



**SUPPLY, DELIVERY, INSTALLATION,
TESTING AND COMMISSIONING OF A
AUTOMATED GANTRY HEAVY DUTY CNC
CONTROLLED 3m X 20m BED HIGH
DEFINITION PLASMA /OXYFUEL-GAS
CUTTING MACHINE
FOR THE RSE BUSINESS.**

**DURBAN MAIN CENTRE, 311 SOLOMON
MAHLANGU DRIVE, DURBAN**

REFERENCE NO.: OPS_RSE_DBN_ESR_SPEC_090

Scope Revision: 1

Date of release: DECEMBER 2024

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Table of Contents

Content	Page no
1. INTRODUCTION/ SCOPE OF WORK	4
2. SITE INSPECTION	4
3. INFORMATION REQUIRED	5
4. TECHNICAL REQUIREMENTS	5
5. SPECIFIC REQUIREMENTS	6 - 13
6. SITE ESTABLISHMENT	13
7. OTHER INFORMATION RELATED TO THE SCOPE	13
8. HEALTH AND SAFETY REQUIREMENTS	13
9. SPECIALIST SUB-CONTRACTORS	14
10. MATERIAL AND WORKMANSHIP	15
11. GENERAL REQUIREMENTS	15
12. DEFINITIONS AND ABBREVIATIONS	15
13. GENERAL	15
14. PENALTY CLAUSES	16

Document Authorities

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Signature of Bidder/s: _____ Date: _____

1. INTRODUCTION / SCOPE of Work

This specification is for the:

#	TASK	REQUIRED
1	Design	✓
2	Manufacture	✓
3	Supply	✓
4	Installation	✓
5	Documentation	✓
6	Testing	✓
7	Training	✓
18	Commissioning	✓

of the specified:

#	ITEM	REQUIRED
	Design, manufacture, supply, delivery, installation, testing and commissioning of Heavy duty CNC controlled 20m x 3m bed size High Definition Plasma Cutting Machine with suction arms (complete with the extraction system to the outside of the work shop).	✓
	Supply of protection screens for profile cutter working places (To cover 1 length and breadth of the machines).	✓

which must be commissioned at the Wagons Manufacturing Business. Once commissioned they shall operate safely for its design life of 30 years.

This specification states the minimum requirements relating to the work and in no way absolves the contractor from 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 and optional prices for addressing such omissions must be provided.

The machine shall be able to operate 24 hours, 7 days a week.

2. SITE INSPECTION

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

Signature of Bidder/s: _____ Date: _____

3. INFORMATION REQUIRED

- 3.1 Offers will not be considered unless full particulars and sufficient literature are provided at the tendering stage to enable Transnet Engineering Technical Officers the opportunity to assess each technical offer properly.
- 3.2 Prospective Contractors will complete the relevant questionnaire in full and must indicate whether their offer complies with each item of the specification
- 3.3 Should there be insufficient space for furnishing full details; contractors 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.
- 3.4 As prospective contractors 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

- 4.1 Except where otherwise provided for in the specification, all equipment offered will comply with the requirements of the relevant standard specifications of the SABS, if published, otherwise with the relevant standard of the British Standards Institution in force at the time of tendering.
- 4.2 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.
- 4.3 The successful tender will at the conclusion of the installation provide a document along the lines “that the installation complies with national/international requirements and that all selected /designed items are compliant with Act 85 of 1993 and SABS 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.”

The work shall be done in accordance to the following legislations, regulations and standards:

- SANS 347:2012, Categorization and conformity assessment criteria for all pressure equipment.
- SANS 10142-1 The wiring of premises Part 1: Low-voltage installations.
- SANS 60529:2001/IEC 60529:2001, IDT, Ed. 2.1 Degrees of protection provided by enclosures (IP Code).
- SANS 60614-1:1994/IEC 60614-1:1994, IDT, Ed. 2 Conduits for electrical installations – Specification Part 1: General requirements.
- SANS 60614-1:1994/IEC 60614-1:1994, IDT, Ed. 2 Conduits for electrical installations – Specification Part 1: General requirements.
- SANS 61084-2-2:2003/IEC 61084-2-2:2003, IDT, Ed.1 Cable trunking and ducting systems for electrical installations Part 2-2: Particular requirements - Cable trunking systems and cable ducting systems intended for underfloor and flushfloor installations.

