Eskom	Specification	Medupi Power Station

Title: **Medupi Power Station Water Plants Pumps, Compressors, Gearboxes and Blowers Spares Scope of Work**

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1. Introduction

Medupi Power Station consists of various water plants to treat and ensure that the water, steam, and condensate quality is within the prescribed and acceptable limits in accordance with to chemistry guidelines and standards. The availability of all equipment and components is crucial for the performance of these plants as well as the station at large. This document contains the scope of work for spares supply of the moving machinery of the Water and Sewage Treatment Plants and Condensate Polishing Plant necessary for the proper maintenance of the respective system. The scope also aims to ensure maximum availability of the plants by ensuring the spares stock levels are maintained.

2. Supporting Clauses

2.1 Scope

The scope of this document covers the following plants,

1. Main water treatment plant (WTP)
2. Mobile water treatment plant (Mobile)
3. Condensate polishing plant (CPP)
4. Sewage treatment plant (STP)

The Works shall comprise of sourcing, supply, delivery, offloading at Medupi Power Station stores the pumps, compressors, and gearboxes listed in Appendix A. The Works shall include the supply of components necessary to and refurbishment of all equipment listed.

2.1.1 Purpose

The purpose of this document is to define the technical specification for a spares supply contract for the pumps, compressors, and gearboxes for water plants at Medupi Power Station.

2.1.2 Applicability

This document shall apply to Medupi Power Station Condensate Polishing, Water and Sewage Treatment plants.

2.1.3 Effective date

This document is effective from the date of authorization.

2.2 Normative/Informative References

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

2.2.1 Normative

[1] ISO 9001 Quality Management Systems

[2] Environmental Incident Management Procedure - 240-133087117

[3] ESKOM SHEQ Policy 32-727

[4] Life Saving-Rules – 240-62196227

[5] Medupi Power Station - SHE File Evaluation Checklist - 240-97661287

[6] Medupi Power Station Working at Heights Work Instruction - 240-135676724

[7] 240-96483144 Medupi Power Station Water Treatment Plant Spares Strategy

[8] 240-147762349 Medupi Power Station Mobile Water Treatment Plant Spares Strategy

[9] 240-102552211 Medupi Power Station Chemicals Handling and Dosing System Spares Strategy

[10] 240-89336596 Medupi Power Station Sewage Treatment Plant Spare Strategy

[11] 240-95475257 Medupi Power Station Condensate Polishing Plant Spares Strategy

2.2.2 Informative

[1] 240-89564072 Medupi Power Station Water Treatment Plant Maintenance Strategy

[2] 240-147775984 Medupi Power Station Mobile Water Treatment Plant Maintenance Strategy

[3] 240-104021467 Medupi Power Station Chemicals Handling and Dosing System Maintenance Strategy

[4] 240-96302541 Medupi Power Station Sewage Treatment Plant Maintenance Strategy

[5] 240-96483100 Medupi Power Station Condensate Polishing Plant Maintenance Strategy

2.3 Definitions

Definition	Explanation
Contractor	Service provider contracted for the works as specified in this scope
Employer	Eskom Medupi Power Station

2.4 Abbreviations

A	Amps
AUX	Auxiliary
BOM	Bill Of Materials
C&I	Control and Instrumentation
CEDI	Continuous Electro-deionisation
CIP	Cleaning in Process
CPP	Condensate Polishing Plant
EMD	Electrical Maintenance Department
GTM	Gas Transfer Membrane
LOPP	Life of Plant Plan
M	Meter
ND	Non-drive end
NRV	Non-Return Valve
OEM	Original Equipment Manufacturer
P&ID	Piping and Instrumentation Diagram
PSA	Pressure Swing Absorption
QCP	Quality Control Plan
RO	Reverse Osmosis
RPM	Revolutions per minute
SOW	Scope of Works
STP	Sewage Treatment Plant
V	Volts
WTP	Water Treatment Plant

2.5 Roles and Responsibilities

Contractor/Supplier is responsible to deliver as per their commitment and to adhere to the contract and delivery of correct spares.

The employer/Purchaser is responsible to ensure that correct spares is delivered (QC), and supplier is paid on time, and that the adhere to the contract and SOW.

