
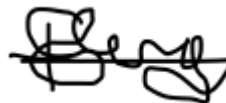


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1. INTRODUCTION

Eskom Rotek Industries SOC Ltd is a wholly owned subsidiary of Eskom Holdings and is requesting information on how it can design and construct as well as populate the detailed bill of materials such that it can execute the design, construction, refurbishment and commissioning of lime stones, coal and ash conveyors.

A Contractor must have adequate design and construction experience in coal and ash conveyor systems and be able to offer design and construction support, supply of spares and materials and commissioning as well have established relationships with various OEMs supplying spares, materials and equipment associated with lime stones, coal and ash conveyors systems.

2. SUPPORTING CLAUSES

2.1 SCOPE

To test the market by requesting information for design and construction proposal as well as detailed bill of materials on how the Contractor will partner with Eskom Rotek Industries SOC Ltd in executing the design, construction, refurbishment and commissioning of lime stones, coal and ash conveyors as well as supplying the spares, materials and equipment for a period of 4 years on when and as required.

2.1.1 Codes and Standards

2.1.1.1 Mechanical (BMH)

- [1] 240-55864503 Belt Conveyor Mechanical Components Standard
- [2] 240-120532564 Splicing and Repairs of Steel Cord and Textile Plied Reinforced Conveyor Belting Standard
- [3] 240-55864504 Belt Conveyor Structural Steelwork and Welding Specification
- [4] ISO 5048 Continuous mechanical handling equipment – Belt conveyors with carrying idlers – Calculation of operating power and tensile forces.
- [5] SANS 1313-1 Conveyor belt idlers Part 1: Troughed belt conveyor idlers (metallic and non-metallic) for idler roller rotational speeds of up to 750 revolutions per minute
- [6] SANS 1313-2 Conveyor belt idlers Part 2: Link suspended idlers and fixed-form suspended idlers (metallic and non-metallic) for idler rotational speeds of up to 750 revolutions per minute
- [7] SANS 1313-3 Conveyor belt idlers Part 3: Performance specifications for troughed belt conveyor idlers (metallic and non-metallic) for idler roller rotational speeds of up to 750 revolutions per minute
- [8] SANS 1173 Conveyor belting - General purpose textile-reinforced construction
- [9] SANS 1669-1 Conveyor belt pulleys Part 1: Pulley types, construction and dimensions
- [10] SANS 1669-2 Conveyor belt pulleys Part 2: Lagging
- [11] 240-119637905 Belt Conveyor Design Review Standard
- [12] 240-55864457 Belt Conveyor Design Manual
- [13] 240-55864479 Belt Conveyor Chute Design Manual
- [14] 240-55864498 Operation and Selection of Fluid Couplings for Belt Conveyor Drives
- [15] 240-5586455 Magnetic Separators and Metal Detectors Standard
- [16] 240-55864550 Mass Meters for Coal Measurement in Power Stations Design Standard

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[17] OHS Act Occupational Health and Safety Act, 1993

2.1.1.1.2 Electrical

- [18] 240-56227443 Requirements for Control and Power Cables for Power Stations Standard
- [19] 240-53114214 Cabling and racking standard
- [20] 240-56357424 MV and LV Switchgear Protection Standard
- [21] 240-56356396 Earthing and Lightning Protection Standard
- [22] 240-56227516 LV Switchgear and Control Gear Assemblies and Associated Equipment for Voltage up to and including 1000V AC and 1500V Standard
- [23] 240-55714363 Coal Fired Power Stations Lighting and Small Power Installation Standard
- [24] 240-57617975 Procurement of Power Station Low Voltage Motors Specification
- [25] 240-50237155 New MV Motor Procurement Standard
- [26] 240-56361435 Transport of Power Station Electric Motors Standard
- [27] 240-56360387 Storage of Power Station Electric Motors
- [28] 240-56536505 Hazardous Locations Standard
- [29] 240-56227573 Air Insulated Withdrawable AC Metal Enclosed Switchgear and Control Gear for rated voltages above 1kV up to and including 52kV
- [30] 240-143485806 Generation Auxiliary plant MV Protection standard
- [31] 240-8697501 Engineering drawing standard
- [16] 240-57648800 New oil filled auxiliary transformers rated 1 MVA and below 33kV

