least two weeks prior to the commencement of the actual project. A safety file and associated documents will be required from a successful tenderer and such will be communicated by the Risk department.

8. SPECIALIST SUB-TENDERERS

8.1 Only specialist sub-Tenderers who have previously successfully completed work of the type and extent specified in this document should be engaged.

The tenderer shall provide the technical officer with sufficient proof of having suitable experience regarding the design and manufacturing of similar equipment. To this end, complete and detailed reference list shall be submitted with the tender. Reference list shall include addresses as well as contact person who may be visited for inspection of the equipment during the adjudication period.

8.2 The tender shall submit a complete list of proposed sub-Tenderers and suppliers of major components with his tender.

8.3 The tenderer shall be prepared to commit in writing to the technical officer with an adequate, experienced and stable project team for the duration of the project.

8.4 Transnet Engineering will not consider any Tenderer's offer that, in the sole opinion of Transnet Engineering does not have adequate experience in the design and manufacture of such equipment.

8.5 Tenderers shall do the installation simultaneously with other tenderers on-site busy with other work and shall plan work that it integrates with other work performed.

8.5 Requirements for prevention of Covid-19

8.5.1 COVID-19 Safety Plan.

8.5.2 Daily Screening questionnaire.

8.5.3 Return to work induction register- Induction Presentation/TE will also conduct the COVID-19 induction.

8.5.4 COVID-19 Employee questionnaire checklist.

8.5.5 Fitness Certificates.

8.5.6 Risk Assessments register.

8.5.7 COVID-19 PPE issue register/sanitizer.

9. MATERIAL AND WORKMANSHIP

9.1 Machinery/equipment shall be offered complete in all respects, including all standard equipment normally offered by manufactures, all of which shall be specified in detail.

Signature of Bidder/s: _____ Date: _____

- 9.2 The equipment, as made and supplied, shall be complete in every respect, of modern design, using the most advanced proven technology extensively supported by reputable local companies, and be built to good engineering practices. Tenderers shall supply a list of all the main components (mechanical, electrical etc.) proposed as well as the addresses of the local support companies.
- 9.3 All parts and components shall be adequately protected against damage and corrosion during shipping, transport and storage.
- 9.4 Should any of the items called for be standard equipment, then the word “Standard Equipment” shall appear against the item.
- 9.5 Tenderers shall indicate clause-by-clause either that they comply in every respect with the specific requirements, or if not, exactly how it differs.

10. GENERAL REQUIREMENTS

Operation will be in the following conditions:

Altitude	Sea level
Ambient temperature	0°C to 45°C
Relative humidity	50% to 100%
Atmosphere	Heavy saline

11. DEFINITIONS AND ABBREVIATIONS

CLIENT	Transnet Engineering Durban
TENDERERS	Tenderers appointed under this specification document
SABS	South African Bureau of Standards
SANS	South African National Standards
ASME	American Society of Mechanical Engineers
This scope of work	Supply, delivery, installation, testing and commissioning of 3 off rotary screw type compressors.

12. GENERAL

- 12.1 The successful tenderer will be subjected to a workshop inspection by Transnet Engineering, to ensure that the facilities are to the satisfaction of the Transnet Engineering in terms of the quality control and equipment capabilities for manufacturing such type of equipment.
- 12.2 The tenderers shall guarantee that the rating and size etc. of the equipment offered, will be adequate to perform the duties required.

13. SITE ESTABLISHMENT

- 13.1 The Tenderers shall be solely responsible for safety of his staff and for providing security to

Signature of Bidder/s: _____ Date: _____

safeguard his works and material on site, until such a time.

13.2 The Tenderers shall be required to attend site meetings when convened by the Project Leader controlling the Project.

13.3 The Tenderers will be responsible for any damages caused by his staff to the building and to civil works on site.

14. PENALTY CLAUSES

14.1 Due to the criticality of this project, penalties will be imposed for late delivery as per contract.

Signature of Bidder/s: _____ Date: _____

15. SCHEDULE OF PRICES:

All prices **exclude Vat** and additional items listed (with prices) shall be clearly labelled as optional or essential.

Item	Qty	Price per item	Price
		R	R
Supply, Install, Test and Commission 90 Kw Rotary Screw Compressor	1		
Supply, Install, Test and Commission 55 Kw Rotary Screw Compressor	2		
Supply, Install, Test and Commission a suitable Air Dryer	1		
Total (Excl. VAT) to tender form			R

Tenderer: _____

Date: _____

Witness 1: _____

Date: _____

Witness 2: _____

Date: _____

Signature of Bidder/s: _____

Date: _____

16. TENDER EVALUATION CRITERIA

The following criteria will be used to award the tender. Should there be a criteria over and above the listed below, that will be used, such criteria will be specifically stated.

Technical evaluation criteria

	Criteria	Weightings	Scoring Methodology Based on Weight	Evidence
1.	Compliance to specification: Compliance with the specification including signing of the specification (Sign on each page/company stamp)	35%	Full Submission of all 3 – Evidence = 35 points Submission of 2 off 3 evidence = 20 points Submission of 1 off 3 evidence = 10 points Non- Submission of the Evidence = 0 points	1. Transnet Engineering specification returned (page 6-8 and 18, far right blocks filled in with” Yes/ No” or ticked) 2. Attached Brochure of the Compressor and Air Dryer from the supplier’s preferred OEM. 3. Attached OEM specification of the Compressors and Air Dryer the supplier intended to supply.
3.	Lead time must be <u>SUPPORTED</u> by project plan which consists of a list of key activities and time frames including but not limited to the following: <ul style="list-style-type: none"> Ordering of items from the OEM AIA processes Delivery on Site Safety file approval Installation, Test and Commissioning Hand Over 	40%	Full Submission of all 2 – Evidence = 40 points Submission of 1 off 2 evidence = 20 points Non- Submission of the Evidence = 0 points	1. Project Plan with sequence of tasks and appropriate timelines. 2. Attached confirmation (email or letter) from the OEM highlighting discussion regarding the lead time.
5.	Previous Experience that is relevant with the Specification for this project	25%	3 Reference letters/Completion certificates on a Company Letterhead signed by referring company with contactable details = 25 Points 2 Reference letters/Completion certificates on a Company Letterhead signed by referring company with contactable details = 15 Points	Referral letters signed by referring company and or Certification of Completion certificates of previous projects.

Signature of Bidder/s: _____ Date: _____

			1 Reference letters/Completion certificates on a Company Letterhead signed by referring company with contactable details = 5 Points	
			No Reference Letter/Completion certificate= 0 point	
Total		100%		
Threshold		80%		

Signature of Bidder/s: _____ Date: _____

17. VERIFICATION OF COMPLIANCE TO SCOPE

ITS IS MANDATORY FOR ALL THE SUPPLIERS/BIDDERS TO COMPLETE THIS FORM. AN INCOMPLETE FORM WILL RESULT IN DISQUALIFICATION.

No.	Heading/Subsection	Comply			Comment
		Yes	No	N/A	
1	Scope of work				
4	Technical requirements				
5	Specific requirements				
5.3	Scope of work				
5.4	Quality controls and monitoring				
5.8	Testing				
5.9	Commissioning				
5.10	Maintenance				
5.11	Warranty				
5.12	Spares				
7	Health and safety requirements				
9	Materials and workmanship				
14	Penalty clauses				

TENDERERS: PLEASE NOTE THAT YOUR TENDER WILL BE REJECTED IF ANY OF THE ABOVE ITEMS ARE OMITTED OR NOT FILLED.

Signature of Bidder/s: _____ Date: _____