

Title: **Conventional and CNC
Machining Services SOW**

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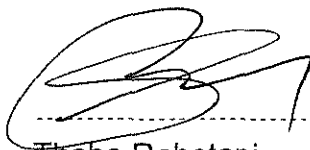
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1. PURPOSE

The purpose of this document is to define the services needed from a contractor for provision of a reliable, high quality, comprehensive and cost effective **Conventional and CNC Machining Services** to ERI – TGS, Matla Works

2. CONTEXT FOR TURNING MACHINING

Conventional and CNC Machining are manufacturing and/or refurbishment processes in which bars, billets and plates of material are held in a chuck and rotated while a tool is fed to the piece to remove unwanted material to create the desired shape or geometry. Conventional lathes and conventional vertical and horizontal boring machines have tooling mounted on a turret which is manually controlled by an Artisan.

Matla Works manufactures and refurbishes small to medium size turbine components for Eskom power stations. Matla Works has the capabilities of Conventional and CNC Machining, however, at times especially during high outage demand, the Matla Workshop can be overloaded with the amount of work required. Some of these components include turbine casing studs, spindles, shafts, bushes, coupling plates, gland boxes and oil baffles but not limited to, where the expertise of Conventional and CNC Machining are required to manufacture and/or refurbish components that range from a diameter of 10mm up to 1200mm and up to 5000mm in length as per provided scope of work.

The company should focus on both Conventional and CNC Machining using Conventional lathes, vertical and horizontal boring mills and CNC lathe machines turning and milling machine services. Their services should include, but not be limited to:

- 1 Must be able to accommodate round bars and/or components of sizes of outside diameters from **10mm up to 1200mm**,
- 2 Must be able to accommodate round bars and/or components of sizes of lengths from **50 to 5000mm long** or at least **1m in height**
- 3 Must be able to accommodate a capacity of large **quantities in excess of up +200** components per order
- 4 The company must be able to achieve the required thread specs, final finishes and critical tolerance as specified on the scope of work supplied
- 5 The company should be able to supply the correct certification required for our demanding clients
 - a The contractor should be **ISO 9001 certified**

3. Scope of Work

The correct turning and milling machining procedures, specifications, qualifications and inspections need to be carried out. This will require that all staff performing the tasks to be fully qualified and certified in their specific fields for the purpose of turning and milling all different kind of steel(s). Some of the steel to be machined will be hardened steel and the hardness value of each steel will be stipulated on the material certificates to be supplied with the steel specimen. Nondestructive testing (NDT) of the finished product will also be required. The final manufactured product must be a very low rate distortion and very tight dimensions, with good surface finishes and must be within the specified tolerances criteria.

The turning and milling machining spec's are as follows, but not limited to:

- ❖ Machining tolerance to be $\pm 0.02\text{mm}$ unless otherwise specified on scope of work or drawing
- ❖ Machining surface finish to be $1.6\mu\text{mRa}$ unless otherwise specified on scope of work or drawing

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The list below shows the variety of metals/steels to be sent for Conventional and CNC machining, but not limited to

EN 24 condition T	40CrMo V47	21CrMo V 5-7
EN 19 condition T	30CrMo V9	20CrMo VTib 410(Durehette 1055)
34 CrAlNi - 7	24CrMo 4	16Mo3
Nimonic	X22CrMo V12 – 1	EN9 (BS 970 GRADE 070M55)
X35CrMo17 (1 4122)	24CrMo5 (1 7258)	40CrMoV4 – 7

NB: All material for Conventional and CNC machining will be supplied by Matla Workshop, unless otherwise stated

It is of imperative note that whenever an item is sent for Conventional and CNC machining that item will be accompanied with an approved detailed scope of work from Matla Works engineering department. If the contractor for whatever reason is to receive an unapproved scope from Matla Work engineering, the contractor is to ignore such scope and only execute as per approved scope of work. The scope of work will at least include the following points

- 1 A detailed manufacturing drawing(s) with the following will be issued
 - a All dimensions for manufacturing given in all views required
 - b Material specification
 - c Machining tolerances
 - d Machining finish required
 - e Thread and tolerance specifications
 - f Part description with drawing reference No for Identification
 - g Isometric view of final component
- 2 Signed off memo detailing the work to be carried out. The scope will also indicate the following
 - a The quantity required
 - b The thread specs and machining tolerances as per drawings supplied
 - c Inspection of supplied material before machining commences (pictures to be taken and any noticeable defects recorded and to be reported immediately)
 - d Inspection required post manufacturing such as ND testing(NDT)
 - e The required surface finish post manufacturing, smooth with no burrs. Components must be deburred
 - f Dimension inspection of the component as indicated on the scope supplied

The following items need to be sent to Matla Works engineering before any manufacturing commences

- 1 Detail Quality control plan of the work to be carried out
 - a Approval of this document will give technical go ahead of the scope to be carried out
- 2 An as received inspection report of the component, immediately upon receipt (pictures indicating any noticeable defects on the components)
 - a A dispatch inspection of each component will be conducted by Eskom Rotek Industries. Note that this inspection report can be compared upon request with the as received inspection conducted by the subcontractor

NB: An external audit to be conducted by an Eskom Rotek representative will be done before any contract or work is awarded. The audit will determine the capacity and capabilities of the awarded contractor are sufficient to satisfy the requirement discussed above.

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NB: Matla Works QC representative will be available for any QC verification if and when required

4. Reporting

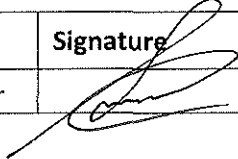
Reporting shall be on weekly basis. Where immediate action is required by Matla engineering personnel the Matla Works engineer and/or technician must be informed immediately. All contact information will be provided.

5. Supporting Documents

NB: The following documentation must be returned for the purpose of technical evaluation:

- a) As received Inspection report
- b) Final inspection report including completed check sheet
- c) NDT Report

6. Document Supported by:

Name	Position	Signature	Date
Sive Madikida	Matla Works Mechanical Manager		29/06/2021

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