- **Maintenance** is responsible for quality control on delivery of spares as well as to ensure damaged components are booked back into stores for refurbishment where applicable.
- **Engineering** shall conduct the technical evaluation and form part of the quality control process when a spare is delivered on site
- **Procurement** will be part of the contract placement process and communication with the contractor until contract award.
- **Materials Management** is responsible to manage this contract in line with this SOW.

2.6 Process for Monitoring

This document shall be revised should there be a need to revise the SOW.

2.7 Related/Supporting Documents

a) 240-96483144 Medupi Power Station Water Treatment Plant Spares Strategy
b) 240-147762349 Medupi Power Station Mobile Water Treatment Plant Spares Strategy
c) 240-102552211 Medupi Power Station Chemicals Handling and Dosing System Spares Strategy
d) 240-89336596 Medupi Power Station Sewage Treatment Plant Spare Strategy
e) 240-95475257 Medupi Power Station Condensate Polishing Plant Spares Strategy
f) 240-89564072 Medupi Power Station Water Treatment Plant Maintenance Strategy
g) 240-147775984 Medupi Power Station Mobile Water Treatment Plant Maintenance Strategy
h) 240-104021467 Medupi Power Station Chemicals Handling and Dosing System Maintenance Strategy
i) 240-96302541 Medupi Power Station Sewage Treatment Plant Maintenance Strategy
j) 240-96483100 Medupi Power Station Condensate Polishing Plant Maintenance Strategy

3. Spare Scope of Work

The scope for the supply of spares shall be in accordance but not limited to

- All spares in the latest revision of [1] and as stated in BOM.

The scope comprises of sourcing, supply, delivery and offloading of the various pumps, compressors, and gearboxes at Medupi Power Station. The Works include the supply of all the components and kits that are required for the refurbishment of these pumps, compressors, and gearboxes.

The contract is envisaged to be a 60-month contract and shall cover the following systems.

- Main water treatment plant: This shall be inclusive of the chemical dosing system, chemical dosing to auxiliary cooling plant and to the steam-water cycle.
- Condensate polishing plant: This shall be inclusive of the CPPs' common regeneration system.
- Mobile water treatment plant.
- Sewage treatment plant.

3.1 Supply of Spares

The Works include the following:

1. The description of the spares and the quantities that the *Employer* envisages for the duration of the contract is indicated in Appendix A. This value will be used with other estimates to determine the overall contract value. It should be noted that this is just an

estimate, and it does not mean that the *Employer* will definitely consume the spares in the duration of the contract. These quantities are therefore not fixed, and the *Contractor* will only supply spares when instructed by a purchase order, from the *Employer*, to do so.

2. Spares that are not included in the list will be supplied as part of the "Miscellaneous spares not specified" portion, as indicated in 3.5.
3. The spares and components will be supplied to the "goods received" section of the Medupi main store where it will be received by the material management section. The spares will be delivered with all the required data books and certificates, where required.
4. A draft QCP shall be submitted (at least 2 weeks prior to starting any work) withhold and witness points specified, for review by Engineering prior to manufacturing, procurement or refurbishments.
5. The *Employer* shall be given sufficient notice by the *Contractor* of any witness and hold points identified for adherence in the QCP. These points may be waived (in writing) by the *Employer* from time to time depending on technical staff availability.
6. Only once the spares have passed the Quality Control checks and are booked into the system can payment be affected.
7. Hardcopies as well as electronic copies of the manufacturing Data Books shall be supplied to the *Employer* with or before the delivery of any spare. This Data Book will be used during on site Quality Control checks to confirm correctness of spare/component delivered.
8. The manufacturing Data Book shall contain as a minimum, but shall not be limited to, approved quality control plan, material certificates, test reports, material catalogue, non-destructive testing reports/certificates.
9. The Spares shall comply shall be as specified. This includes all aspects such as design, materials and material specifications, manufacturing, including manufacturing processes, calibration certificates and acceptance testing. Where spares offered deviate from the original in any respect, it should be indicated to the *Employer* upon quotation/query.
10. It is the *Contractor's* responsibility to ensure that correct spares are delivered. If the incorrect spares are delivered, the spares will have to be replaced with the correct spares at the *Contracto*r cost. This includes transport and delivery.
11. The Delivery and Transport Costs must be included in the quotation.
12. The following packaging requirements should be adhered to:
    a) The Goods are to be packaged in such a manner that it can be transported and stored for an extended period of time without resulting in damage to the goods.
    b) This includes damage due to moisture ingress, corrosion, dust and/or vibrations.
    c) Where lifting gear is utilised to move the goods, the packaging should allow the lifting operation and ensure that the goods are not damaged in any way during the process.
    d) It will also not be necessary to open packaging for any lifting or transport operation.
    e) Where eye bolts are fitted to move the goods, these eye bolts should be fitted such a way that they can be easily removed and replaced with the *Employers*' eye bolts, ensuring that the packaging stays intact.
    f) Packaging and labelling of the components should ensure that the spare can be identified without opening the packaging.
    g) Delivery packaging to have the following detail on it as a minimum (removable adhesive sticker if possible):
        i. Order number,