2.1.1.1.3 Control and Instrumentation

- [32] 240-563557516 Field instrument installation standard
- [33] 240-56385815 Field Instrument installation standard for Junction boxes and cable termination
- [34] 240-56227516 Requirement for Control and Power cables for Power station Standard
- [35] 240-56355731 Environmental Conditions for Process Control Equipment
- [36] 240-56356396 Earthing and Lighting Protection
- [37] 240-56227927 Electrical Load List template
- [38] 240-56355466 Alarm Management System Guideline

2.1.1.1.4 Civil and Structures

- [39] 240-56364535 Architectural Design and Green Building Compliance Manual
- [40] 240-56364545 Structural design and Engineering standard
- [41] SANS 10100-1 The Structural Use of Concrete Part 1 – Design
- [42] SANS 10100-2 The Structural Use of Concrete Part 2 – Materials and execution of work
- [43] SANS 10160 Basis of structural design and actions for buildings and industrial structures
- [44] SANS 10162-1 The structural use of steel Part 1: Limit-states design of hot- rolled steelwork

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- [45] SANS 10162-2 The structural use of steel Part 2: Cold-formed steel structures
- [46] SANS 10400 The application of the National Building Regulations
- [47] SANS 1200 Standardised specification for civil engineering construction
- [48] SANS 2001 Construction Works
- [49] SANS 12944 Corrosion Protection of Steel Structures
- [50] 240-85549846 Standard for Design of Drainage and Sewerage Infrastructure
- [51] 240-84418186 Road Specification Manual
- [14] NRS060 Code of Practice for Clearance of Electrical Systems up to 145 kV

2.1.1.1.5 Fire System

- [52] 240-54937439 Fire Protection/ Detection Assessment standard
- [53] 240-54937450 Fire Protection & life safety Design Standard
- [54] NFPA 68 Standard on Explosion Protection by Deflagration Venting The Classification of Hazardous Locations and the Selection of
- [55] NFPA 15 Standard for Spray Fixed Systems
- [56] 240-56737448 Fire Detection and Life Safety Design Standard
- [57] NFPA 13 Standard for Installation of Sprinkler System
- [58] NFPA 2001 Standard on Clean Agent Fire Extinguishing Systems
- [59] NFPA 850 Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations
- [60] 240-54937454 Inspection, Testing and Maintenance of Fire Protection Systems

2.1.1.1.6 Low Pressure Services

- [61] 240-123801640 Standard for low pressure pipelines
- [62] 240-108079430 Power Plant water systems Design guideline
- [63] 240-105020315 Standard for low pressure valves
- [64] SANS 121 Hot Dip Galvanized Coatings on Fabricated Iron and Steel Articles – Specification and Test Method
- [65] SANS 62 Steel Pipes
- [66] SANS 719 Electric Welded Low Carbon Steel Pipes for Aqueous Fluids (Large Bore)
- [67] SANS 1476 Fabricated Flanged Steel Pipework
- [68] SANS 815 Shoulder-ended and Groove-ended Piping Systems
- [69] SANS 533 Black Polyethylene Pipes for the Conveyance of Liquids
- [70] SANS 14 Malleable Cast Iron Fittings Threaded to ISO 7-1
- [71] SANS 1223 Fibre-cement Pressure Pipes and Couplings
- [72] SANS 966 Components of Pressure Pipe Systems Part 2: Modified Poly(vinyl chloride)(PVC-M) Pressure Pipe Systems