Signature of Bidder/s: _____ Date: _____

- **SANS 1507-2:2007 Electric cables with extruded solid dielectric insulation for fixed installations (300/500 V to 1900/3 300 V) Part 2: Wiring cables.**
- **Occupational Health and Safety Act and Regulations 85 of 1993.**
- **National Environmental Management Act, No. 107 of 1998.**
- **Design and manufacturing specification to conform with ISO 9001**
- **Factory acceptance tests in accordance with EN ISO 9013.**
- **National Environment Management: Waste Management Act, No. 59 of 2008.**
- **National Environment Management: Air Quality Act, No. 39 of 2004.**
- **Water Services Act, No. 108 of 1997.**
- **Independent EMC and electrical voltage testing to confirm conformance with all current European EMC regulations.**
- **EN ISO 12100: 2010**
- **EN 60364-1:2006 + A1 2009**
- **EN 60825- 1:2007**
- **EN ISO 13850:2008**
- **EN 61000-6-4:2007 + A1 2011**
- **EN 61000-6-2:2005**
- **Mark with supporting declaration of conformity in accordance with: Guideline 2006/42/EG from 09.06.2006 and Guideline 2004/108/EG from 15.12.2004**

5. SPECIFIC REQUIREMENTS

Any person with the intention of procuring the machine or material shall ensure that the information below is complied with.

5.1 Loads and Duty Cycles

- The HD Plasma Cutting /Oxy-gas Machine shall be effective and efficient for the full design life of 30 years.

5.2 Environment

- The workshop has dust, smoke, high temperatures due to operations.

5.3 Operating Environment

- Enclosed environment.

5.2 Design : 20mx3m CNC Plasma cutting machine portal Bridge

Item no.	REQUIREMENTS
5.2.1	Read this scope of work with Annexure 1 (Transnet contractor safety, health and environmental management specification guidelines TRN-IMS-GRP-GDL-014. 2).
5.2.2	The service provider is required to submit a SHE Contractor Compliance file (Index to be provided to the successful service provider); - This file shall be submitted after the Purchase Order has been issued, not at tender stage.

Signature of Bidder/s: _____

Date: _____

Item no.	REQUIREMENTS
5.2.3	The scope of work includes design, manufacture, supply, delivery, installation, calibration, testing and commissioning.
5.2.4	<p>CNC plasma cutting machine portal bridge design. Cutting width minimum 3000mm. Cutting length 20 000mm. The machine must have 1-High-Definition CNC plasma system/head and 1 CNC oxy-gas cutting system/head for cutting up to the following:</p> <ul style="list-style-type: none"> • CNC Plasma head for cutting up to 90mm Mild Steel and 90mm Stainless steel. • CNC Oxy fuel head for cutting from 3mm to 300mm Mild Steel. <p>Both the Plasma cutting and Oxyfuel cutting system must be integrated into one CNC system that will be compatible to Sigmanest CAD/CAM nesting.</p>
5.2.5	<p>The machine is required to meet the following international machine tool builders and manufacturing specifications.</p> <p>a) CE Mark, with supporting declaration of conformity in accordance with:</p> <ul style="list-style-type: none"> Guideline 2006/42/EG from 09.06.2006 Guideline 2004/108/EG from 15.12.2004 EN ISO 12100: 2010 EN 60204-1:2006 + A1 2009 EN 60825-1:2007 EN ISO 13850:2008 EN 61000-6-4:2007 + A1 2011 EN 61000-6-2:2005 <p>b) Factory acceptance tests in accordance with EN ISO 9013.</p> <p>c) Design and manufacturing specification to conform with ISO 9001.</p> <p>d) Independent EMC and electrical voltage testing to confirm conformance with all current European EMC regulations.</p>
5.2.6	<p><u>The machine specification:</u></p> <p>a). The machine track is to be separate for the cutting table and mounted on I-beams.</p> <p>b). Machine track must be made from heavy duty from precision machined railway line sections. The size of rail guide prism to be at least 55 (mm) x 45 (mm).</p> <p>c). The rail height is to be maximum of 500mm above the floor level.</p> <p>d). The machine is to have dual-side rack and pinion drive in the longitudinal axis. The drive pinion diameter to be a minimum of 120 mm. The drive rack to be at least 2.0 module.</p> <p>e). The machine is to have dual-side digital AC drives fully synchronised. Drive speeds up to 35m/minute.</p> <p>f). Each drive motor is to be fitted with high quality low backlash planetary gearboxes. the backlash of the gearbox to be less than 3 arc minutes.</p> <p>g). Each drive motor to have longitudinal and transverse.</p> <p>h). Ether CAT Bus system for the connection of all drives and peripheral items, giving reliable inference free operation.</p> <p>i). Each cross traverse shall be independent from each other and able to operate without the other head independently.</p> <p>j). Each torch shall be able to have full movement of the table and not restricted when cutting with one torch.</p>
5.2.7	<p>The machine torch suspension units must be CNC controlled. The CNC control must precisely control the height of the cutting torch during the plasma cutting operation.</p> <p>a). Automatic torch collision to prevent torch damage during operation is to be integrated within the CNC control system.</p> <p>b). Integrated air conditioning unit is to be provided to ensure reliable operation of the machine in high</p>