ii. A short description of component
iii. The stock numbers
iv. Manufacturing date (refurbishment date if applicable)
v. Space for adding the installation date

h) The documentation for preservation requirements should be delivered with the component.

3.2 Obsolescence

1. All spares shall be supplied in accordance the specifications as detailed.
2. Any components that are deemed to be obsolete shall be replaced with an equivalent spare as recommended by the OEM on condition that:
   - The OEM of the product deems the component obsolete in writing. Local distributors are to obtain written communications with the OEM stating such to be in effect.
   - An equivalent of the component from the OEM for the components detailing any retrofitting that will be required with the new spare.
   - Full technical datasheet of the component that has been superseded.
   - Full technical datasheet of the component that supersedes the obsolete part.
3. No equivalent spare shall be accepted if the above bullets are not adhered to.

3.3 Alternatives

1. No technical deviations or alternatives to the technical specifications shall be permitted.
2. In the case of obsolescence, the *Contractor* shall follow 3.2 as stated above.
3. In instances where 3.2 does not apply the *Contractor* shall
   - Engage the *Employer* with the alternative proposal.
   - The proposal shall include the datasheet of the item.
   - Prior to purchase and/ or delivery of the alternative, the deviation shall be approved.
4. Any deviation to the above stated shall not be accepted.

3.4 Fabrication

1. All components that are to be fabricated shall be in accordance with the specifications provided.
2. The *Contractor* shall come to site to do measurements of the items that require fabrication.
3. The *Contractor* shall provide drawings that will be approved by the *Employer* prior to the fabrication of any components.
4. The *Contractor* shall provide all testing certificates as required.
5. Any technical deviations shall be addressed as per 3.1 & 3.3 above.

3.5 Miscellaneous spares

1. Miscellaneous spares such as pipes, pipe supports, (miter) bends, clamps, gaskets, flanges, fittings such as nipples/weldolets/thriolets/others, consumables, leak sealing devices and wraps, soft kits, engine consumables, FPAS.

3.6 Warranty

1. All components shall carry a 24-month warrantee from date of delivery
2. All components shall carry a further 12-month warrantee after installation (which shall not shorten the warranty after delivery), coupling alignment as well as drive vibration reports will be available and used as baseline for spare/component installation
3. Any specific requirements to enable the 12-month warrantee shall be brought forward by the *Contractor* for agreement during negotiations. If witnessing of installation is required, this will be at the *Contractor's* own cost.
4. The warranty shall cover, but not be limited to, minor defects identified, for example: shaft oil seal leakages, minor oil leaks, cooling fan, safety guard or breather related issues, etc.
5. Defective spares under warranty shall be replaced within two (2) months by the *contractor*.