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- [73] SANS 1748 Glass Fibre Reinforced Thermosetting Plastics (GRP) Pipes: Part 3 Pipes, Fittings, and Ancillaries for Underground (Buried) Fire Protection Services
- [74] SANS 1123 Pipe Flanges
- [75] SANS 1700 Fasteners
- [76] SANS 1143 Mushroom- and Countersunk-head Bolts and Nuts
- [77] SANS 191 Cast Steel Gate Valves
- [78] SANS 226 Water Taps (metallic bodies)
- [79] SANS 776 Copper Alloy Gate Valves – Heavy Duty
- [80] SANS 664 Wedge Gate and Resilient Seal Valves for Waterworks
- [81] SANS 665 Wedge Gate and Resilient Seal Valves for General Purposes
- [82] SANS 198 Functional-control Valves and Safety Valves for Domestic Hot and Cold Water Supply Systems

2.1.2 Informative

- [83] 240 – 53113685: Design Review Procedure
- [84] 240-53114026, Project Engineering Change Procedure.
- [85] 240-4332798, Engineering Policy.

2.2 DEFINITIONS

Contractor	Person or company undertaking to perform work for the Employer.
Employer	Client for this Scope of Works.

2.2.1 Classification

a. Controlled Disclosure

2.3 ABBREVIATIONS

Abbreviation	Description
A	amperes
BMH	Bulk Materials Handling
C&I	Control and Instrumentation
CS	Construction Services
COC	Electrical certificate of compliance
ERI	Eskom Rotek Industries
DB	Distribution board
FAT	Factory Acceptance Test
LPS	Low Pressure Services
NFPA	National Fire Protection Association

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Abbreviation	Description
OEM	Original Equipment Manufacturer
QCP	Quality control plan
SANS	South African National Standards
SD & L	Supplier Development and Localization

2.4 ROLES AND RESPONSIBILITIES

2.4.1 Minimum Requirements

N/A

2.5 PROCESS FOR MONITORING

2.6 RELATED DOCUMENTS

3. SCOPE OF WORK FOR CONSTRUCTION AND SUPPLY OF SPARES AND MATERIALS

3.1 MECHANICAL WORKS

3.1.1 Main Works Bulk Materials Handling

Based on Eskom standards and specifications, the *Contractor* shall supply provide the design and construction proposal as well as detailed list of bill of material related to main mechanical spares and materials required to execute the works as per the specific project. In instances where the *Contractor* will be sourcing the spares or materials from third parties or others, the names of related OEM/s shall be provided and where possible the catalogue of such spares and materials shall be submitted.

The list of mechanical materials and spares to be supplied by the *Contractor* should be based previous design where the Contractor has previously executed similar construction and design works. It will be the responsibility of the *Contractor* to familiarize himself with various OEMs currently being used by Eskom on its coal plant fleet. All spares and materials proposed should comply to applicable Eskom BMH standards and specifications. The key mechanical commodities to be supplied by the *Contractor* includes but not limited to:-

- Gearboxes
- Drives
- Holdbacks
- Brakes
- Lubricating systems
- Greases
- Low speed couplings
- High speed hydrodynamic couplings
- Fluid couplings
- V-belts and v-belts pulleys

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- Idlers
- Conveyor belting
- Cover guards
- Nip points and nip point guards
- Interlocks
- Flexible coupling shear pins/bolts
- Conveyor pulleys
- Conveyor belt cleaning systems
- Bearings
- Magnets
- Plummers
- Conveyor gravity take up equipment
- Moving heads and shuttle conveyors
- Hydraulic systems
- Greasing system

3.1.2 Lifting, Movable Head and Tensioning Equipment

Based on Eskom standards and specifications, the *Contractor* shall supply provide a detailed list of bill of material related to lifting, movable head and tensioning equipment and materials required to execute the works as per the specific project. In instances where the *Contractor* will be sourcing or proposing the spares or materials from third parties or others, the names of related OEM/s shall be provided and where possible the catalogue of such spares and materials shall be submitted.