Signature of Bidder/s: _____ Date: _____

ambient temperature conditions max 35 degrees Celsius.

Item no.	REQUIREMENTS
5.2.8	<p><u>CNC unit specification:</u></p> <ul style="list-style-type: none"> a). Open architecture Ether CAT Bus system allowing for future expansion. b). Current operating system (Windows 11, with the possibility to future versions). c). Minimum 1,9GHz processor speed. d). Must be industrial PC with Dual Core Intel processor e). Touch screen operation with intuitive HMI, having only the required screen active at any one time. f). Clear menu structure for all operations, including the loading and execution of programs. g). Fully integrated built-in diagnostics for extensive fault finding on both the machine and the plasma cutting process. h). Semi-automatic plate alignment. i). Internet connection facility, with fully secured access. Enabling remote access to establish machine operation status, remote fault finding, and remote software / service updates to be carried out if desired. j). Flat screen touch screen design, with main PC unit mounted remotely from the operators panel. k). Built in data bank enabling all of the parameter settings for the plasma system to be automatically set by the CNC control. l). On screen visual display of the individual consumables required for the actual cutting operation. m). Fully automatic programmable Voltage, Current, and gas settings via the CNC unit. n). On screen visual representation of the consumable lifetime. o). On screen visual representation of the consumables required for cutting. p). Production process times, including arc on time to be directly accessible from the CNC unit for production planning purposes. q). Integrated Arc Voltage Height Control (AVC) within the CNC unit. r). Network connection for connection to host PC for the downloading of shape nests. s). Fully compatible with the Sigma nest plate nesting and programming system. t). Fully automatic nesting integrated into the CNC unit u). Fully integrated Image restore and system repair programme for the full recovery of the CNC system in the case of system corruption by e.g. computer virus infestation. w). Not less than 19.5 inch Capacitive touchscreen. x). All menus and text to be in English.
5.2.9	<p><u>High-Definition plasma cutting system, MUST include:</u></p> <ul style="list-style-type: none"> a). High-Definition Plasma cutting range from 3mm to 100 mm on Mild Steel, up to 90mm Stainless Steel. b). Production pierce capacity (air shield gas) on Mild Steel 50mm and 38mm Stainless steel c). Production severance 90mm on mild steel and Stainless steel d). Power source amperage 460A minimum. e). True Hole Cutting operation for the production of round holes. f). Dross free cutting on Mild Steel and Stainless Steel over the entire range. g). Quick release torch heads enabling consumables to be changed off-line. h). Full list of consumables required stating expected lifetime and replacement costs. i). Confirmation of the number of systems currently in service in South Africa, and worldwide. j). Simple, safe, and easy to use. k). Fully automatic gas console for the setting of the gas flow rate and cutting parameters via the CNC unit.