4. Acceptance

This document has been seen and accepted by:

Name	Designation
Tshepo Sethosa	Auxiliary Mechanical Maintenance Manager
Hogen Sihlangu	Snr Supervisor Tech Maint
Maripa Seepe	Snr Supervisor Tech Maint
Ledile Mokgetlhe	Technician Mechanical
Natly Mokoala	Technician Mechanical
Lebo Pebane	Officer Inventory Account
Thapedi Ramokgoname	Officer Materials Planning
Aubrey Mokgotho	Officer Materials Planning
Mosekami Mokgala	Middle Manager Procurement

5. Revisions

Date	Rev.	Compiler	Remarks
October 2025	2	Refiloe Mphela	Removed Refurbishment of Spares/components scope.
May 2025	1	Refiloe Mphela	Addition of BOM table
January 2024	0	Nyameko Mkhatshane	Draft

6. Development Team

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

- Nyameko Mkhatshane
- Motlatso Monene
- Refiloe Mphela

7. Acknowledgements

N/A

Appendix A: Bill of Materials

PLANT DESCRIPTION	MATERIAL NUMBER	APPLICABLE KKS NUMBER/S	MATERIAL ITEM CHARACTERISTICS (DETAIL DESCRIPTION WITH DEFINING DESIGN CHARACTERISTICS)	OEM	EXPECTED QUANTITIES OVER 5 YEARS	LAB CODE
PUMPS						
WTP						
SMBS Transfer Pump 001/005	0633936	0 0GDN70 AP001/005	CENTRIFUGAL PUMP, MODEL ARMEK HTT3000 PP, STAGE 1, HORIZONTAL, FLOW RATE 1.84 m^3/Hr, MAX 8.5 m^3/Hr, PUMP SPEED 2900 RPM, DELIVERY PRESURE 150 KPa, LIQUID SMBS, POWER 0.37 KW, VISCOSITY 200cST, DENSITY 1.15 Kg/dm^3, MOTOR SIZE 0.55 KW, DIRECTION OF ROTATION CLOCKWISE, IMPELLER TYPE MAGNETIC DRIVEN TURBINE, CASING SUPPORT FEET, **FLANGES** SUCT-SIZE/POSITION G 3/4 INCH, DISCH SIZE/POSITION G 3/4 INCH, **MATERIALS** SUCT CASING PP, IMPELLER PVDF, O RING EPDM, SHAFT AL203 99.7 %, SHAFT PROT.SLEEVE EPDM, BEARING PTFEC, PAINTING HIGHLY CORROSIVE.	ARMEK	3	WAT
Coagulant Transfer Pump 001/021		0 0GDN74 AP001/021	PERISTALTIC HOSE (ROTOR AND SHOE) PUMP, MODEL MOUVEX (ABAQUE), STAGE 1, HORIZONTAL,FLOW RATE 5 m^3/Hr, OPERATING PRESSURE 100 KPa, PUMP SPEED 28 RPM, MOTOR SIZE 4KW 4 POLE, OPERATION CAN RUN DRY/WET AND CLOCKWISE/ANTI-CLOCKWISE, LIQUID COAGULANT (ALUMINIUM SULPHATE 27 %, pH 2.1) TEMP 10°C MIN AND 45°C MAX, POWER 3 KW, VISCOSITY 25 mm^2/s, DENSITY 1.2 TO 1.3 Kg/dm^3, SEAL FREE, DIRECTION OF ROTATION CLOCKWISE, BEARING/LUBRICATION GLYCERIN 99,5, CASING SUPPORT FEET, **FLANGES** SUCT-SIZE/POSITION 65NB (TOP), SUCT DRILLING STAINLESS STEEL-DIN 2633 PN16, DISCH SIZE/POSITION 65NB (BOTTOM), DISCH DRILLING STAINLESS STEEL-DIN 2633 PN16, **MATERIALS** PUMP CASING EPOXY COATED MILD STEEL, VIEWING COVER PLEXIGLAS/STEEL,ROTOR DUCTILE IRON, SHOES CAST IRON, SHAFT STAINLESS STEEL, HOSE RUBBER (EPDM), HOSE INSERTS STAINLESS STEEL, PAINTING FOR A HIGHLY CORROSIVE ENVIROMENT.	MOUVEX	2	WAT
Power Unit 1/2/3/4/5/6 Ammonia Dosing Pump 011/021		0 0GDN06/070/08/09/10/11 AP011/021	DIAPHRAGM PUMP, DMH 170-50 B-SS/E/SS-X-O1A1A1	GRUNDFOS	6	WAT