The list of lifting, movable head and tensioning equipment and materials to be supplied by the *Contractor* should be based on the previous design/s where the Contractor has previously executed the works. It will be the responsibility of the *Contractor* to familiarize himself with various OEMs to lifting equipment and movable head spares and materials and in South Africa. All lifting equipment and movable head materials and spares proposed should comply to applicable Eskom BMH, Civil, C&I and Electrical standards and specifications. The Contractor shall provide detailed bill of materials, where applicable catalogues and respective OEMs. The lifting, movable head and tensioning equipment and materials to be supplied by the *Contractor shall* include but not limited to:-

- Chains blocks and fittings;
- Crawl beams and fittings;
- Motorized winches
- Thimble
- Crosby clamps
- Wire rope
- Turnbuckle
- D-shackle
- Wires rope

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- Sheaves & Winches (Incl. Ropes and clamps)
- Manual hoists, electric hoists, and pneumatic hoists;
- Take-Up cylinders
- Testing and certification.

3.1.3 Low Pressure Services (LPS) and Fire System

Based on Eskom standards and specifications, the *Contractor* shall supply provide a detailed list of bill of material related to LPS and Fire System spares and materials required to execute the works as per the specific project. In instances where the *Contractor* will be sourcing or proposing the materials and spares from third parties or others, the names of related OEM/s shall be provided and where possible the catalogue of such spares and materials shall be submitted.

The list of LPS and Fire System materials and spares to be supplied by the *Contractor* should be based on the previous design/s where the Contractor has previously executed the works. It will be the responsibility of the *Contractor* to familiarize himself with various OEMs of LPS and Fire System materials and spares in South Africa. All LPS materials and spares proposed should comply to applicable Eskom LPS and Fire System standards and specifications. The Contractor shall provide detailed bill of materials, where applicable catalogues and respective OEMs. The LPS and Fire System materials and spares to be supplied by the *Contractor shall* include but not limited to:-

- Fire piping
- Pressure gauges
- Hose reels
- Sprinklers
- Fire extinguishers (9kg)
- Fire Hydrants
- HDPE piping
- uPVC piping
- Steel piping
- Pumps
- Flanges
- Pipe fittings

3.2 STRUCTURAL STEEL MECHANICS

Based on Eskom standards and specifications, the *Contractor* shall supply provide the design and construction proposal as well as detailed list of bill of material related to steel materials required to execute the works as per the specific project. In instances where the *Contractor* will be sourcing the steel materials from third parties or others, the names of related OEMs/Suppliers shall be provided and where possible the catalogue of steel materials shall be submitted.

The list of steel materials to be supplied by the *Contractor* should be based on previous design where the Contractor has previously executed similar design and construction works. It will be the responsibility of the *Contractor* to familiarize himself with various reputable OEMs/Suppliers currently being used by Eskom on its coal plant fleet. All spares and materials proposed should comply to applicable Eskom BMH and Civil standards and specifications. The steel components to be supplied by the *Contractor* includes but not limited to:-

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- Chutes
- Idler frames
- I-sections, H-sections, c-channels, angle sections, square tubes, round tubes etc
- Gratings
- Handrails
- Staircases
- Steel hopper bins
- Steel plates

3.3 ELECTRICAL

Based on Eskom standards and specifications, the *Contractor* shall supply provide the design and construction proposal as well as detailed list of bill of material related to electrical equipment and spares required to execute the works as per the specific project. In instances where the *Contractor* will be sourcing the electrical equipment or components from third parties or others, the names of related OEMs/Suppliers shall be provided and where possible the catalogue of electrical equipment and spares shall be submitted.

The list electrical equipment and spares to be supplied by the *Contractor* should be based on previous design where the *Contractor* has previously executed similar design and construction works. It will be the responsibility of the *Contractor* to familiarize himself with various reputable OEMs currently being used by Eskom on its coal plant fleet. All electrical equipment and spares proposed by the *Contractor* should comply to applicable Eskom Electrical standards and specifications. The electrical equipment and spares to be supplied by the *Contractor* includes but not limited to:-

- Motors (Various sizes);
- Variable Speed Drives;
- Electrical cables;
- Racking;
- Small power lighting and associated accessories;
- Plugs; and
- Distribution Boards (DB's).