Signature of Bidder/s: _____ Date: _____

Item no.	REQUIREMENTS
5.2.10	<p><u>Fume Extraction system</u></p> <ul style="list-style-type: none"> a). The unit is to be PLC controlled for the control of the pulse cleaning cycle. b). The unit is to have a built-in spark trap to prevent sparks from burning the filter cartridges. c). The filter cartridge medium to be spark and flame retardant. d). The fume extraction unit is to be fully interlocked to the CNC system to prevent use of the plasma cutting machine if the extraction unit is not switched on. e). The extraction volume of the unit to be a minimum of 13,000m³/hour. f). The fume extraction system is to be supplied with all necessary ductwork to connect between the cutting bed and the filtration system. The filtration unit will be placed at a maximum of 15 metres for the end of the cutting bed. g). The extraction system is to be fully installed and commissioned on site.
5.2.11	<p><u>Fume Extraction Table (Cutting bed)</u></p> <ul style="list-style-type: none"> a). The cutting bed is to have sectional extraction over its entire working length. b). The cutting bed is to have removable cutting grids for cleaning purposes. c). The cutting bed is to have integrated (and removable) collector bins for catching the cutting dross and drops outs. d). The cutting bed is to be designed to carry a 100mm plate load over its entire working area. e). The cutting table must be able to handle both Plasma and Gas oxyfuel cutting operation
5.2.12	<p><u>Compressor unit</u></p> <ul style="list-style-type: none"> a). The compressor unit is to be rotary screw type, capable of output pressure of minimum 8 Bar pressure and volume required for the machine. b). Sufficient capability to provide the necessary compressed air for two plasma cutting heads. c). Complete with integrated air dryer. d). With all suitable filters to remove both particles and oil from the compressed air. e). The compressor unit to be fully installed and commissioned on site within 10 metres of the plasma cutting machine position. f). The air receiver attached to the compressor unit to be fully compliant with pressure equipment regulations GNR.734 of 15th July 2009.
5.2.13	<p><u>The gas cutting operation, MUST include:</u></p> <ul style="list-style-type: none"> a). Cutting thickness from 3mm to 300mm on Mild Steel. b). Full list of consumables required stating expected lifetime and replacement costs. c). Confirmation of the number of systems currently in service in South Africa, and worldwide. d). Simple, safe, and easy to use. e). Fully automatic gas console for the setting of the gas flow rate and cutting parameters via the CNC unit. f.) The cutting touch must be able to cut from 3 mm to 300 mm mild steel supplied with a starter kit for all thicknesses.
5.2.14	<p>Also supply the following :</p> <ul style="list-style-type: none"> a) Complete additional oxy fuel cutting torch head. b) Complete additional edge type PLC HMI controller.

Signature of Bidder/s: _____ Date: _____

Item no.	REQUIREMENTS
5.2.15	<p>It is required that all operational staff and maintenance staff be fully trained on the functioning, fault finding and normal maintenance of the machine.</p> <p>The supplier has to supply a commissioning certificate. This certificate must clearly indicate the commissioning date, as well as declaration stating that the machine is in a total working condition and is ready for production.</p> <p>Indicate on the tender the required electrical power supply, compressed air, gases required to operate the machine. This shall not absolve the supplier from the electrical installation referred to in section 1.</p>
5.2.16	<p>Painting All painting shall be done with strict adherence to the SANS 1091 standard for colours.</p>
5.2.17	<p>The following must be supplied on commissioning of the machine:</p> <ul style="list-style-type: none"> • Electrical certificate of compliance, in accordance with SANS 10142. • Performance Test certificate • Certificates of calibration. • Gas Compliance Certificate <p>The following documents to be submitted in 2 sets of hard copies and 1 set of pdf file in a USB memory stick</p> <ul style="list-style-type: none"> • Mechanical and electrical schematic drawings for all components. • Operational and Maintenance manuals • Maintenance Schedule • Purchased parts equipment Manuals • Parts catalogue for electrical with OEM Part numbers. • Parts catalogue for mechanical with OEM Part numbers • Parameters and settings backup • PLC Program backup • Operations and Maintenance staff training for 15 people. • Operator Training on the full operation of the machine. • Maintenance Training on the effective Maintenance and troubleshooting on the machine. • All required software (Soft copies), licences and passwords to be owned by Transnet Engineering. • List of agencies in South Africa for supply of spare parts.