PLANT DESCRIPTION	MATERIAL NUMBER	APPLICABLE KKS NUMBER/S	MATERIAL ITEM CHARACTERISTICS (DETAIL DESCRIPTION WITH DEFINING DESIGN CHARACTERISTICS)	OEM	EXPECTED QUANTITIES OVER 5 YEARS	LAB CODE
Filtered Water Tanks Caustic Dosing Pump 011/021	0633959	0 0GDN26 AP011/021	DIAPHRAGM PUMP, DMH 24-10 B-PP/E/T-X-O1B3B3	GRUNDFOS	3	WAT
RO 2 Caustic Dosing Pump 011/021	0633958	0 0GDN27 AP011/021	DIAPHRAGM PUMP, DMH 67-10 B-PP/E/T-X-O1B4B4	GRUNDFOS	3	WAT
RO 2 Caustic Dosing Pump 011/021	727246	0 0GDN27 AP013/023	DIAPHRAGM PUMP, DDA 7.5-16FCM-PV/T/C-F-31U2U2FG	GRUNDFOS	3	WAT
UF CEB Caustic Dosing Pump 011/021	0633957	0 0GDN28 AP011/021	DIAPHRAGM PUMP, DMH 1150-10/2 B-PP/E/G-X-O1B5B5	GRUNDFOS	3	WAT
Neutralisation Sump Caustic Dosing Pump 011/021	0633954	0 0GDN30 AP011/021	DIAPHRAGM PUMP, DMH 550-10 B-PP/E/T-X-X7B4B5	GRUNDFOS	3	WAT
UF Feed Caustic Dosing Pump 011/021	0633953	0 0GDN31 AP011/021	DIAPHRAGM PUMP, DMH 46-10 B-PVC/E/T-X-O1B1B1	GRUNDFOS	3	WAT
Filtered Water Supply Pump 001/011		0 0GDN40 AP001/011	CENTRIFUGAL PUMP, MODEL EBARA PRA150T, STAGE 1, HORIZONTAL,FLOW RATE 1 m^3/Hr, HEAD (DIFF PRESSURE) 77 m, PUMP SPEED 3000 RPM, DESING PRESURE 1.2 MPa, IMPELLER DIA + FORM 77mm, LIQUID CLEAN WATER, DESIGN TEMP 80°C, POWER 1.1 KW, VISCOSITY 1 mm^2/s, DENSITY 1 Kg/dm^3, SHAFT SEAL MECHANICAL, DIRECTION OF ROTATION CLOCKWISE, SEALED BALL BEARING, IMPELLER TYPE PERIPHERAL TURBINE, CASING SUPPORT FEET, **FLANGES** SUCT-SIZE/POSITION 25 MM/1 INCH BSP, SUCT DRILLING FEMALE THREADED, DISCH SIZE/POSITION 25 MM/1 INCH BST, DISCH DRILLING FEMALE THREADED, **MATERIALS** PUMP CASING & DISCHARGE COVER CAST IRON, IMPELLER BRASS CASING WEAR RING AISI 304, SHAFT CARBON STEEL-AISI 303 (WET EXTENSION), SHAFT SEAL CERAMIC/CARBON GRAPHITE, PEDESTAL CAST IRON.	ZILMET	2	WAT
Raw Water Inlet Sulphuric Dosing Pump 011/021	0633960	0 0GDE08 AP011/021	DIAPHRAGM PUMP, 95715837/DMH 67-10 B-PV/T/T-X-O1B4B4	GRUNDFOS	3	WAT

