Eskom Rotek Industries	**Dual-face spin casing machine** **SCOPE OF WORK**	**Turbo Gen Services**

Title: **Supply and delivery of a Dual Face Spin Casting Machine with accessories**

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1. PURPOSE

The purpose of this document is to define the specifications of equipment to supplied and delivered to Bearing Services section of Eskom Rotek Industries

2. CONTEXT FOR MACHINES AND EQUIPMENT MAINTENANCE AND REPAIRS

Eskom Rotek Industries Bearing Services is in need of a supply and delivery service of equipment as detailed on the below scope of work.

3. SCOPE OF WORK

TYPE OF EQUIPMENT

- Dual face plate spin casting machine and accessories

SPECIFICATIONS OF EQUIPMENT

Base Frame

This comprises of a fabricated, fully welded and machined heavy-duty section. The base unit fully supports the drive and traversing head.

Drive Head

The drive head is designed as a single heavy fabricated box frame fully machined to support the drive shaft and support bearings. The rigidity of the frame reduces vibration allowing for smooth operation. All bearings to be grease lubricated. A Disk brake is to be supplied on the drive shaft.

Traversing Head

The traversing head is of a similar design to the drive head but without the rear shaft support bearings. The shaft is hollow to allow pouring of the Babbitt or whit metal material.

Traversing head Support

The traversing head is supported by a secondary frame which traverses along hardened chrome bars to clamp the production bearing shell. The movement of the traversing head is controlled by two hydraulic cylinders giving precise control and smooth operation**.** The hydraulic cylinders are mounted as close to the centreline of the faceplate to facilitate even clamping and pressure.

Clamping system

The clamping system uses hydraulic cylinders with three safety systems to prevent ejection of the bearing during production.

1. P.O. check valves in case of hose failure
2. A pre-charged accumulator to maintain pressure in case of power failure.
3. Twin cylinders so if one fails pressure is maintained.

The hydraulic system is designed and constructed to the most up to date legislation and can be used with flame resistant fluid if requested.

Faceplates

Supplied with 2 face plates, which are attached to the drive head and traversing head shafts. The precision machined heavy duty plates have sets of drilled and tapped holes on various P.C.D. This allows fixing of the bearing shell locators(dogs), which facilitates ease of centering of the bearing shell during production.

Main Drive

The main drive is a standard IEC general purpose motor with IE2 efficiency. It has been selected for use in an industrial environment and has been found to be highly reliable. The drive unit provides infinitely variable speed operating on the frequency operating and adjustment principle.

Machine Capacity

(a) The dimensional capacity of the machine is as follows:
Maximum outside diameter of face plates 1700mm
Maximum distance between face plates (pos. 1) 1150mm
Minimum inside diameter after lining 150mm
Maximum o/d of bearing 1600mm
Maximum bearing length (pos. 1) 1070mm
(b) The typical maximum weights which can be loaded on the machine are:
Steel shells in halves with tooling 2000kg
Poured white metal 500kg
∴ Total maximum load (in balance) 2500kg
The maximum load quoted refers to components in reasonable balance.
Details on balancing must be provided in the instruction manual.
The total maximum load can be exceeded for certain applications.
(c) The speed range of the machine is such that a constant 'g' factor can be obtained on the interior shell surface irrespective of the bearing size (within the capacity of the machine).
A speed chart is to be provided with the machine to indicate optimum lining speeds.
The standard speed range is infinitely variable up to a top speed of 550 rpm with the appropriate potentiometer control.
The power is transferred to the drive shaft by a standard ‘V’ groove pulley and belt arrangement.

Human machine Interface (HMI)

• The HMI is supplied translated into **English** language.

• Utilizing the latest PLC and HMI program that offers flexibility and is used by leading bearing producers around the world.

• The recipe function allows operators to load approved recipes and supervisors to write and edit new and existing recipes.

• Alarm messaging warns of machine fault conditions and warns/ blocks operator control errors.

• HMI screens are translated into the local language

Centrifugal Metal Lining Machine built to be enclosed and supplied complete with:

• Heavy duty machine base
• Precision machined components
• Robust fully enclosed guarding
• Motorised Guard
• Dual cylinder hydraulic clamping
• Power/hose failure hydraulic safety system
• Modern control panel with PLC & Drive
• HMI with alarm messaging, pictorial display and recipe functionality
• Automated water cooling
• Pouring spout pre-heat burner

ACCESSORIES

• Tinning Bath (Electric) 1200mm x 1000mm x 800mm deep, complete with energy and temperature controls

• Melting-out Station with 2 gas burners and complete with gas control valves

• White Metal Melting/Holding Furnace, manual type, fixed body, capacity Ø400 x 400mm (Nominal 350kg)

• Ultrasonic Flaw Detector including soft faced transducer, twin compression transducer

• Water Re-Circulating System, comprising of pumps, filter, radiator type, heat exchanger with associated control gear.

INSTALLATION AND COMMISSION

• Installation supervision & Start-up Assistance

• Technical Assistance on site in South Africa

Including: commissioning, operator training

• 5-year warranty on hardware

• 2-year warranty on software
    - 5 year service and maintenance plan inclusive of spares

PROOF OF COMPLIANCE WITH THE LAW

The contractor shall ensure that:

1. All employees are registered with the Workmen's Compensation Commissioner in a manner which is acceptable to the Department of Labour and which satisfies the requirement of the compensation for occupational injuries and diseases act.
2. All employees are registered for unemployment.
3. All unskilled/casual staff must be paid in accordance with the Labour Act. The contractor will be responsible for their training.
4. All personnel shall wear the necessary protective clothing in accordance with Occupational Health and Safety Act No.85 / 1993 and the Construction Regulations of 2003.

HEALTH AND SAFETY

The Contractor shall at all times comply with the requirements of the Occupational Health & Safety Act (1993), Construction Regulations (2003) and the Employer's Pre-construction Health and Safety Specification. In pursuit of the aforementioned, the Contractor shall allow for:

- Carrying out and documenting risk assessments of all work to be carried out under the contract.
- Preparation of safe work procedures for all work to be carried out under the contract.
- Preparation of an H&S plan, discussing it with the Employer, and then amending it as agreed.
- Preparation for and conducting "toolbox talks" with relevant employees.
- Induction and training as and where required.
- Preparation of a Project H&S File.
- Regular updating of all of the foregoing.
- Provision of PPE and protective clothing for employees
- Complying with all H&S requirements for the duration of the contract
- Storage of cleaning material / equipment

DOCUMENT SUPPORTED BY:

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