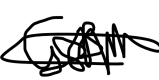
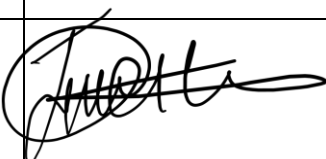
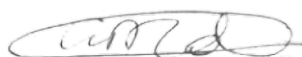




-IMS-PEMM P&E KDS-SPC-405 Specification

Description: (Specification for supply, installation, commissioning and testing of new Small basic mini-CNC Lathe Machine for PD business at Koedoespoort)				
Compiled By:	S.G. Bhembe		Date:	28/02/2025
Recommended By:	V. Matjeke		Date:	28/02/2025
Approved by:	A. Ndamase		Date:	2025/03/04
Risk:	C. Manana		Date:	04-03-2025
Local Business:	PD			
Location:	Koedoespoort			

Contents

1. Scope of Work.....	4
2. Site Inspection	4
3. Information Required	4
4. Specific Requirements:	5
5. Technical Requirements:	6
6. Codes of Practice, Regulations & Standards:	6
7. Loads and Duty Cycles:	6
8. Dimensional Parameters:.....	6
9. Operational Parameters:.....	6
9.1 Environment:.....	6
9.2 Safety Features:.....	6
9.3 Special Requirements:	7
9.4 Controls:.....	7
9.5 Markings:	7
10. Power Supply & Services:.....	7
11. Foundation:	7
12. Testing:	7
13. Specific Requirements:	8
14. References:.....	19
15. Painting:	19
16. Quality Control:.....	19
17. Installation and Commissioning:	19



18.	Guarantee:	19
19.	After Sales Support:	20

1. Scope of Work

This specification requirement covers all the requirements that will be needed to inform the supplier/vendor/manufacture to carry out what is expected from him/her: The contract will be awarded as a turnkey project, and the contractor will be responsible for all the work specified.

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 KOEDOESPOORT at tender stage and optional prices for addressing such omissions must be provided.

The Supplier shall supply all the labour, tools, material, equipment, consumables, facilities, testing and supervision required for the supply of the specified equipment at site during erection, pre-commissioning and commissioning activities.

2. Site Inspection

Tenderers must visit the site to familiarize themselves with all the aspects involved relating to the project that must be done. This must be arranged via the Contract Manager. The site inspection certificate will be counter-signed by the Contract Manager on day of the site visit. The tender documents must only be submitted if the site inspection certificate has been signed.

3. Information Required

Tenders shall be in duplicate and will not be considered if full particulars of all relevant equipment and works requested are not submitted at the tender stage, to ensure an objective assessment of the offer can be made. Tenderers shall confirm that the items that they are offering comply at a standard not less than the minimum required requirement asked for in the specifications. Tenderers must comply to these

specifications, but alternative offers may, in addition, also be submitted. Such alternative offers must be fully motivated and substantiated.

4. Specific Requirements:

- Comply with the Occupational Health and Safety Act (Act85 of 1993), as amended.
- Adhere to the Construction Regulations of the Occupational Health and Safety Act (Act85 of 1993), as amended.
- The contractor to have SAFETY INDUCTION and have valid permits when entering Transnet Engineering.
- The contractor to have a SAFETY FILE, SITE INSTRUCTION BOOK on site at all times.
- All measurements and amounts must be stipulated in quote.
- Contractor's name board will at all times be visible.
- A supervisor will be on site at all times.
- Rubble will be removed from site daily.
- The correct PPE must be worn at all times. (Harnesses ropes, etc.)
- During and on completion of the project, there will be SHE inspections and Risk assessments done on the site that the supplier/vendor is working on, which will be reported to the project manager.
- Failure to comply will result in a stop certificate being issued and the supplier will be required to leave the site until the situation is rectified.
- All scaffolding used to be SANS approved.
- All employees who will be working at height to have medical fitness certificate and proof of competency training thereof.
- Valid letter of good standing with Workman's Compensation.

- Failure to comply will result in a stop certificate being issued and the supplier will be required to leave the site until the situation is rectified.
- Comply with Transnet Engineering SHE Specification for contract work Version 02.

5. Technical Requirements:

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. Sudden power losses will not have an adverse effect on equipment and shall not unduly delay return to operation after power is restored.

6. Codes of Practice, Regulations & Standards:

The tenderer shall specify which statutory, or industry rules will be applied for the equipment to be working successfully and safely and shall indicate the designed life span.

7. Loads and Duty Cycles:

The tenderer shall describe all duty cycles that the equipment would be required to perform.