5.3 Special Requirements

- The contractor shall provide a quality control plan with the tender indicating how quality will be assured.
- The Contractor shall be required to install and operate a quality management system, which is based on International Standard ISO 9001.
- The tenderer must indicate if Plasma Cutting Machine complies with any of the EN and DIN standards.
- The contractor shall be fully responsible for any damage caused to all supplied equipment ant to Transnet Engineering's assets during the installation, testing and commissioning.
- The supplier shall conduct a risk assessment as to identify anything that might hinder the installation of Plasma Cutting Machine.

Signature of Bidder/s: _____ Date: _____

- **The suppliers shall clearly indicate in their proposals the comprehensive power requirements of the machines, gas/es requirements for Transnet to determine if such is available.**
- Before the contract is awarded, a quality audit will be done on all tenderers to ascertain whether the quality control system is implemented and whether the requirements of this specification can be met. The equipment shall be offered complete in all respects, including all standard equipment normally offered by manufacturers, all of which shall be specified in detail.
- The contractor shall provide a quality control plan with the tender indicating how quality be assured.
- Should any of the items called for be standard equipment, then the words “Standard Equipment” shall appear against the item.
- Any further items of equipment and accessories, not listed which Tenderers can offer, shall be detailed and quoted for separately under the head “Additional Equipment”.
- Tenderers shall provide a list of local firms using equipment similar to that offered. The date of supply and quantities shall be included. This information is required to assess whether or not the equipment offered meets present day demands.
- The Technical Officer reserves the right to have the Plasma Cutting Machine proposal checked independently by a third party.
- Any spares recommended as being necessary to cover the first year’s operation shall be detailed and quoted for separately under the heading of “Recommended Spares.”

5.4 Markings

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

5.5 Safety Features

- The minimum safety features shall be according to standards in section 4.3 plus statutory South African requirements and industry norms.

The following shall be noted:

- A detailed program (Gantt chart) shall be submitted with the tender, indicating the main activities and periods necessary up to handover. The tenderer shall submit with their tender a detail erection and installation procedure.
- The contractor shall make provision for the necessary equipment needed for the erection of the Plasma Cutting Machine on site as well as provide adequate personnel to facilitate the erection and installation of the Plasma Cutting Machine on site.
- Transnet Engineering will provide the electrical power source, isolate when required, take out a work permit and the contractor shall be responsible for the whole installation up to the terminations of the machine.
- Transnet Engineering will provide the gas supply terminations to a pre-determined location(Based on the proposed machine design by the contractor) the contractor shall be responsible for the installation up to the point of consumption.
- The contractor must ensure that all hoses and cables are installed from these pre-determined positions to the machine.

Signature of Bidder/s: _____

Date: _____

- The contractor must ensure that all cable trunking for the hose and cables are provided and installed.
- All the electrical/electronic connections, including electrical compliance certificate.
- Test certificate.
- Testing and commissioning.
- Supply of four operating and maintenance manuals – including electrical diagrams.
- Maintenance and schedule of maintenance under Warranty.
- Training on maintaining and operating the equipment.

5.6 Testing

- Compliance inspections and tests shall be completed by a registered person in respect of an electrical installation or part of an electrical installation and a certificate of compliance with a unique number obtainable from the chief inspector, or a person appointed by the chief inspector in the form of annexure 1.

5.7 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 the machine works. Confirmation shall be given on site visits and captured minutes.**
- **No machinery will be accepted by Transnet without the satisfaction of the conditions above.**
- The contractor shall be fully responsible for any damage caused to all supplied equipment and to Transnet Engineering's assets during the installation, testing and commissioning. The supplier shall conduct a risk assessment as to identify anything that might hinder the installation of plasma Cutting Machine.

5.8 Quality Controls and Monitoring

- The Plasma cutting Machine 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 %.
- 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.