3.4 CONTROL AND INSTRUMENTATION

Based on Eskom standards and specifications, the *Contractor* shall supply provide the design and construction proposal as well as detailed list of bill of material related to Control and Instrumentation (C&I) equipment or spares required to execute the works as per the specific project. In instances where the *Contractor* will be sourcing the electrical equipment or components from third parties or others, the names of related OEMs/Suppliers shall be provided and where possible the catalogue of C&I equipment and spares shall be submitted.

The list C&I equipment and spares to be supplied by the *Contractor* should be based on previous design where the *Contractor* has previously executed similar design and construction works. It will be the responsibility of the *Contractor* to familiarize himself with various reputable OEMs currently being used by Eskom on its coal plant fleet. All C&I equipment and spares proposed by the *Contractor* should comply to applicable Eskom C&I standards and specifications. The C&I equipment and spares to be supplied by the *Contractor* includes but not limited to:-

- Emergency stop (E-stop) buttons

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- Pull-key switches/ pull wires/pull ropes
- Fibre optic cable
- Belt overload
- Belt misalignment switches
- Belt tear detection switches
- Belt rip detection switches
- Block chute detectors
- Cord guard system
- Take-up over-travel limit switches
- Fluid coupling over temperature switches / fusible plugs
- Fire detection and protection systems
- Coal Analysers
- Coal Weighers
- Warning alarms, sirens, warning beacons or lights
- Conveyor Start-up warning strobe light.
- Conveyor moving head proxy and limit switches
- Conveyor belt motor thermal overload equipment, earth fault and over-current devices
- Motor current sensor per phase.
- Motor bearing and winding temperature sensors
- Motor speed sensor to protect the drive against over-speed.
- Gearbox oil temperature sensor to prevent deterioration of lubricant.
- Fluid coupling failure.
- Brake failure (if required).
- Fibre optic cable

3.5 CONSTRUCTION AND COMMISSIONING SUPPORT

For the purpose of Employer's information The Contractor shall provide the detailed organogram showing all disciplines, high level planning showing sequence of construction and CVs of the following resources:

- Project Manager
- Construction Manager
- Construction Supervisors
- Quality Controllers
- Materials Controller

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3.6 OTHER WORKS

Other information that should be included on the returnable is high level of bill of material or rate on the following items:-

- Sand blasting, corrosion protection, coating and painting
- Ceramic tiling
- Pulley lagging
- Conveyor splicing
- Site disassembly and re-assembly
- Welding materials and consumables
- Flanges, bolts and nuts or any other miscellaneous items required or necessary to execute the works

4. DESIGN

The Contractor is expected to provide the proposal on how the detail design including drawings and 3D models will be carried out. The following disciplines should be covered in the proposal:-

- Civil & Structures;
- Control & Instrumentation;
- Electrical; and
- Mechanical .

Contractor to propose design software packages and manhours required to execute the design works as per the above engineering disciplines.

5. BILL OF MATERIALS

The Contractors shall provide detailed bill of materials. The Bill of materials shall be based on previous design and construction works performed by the Contractor.

6. AUTHORISATION

This document has been seen and accepted by:

Name & Surname	Designation
Andrew Matlala	Eskom Generation Engineering – Chief Engineer
Vishal Magan	Head of Engineering – ERI BMS
Tshidiso Lekalakala	Senior Mechanical Engineer – ERI BMS
Khomotso Mothata	Project Manager – ERI CS
Tshepo Motlhabane	BMH Mechanical Engineer – ERI BMS

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7. REVISIONS

Date	Rev.	Compiler	Remarks
July 2022	1.0	R Murawo	Draft Document
May 2023	1.1	K. Mothata	Revised Draft Document to align with Eskom Standard and Specifications
June 2023	2	K. Mothata	Final document incorporated with Eskom Generation's comments

8. DEVELOPMENT TEAM

The following people were involved in the development of this document:

- Khomotso Mothata

9. ACKNOWLEDGEMENTS

- Eskom Generation Engineering (BMH)

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