The duration and the number of cycles per day/week/month/year must also be stipulated.

8. Dimensional Parameters:

The tenderer shall describe the major physical dimensions that are required for ease of operation and installation.

9. Operational Parameters:

9.1 Environment:

The equipment will be required to operating in the climatic conditions of Pretoria:

9.2 Safety Features:

The tenderer shall indicate all the safety features installed on the equipment and describe fully its operational standard/s.

9.3 Special Requirements:

The tenderer shall indicate any tooling, lifting attachments etc. which is not considered to be standard accessories for the equipment at hand and will be required to operate the equipment effectively and safely.

9.4 Controls:

The tenderer shall indicate the type of controls and layout to operate the equipment. This must also include backup and emergency systems.

9.5 Markings:

The tenderer shall conspicuously mark the equipment with following info as a minimum: all PPE to be worn, technical data, dates of manufacture, manufacturer's details etc.

10. Power Supply & Services:

The tenderer shall indicate the electrical power supply and air (if applicable) required operating the equipment.

11. Foundation:

The tenderer shall indicate the foundation design required for the equipment.

12. Documentation:

The tenderer shall supply the following manuals during commissioning: Operation Manuals x 4 hard copies and CDs, Maintenance Manuals x 4 hard copies and CDs and Spare Catalogues x 4 hard copies and CDs. Full details of recommended lubricants to be furnished with possible suppliers.

13. Testing:

The tenderer shall indicate the performance/s standard which the equipment will be subjected to.

14. Training:

The tenderer shall supply the high-level training scope for the operators, millwrights, electricians and electronics technician. The supplier shall indicate if the training is accredited and furnish with such accreditation number or reference quote and the body that is issuing such accreditation.

15. Specific Requirements:

ITEM NO.	REQUIREMENTS	DETAILS OF OFFER Comply (Yes) / Do not comply (No)
1.	Scope of work: Small Basic mini-CNC lathe	
1.1	Supply of new mini-CNC lathe Machine.	
1.2	Supply and install electrical power points.	
1.3	Installation of mini-CNC lathe Machine.	
1.4	Training on mini-CNC Lathe Machine	
1.5	Documentation for mini-CNC lathe Machine and electrical installation	
1.6	Testing and commissioning of the mini-CNC lathe Machine.	
2.	Mini-CNC Lathe Machine	
2.1	The machine must be capable of sectioning and engraving	
2.2	Must be able to section various sizes, shapes (round and rectangular) and types of the test	



ITEM NO.	REQUIREMENTS	DETAILS OF OFFER Comply (Yes) / Do not comply (No)
	pieces	
2.3	It must have easy to use software, with high precision and good surface finish. Must be able to cut non-ferrous and ferrous Alloys, composites etc	
2.4	It must be able to convert 2D and 3D drawings into the CNC program	
2.5	It must come with all the tools necessary for it to be operational i.e., End mills, Face mills, fly cutter, Drill bits and taps, Reamers, turning tool, chamfering tool, threading tool, facing tool, Grooving tool, Boring tool, Parting tool, Drill press and Forming tool	
2.6	It must have high speed and efficiency with deeper cuts, higher rpms, and increased feed rates.	
2.7	The first off accessories must be supplied i.e., coolant.	
2.8	The machine must come with all the required tooling	
2.9	The machine is for laboratory testing samples (Tensile & Charpies) so it must be able to hold tolerances Consistently	
3.	Capability of the new CNC Lathe Machine:	
3.1	Maximum spindle speed (RPM) must be 3001-	



ITEM NO.	REQUIREMENTS	DETAILS OF OFFER Comply (Yes) / Do not comply (No)
	3500	
3.2	X-axis-90mm and Distance between centres must be 250mm	
3.3	Spindle motor power must be at least 1.2KW Spindle bore must be at least 26 mm	
3.4	Tailstock diameter at least 22 mm and Tailstock taper MT2	
3.5	Maximum swing over carriage must at least be 100mm. Maximum swing over bed must be at least 210mm	
3.6	Spindle taper-MT4	
3.7	Feeding motor power must be at least 3.0 N.M	
3.8	Power source shall be minimum 125 Amp at 100% duty cycle.	
3.9	It must have easy to use software, with high precision automatic machining, CNC Automatic tool feeding and intelligent system	
3.10	At least 4 position tool post	
3.11	X-axis travel 90mm, Z-axis travel 300mm	
3.12	X & Z rapid speed at least 2000mm/min	
3.13	X & Z motor torque at least 3 N.m	