5.9 Maintenance

- The maintenance plan shall be for 5 years. The tenderers shall include the maintenance plan. The quote for maintenance plan shall be added on the Schedule of prices.

5.10 Spares

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

5.11 Warranty

- **The warranty period shall be for 5 years.**
- **A maintenance contract for the warranty period shall be included in the quoted price and shall involve Transnet employees to learn.**
- **The Supplier shall supply all passwords for the machine once warranty/service contracts expire.**

Signature of Bidder/s: _____ Date: _____

- **The contractor will be required to provide the software at the end of the warranty / guarantee period for further use by Transnet Engineering.**

5.12 After-Sales Service

- The successful tenderer shall provide Transnet Engineering with acceptable proof that spares can be easily and speedily procured for the equipment within 14 working days through agents locally.
- The supplier to offer the 5 year after market support, spares to be available within reasonable time.
- The supplier to recommend spares to be kept in stock by TE.

6. SITE ESTABLISHMENT

- 6.1 The contractor shall be solely responsible for safety of his staff and for Providing security to safeguard his works and material on site, until such a time.
- 6.2 The contractor shall be required to attend site meetings when convened by the Project Leader controlling the contract.
- 6.3 The contractor will be responsible for any damages caused by his staff to the building and civil works on site.

7. OTHER INFORMATION RELATED TO THE SCOPE

This specification states the minimum requirements relating to the work and in no way absolves the contractor from 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 and optional prices for addressing such omissions must be provided.

- 7.1 Any matter relating to this work, which requires a decision from Transnet Engineering shall be presented to the Project Manager in charge.
- 7.2 All offers shall be completed in every respect with this specification. Only completed tenders shall be considered

The Technical Officer reserves the right to have the proposal checked independently by a third party.

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 contract. No tender will be considered unless it has this certificate signed by the Engineer or his representative.

8. HEALTH AND SAFETY REQUIREMENTS

- 8.1 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 by applicable local authorities.

Signature of Bidder/s: _____ Date: _____

All equipment shall be designed to **fail to safety**. Sudden power losses must not have an adverse effect on equipment and shall not unduly delay return to operation after power is restored.

- 8.1 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. 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.

8.2 Safety Induction:

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 adhoc basis.

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

8.3 Risk Assessment:

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. The cost of medicals and related factors shall be allowed for in the tender.

9. SPECIALIST SUB-CONTRACTORS

- 9.1 Only specialist sub-contractors 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.

- 9.2 The tender shall submit a complete list of proposed sub-contractors and suppliers of major components with his tender.
- 9.3 The tenderer shall be prepared to commit themselves in writing to the technical officer with an adequate, experienced and stable project team for the duration of the contract.
- 9.4 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.

Signature of Bidder/s: _____ Date: _____

Contractors shall do the installation simultaneously with other contractors on-site busy with other work and shall plan work that it integrates with other work performed.

10. MATERIAL AND WORKMANSHIP

- 10.1 Machinery shall be offered complete in all respects, including all standard equipment normally offered by manufactures, all of which shall be specified in detail.
- 10.1 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 local the support companies.
- 10.2 All parts and components shall be adequately protected against damage and corrosion during shipping, transport and storage. Should any of the items called for be standard equipment, then the words “Standard Equipment” shall appear against the item.

11. 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

- 11.1 Tenderers shall indicate clause-by-clause either that they comply in every respect with the specific requirements, or if not, exactly how it differs.

12. DEFINITIONS AND ABBERVIATIONS

CLIENT	Transnet Engineering Durban
TECHNICAL OFFICER	Project Manager, Transnet Engineering Durban
CONTRACTOR	Contractor appointed under this specification document
SABS	South African Bureau of Standards
BS	British Standard Specification
FEM	Federation of European Mechanical Handling Standard
ISO	International Organisation for Standardisation

13. GENERAL

- 13.1 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.
- 13.2 The tenderers shall guarantee that the rating and size etc. of the equipment offered, will be adequate to perform the duties required.

Signature of Bidder/s: _____ Date: _____

14. PENALTY CLAUSES

14.1 Due to the criticality of this machine, penalties will be levied for late deliveries.

Signature of Bidder/s: _____ Date: _____