ITEM NO.	REQUIREMENTS	DETAILS OF OFFER Comply (Yes) / Do not comply (No)
3.14	The Overall size at least 1170*700*860mm	
4.	Control system:	
4.1	ACCUMOVE controller incl. CAD/CAM Software and 20-inch touchscreen (HMI) control with adjustable industrial-grade mounting arm	
4.2	Mirror rotate and scale of parts.	
4.3	Clip art Gallery. (Indicate what shall be provided).	
4.4	Selective Kerf.	
4.5	DFX importer	
5.	Electrical Installation:	
5.1	Service provider must install the electrical points for the mini-CNC lathe Machine where the equipment will be installed. The point of supply will be from a Distribution board	
5.2	The electrical connection must be from an isolator on the Main supply DB to an isolator of the machine.	
5.3	Isolators must have neutral Boven and erath	
5.4	The electrical installation shall fully comply with the latest version of SANS 10142 Part 1 standard.	
5.5	Supplier shall determine the cable sizes	



ITEM NO.	REQUIREMENTS	DETAILS OF OFFER Comply (Yes) / Do not comply (No)
	(calculations of cable size selection) according to the equipment that shall be used in the installation. (Total amperage).	
5.6	All supply cables shall be SWA copper cables installed on cable tray from the main distribution board to the control panel and to all electrical components.	
5.7	Four core SWA supply cables shall be supplied with a separate bare earth conductor for 3 phase installations.	
5.8	Three core SWA supply cables shall be supplied for all single-phase power points.	
5.9	All SWA supply cables shall be fitted with the correct size glands, shrouds and gland rings on both ends. Gland rings shall be bonded throw to the main earth conductor.	
5.10	IP rating of the glands and isolator must be according/suitable to the foundry environment.	
5.11	Bidders to supply the overload protected circuit breaker in the distribution board and the lockable fused isolator before the control panel.	
5.12	All supply cables, overload and short circuit protection supplied shall be selected accordingly to the amperage required for the fume extraction system to operate fully.	



ITEM NO.	REQUIREMENTS	DETAILS OF OFFER Comply (Yes) / Do not comply (No)
5.13	All electrical equipment shall be properly labelled identifying the point of supply, point of consumption and isolator labelling. Cross reference between all termination points.	
5.14	Termination must have separate earth wire and separate earth tags and termination lugs.	
5.15	CNC lathe machine power source shall be fed from a 5-pin earth leakage protected welding switch socket outlet.	
5.16	Control panel shall be supplied from a dedicated single phase switch socket outlet.	
5.17	Relevant test shall be done for the electrical installation according to the latest version of SANS 10142-1 standard	
5.18	Electrical COC shall be supplied on the day of commissioning.	
5.19	The legend must be updated with the new installation information.	
6.	Documentation:	
6.1	Bidders shall supply the following documentation at tender stage:	
6.1.1	Suppliers, electrical contractor's registration with Department of Labour as electrical contractor.	
6.1.2	The accredited person's wiremen's licence.	



ITEM NO.	REQUIREMENTS	DETAILS OF OFFER Comply (Yes) / Do not comply (No)
	(Installation Electrician)	
6.1.3	A copy of the accredited person's ID.	
6.2	Documentation before any work shall commence:	
6.2.1	Calculations regarding the cable size for the electrical supply cables from distribution board to the point of consumption. (This shall indicate cable size and lengths used for the installation and the main overload circuit breaker installed for each circuit).	
6. 3	Documents on day of commissioning:	
6.3.1	4 sets off hard copies each with a disc containing documentation in PDF Format.	
6.3.1.1	Operating Manual.	
6.3.1.2	Maintenance Manual.	
6.3.1.3	Electrical Schematics.	
6.3.1.4	Mechanical Drawings.	
6.3.1.5	Parts List.	
6.3.1.6	Hard Copy of PLC Program.	
6.3.1.7	Hard copy of Parameters of all systems including PLC, mini-CNC and Drives	
6.3.1.8	Setup guides for Software on Computer.	



ITEM NO.	REQUIREMENTS	DETAILS OF OFFER Comply (Yes) / Do not comply (No)
6.3.1.9	Passwords for all software.	
6.3.1.10	Backup of PLC Program.	
6.3.1.11	Backup Image of Computer.	
6.3.1.12	Install software files for Computer.	
6.3.1.13	Electrical Test results	
6.3.1.14	Electrical COC for installation. (Original certificate).	
6.3.1.15	Calibration certificate of meters	
7.	Spares.	
7.1	The supplier shall indicate detail spare parts list of the equipment.	
7.2	The supplier shall indicate the critical maintenance spares.	
7.3	The supplier shall indicate if consignment spares will be readily available in South Africa and the average lead time	
7.4	The supplier shall describe in detail the main components and how they operate in details.	
8.	Safety Standards:	
8.1	The bidder to supply the design standards of the equipment/machine	



ITEM NO.	REQUIREMENTS	DETAILS OF OFFER Comply (Yes) / Do not comply (No)
8.2	The bidder to supply and indicate all the safety features build into the equipment/machine	
8.3	All safety signage (PPE that are required) shall be supplied and installed with the equipment	
9.	Maintenance:	
9.1	The supplier shall indicate the maintenance requirements and frequency of the equipment.	
9.2	Maintenance/servicing of the equipment during guarantee period shall be included in the price.	
10.	Training:	
10.1	The supplier shall offer a formal training to Operators and maintenance artisans according to the training manuals of the equipment supplied.	
10.2	The supplier shall indicate if this training is accredited by SAQA.	
10.3	Training shall be for minimum three people from the business and Minimum of four persons for maintaining the equipment. (2 x Electricians and 2 x Mill wrights).	
10.4	The supplier shall supply training manuals.	
11	Guarantee:	



ITEM NO.	REQUIREMENTS	DETAILS OF OFFER Comply (Yes) / Do not comply (No)
11.1	The supplier shall guarantee for a period 24 months after successful commissioning of the CNC Lathe machine that all components, plant equipment and material fitted are new and fit for the specific purpose which they are purchased, and free from any defects in design, workmanship and material, and are in strict accordance with the contract, unless otherwise agree in writing.	
11.2	The supplier shall agree to replace at his/her cost any defective items discovered within the guaranteed period.	
11.3	The supplier shall clearly stipulate the nature of the guarantee and how long it will take their maintenance staff to be on site. Transnet Engineering requires a response time of no more than 24 hours.	
11.4	Should the supplier fail, when called upon, to make good or remedy a defect (under guarantee or declared inherent) within a reasonable time, Transnet Engineering may affect the repair and thereafter recover from the supplier all cost and expenses associated with the supplier	
12.	General:	
12.1	The following services is available at Transnet Koedoespoort: • Air pressure of 6 to 6.9 Bar. • Electrical supply of 400Volt (±5%), 3 phase +	



ITEM NO.	REQUIREMENTS	DETAILS OF OFFER Comply (Yes) / Do not comply (No)
	neutral and earth at 50 Hertz.	
12.2	All material/equipment installed shall be new and ISO/SABS approved.	
12.3	All installation work to be neat and of high standard.	
12.4	All rubble shall be disposed of on a daily base at an approved dumping site.	
12.5	The contractor must be available and present on the date of final commissioning.	
12.6	Bidders to supply full colour brochures regarding the equipment that will be supplied. This must indicate the model number of equipment and technical specifications.	
13.	Price Schedule:	
13.1	Bidders to give a full price breakdown for the individual areas identifying all equipment that shall be supplied and work that they will perform.	
14.	INSTALLATION AND COMMISINING	
14.1	As this project is "Turnkey" the successful tenderer is responsible for all installations and commissioning. The complete project team and PEMM responsible persons will participate in final commissioning.	

16. References:

Standard operating procedure for specification of contract work

17. Painting:

The supplier shall indicate the code of practice to which painting and surface preparation will conform to.

18. Quality Control:

The contractor shall provide a quality control plan with the tender indicating how quality will be assured.

19. Installation and Commissioning:

A detailed program (project-plan/gantt-chart) shall be submitted with the tender, indicating the main activities and periods necessary up to handover. The bidder shall submit with their tender a detail erection and installation procedure.

The contractor shall be fully responsible for any damage caused to all supplied equipment and to Transnet Rail 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 the equipment.

20. Guarantee:

The contractor shall guarantee for a period of 12 months minimum (preferably 24 months or more) after successful commissioning and free from any defects in design, workmanship and material, and are in accordance with the Contract, unless otherwise agreed in writing.

The Contractor shall agree to replace at his cost any defective items discovered within the guaranteed period.

21. After Sales Support:

Tenderers shall state whether all essential renewable parts for the equipment will be readily available in the Republic of South Africa.

The tenderer shall guarantee the supply of spares for a minimum of 20-years after commissioning.

Tenderers shall state what after-sales service can be offered.