PLANT DESCRIPTION	MATERIAL NUMBER	APPLICABLE KKS NUMBER/S	MATERIAL ITEM CHARACTERISTICS (DETAIL DESCRIPTION WITH DEFINING DESIGN CHARACTERISTICS)	OEM	EXPECTED QUANTITIES OVER 5 YEARS	LAB CODE
Neutralisation Sump Sulphuric Dosing Pump 011/021	0633956	0 0GDE09 AP011/021	DIAPHRAGM PUMP, DMH 550-10 B-PV/T/T-X-X7B4B5	GRUNDFOS	3	WAT
UF CEB Sulphuric Dosing Pump 011/021	0633955	0 0GDE10 AP011/021	DIAPHRAGM PUMP, DMH 1500-4/2 B-PV/T/T-X-O1B5B5	GRUNDFOS	3	WAT
RO 1 Sulphuric Acid Dosing Pump 011/021		0 0GDE11 AP011/021	DIAPHRAGM PUMP, DMH, P/N 253-67-10173, HEAD PRESSURE 1000 KPa, HEAD TEMP 60°C, STROKE FREQUENCY 96/SEC, STROKE AND FREQUENCY ADJUSTMENT MANUAL, MIN AND MAX FLOWRATE 6.7 L/H, POWER @ MAX STROKE 0.16 KW, **NOZZLE: SUCTION & DISCHARGE** SIZE 1 ¼', RATING 10, **MATERIAL**: PUMP HEAD PVDF, DIAPHARM PTFE, PLUGER/PISTON CARBON STEEL, **VALVE**: SEAT AND BALL PTFE, BODY PVDF, GASKET PTFE, **RELIEF VALVE:** CASING FORGED STEEL, SEAT PTFE, SPRING STAINLESS STEEL, BARING HOUSING ALUMINIUM	GRUNDFOS	3	WAT
RO 1 Sulphuric Acid Dosing Pump 013/023	0698436	0 0GDE11 AP013/023	DIAPHRAGM PUMP, DDA 7.5-16FCM-PV/T/C-F-31U2U2FG	GRUNDFOS	3	WAT
Cooling Tri-Sodium Phosphate Dosing Pump 021/041		0 0GDN50 AP021/041	DIAPHRAGM PUMP, 95723386/DMH 100-10 B-PVC/V/G-X-O1B2B2	GRUNDFOS	3	WAT
Tolyltriazole Dosing Pump 021/041	0643812	0 0GDN51 AP021/041	DIAPHRAGM PUMP, 95723386/DMH 100-10 B-PVC/V/G-X-O1B2B2	GRUNDFOS	3	WAT
UF Feed Coagulant Dosing Pump 051/061	0633952	0 0GDN54 AP051/061	DIAPHRAGM PUMP, DMH 5,0-10 B-SS/T/SS-X-O1AA	GRUNDFOS	3	WAT
RO 1 Antiscalant Dosing Pump 051/061	0633951	0 0GDN55 AP051/061	DIAPHRAGM PUMP, DMH 13-10 B-PVC/V/G-X-O1B1B1	GRUNDFOS	3	WAT
UF CEB Hypochlorite Dosing Pump 051/061	0633950	0 0GDN60 AP051/061	DIAPHRAGM PUMP, DMH 1500-4/2 B-PVC/V/G-X-O1B8B8	GRUNDFOS	3	WAT
RO SMBS Dosing Pump 051/061/071		0 0GDN70 AP051/061/071	DIAPHRAGM PUMP, DMH 100-10 B-PP/V/G-X-O1B4B4	GRUNDFOS	3	WAT

PLANT DESCRIPTION	MATERIAL NUMBER	APPLICABLE KKS NUMBER/S	MATERIAL ITEM CHARACTERISTICS (DETAIL DESCRIPTION WITH DEFINING DESIGN CHARACTERISTICS)	OEM	EXPECTED QUANTITIES OVER 5 YEARS	LAB CODE
Sludge Thickeners Coagulant Dosing Pump 051/061/071		0 0GDN75 AP051/061/071	DIAPHRAGM PUMP, DMH 100-10 B-SS/E/SS-X-O1A1A1	GRUNDFOS	3	WAT
Sludge Thickeners Sludge Waste Pump 011/021/031	0755574	0 0GDS03 AP011/021/031	POSITIVE DISPLACEMENT PUMP, NEMO NM045BY, FLOW RATE 8.1 m^3/h, SPEED 216 RPM, POWER 0.98 KW, EFFICIENCY 62 %, MOTOR 3 KW-4P; HEAD PRESSURE 29 m, HORIZONTA, LIQUID SLUDGE, TEMP AMBIENT, VICOSITY 50 – 100 mPa, DENSITY 0.95 – 1.05 Kg/dm^3, SHAFT SEAL MECHANICAL TYPE MG1-G60, DIRECTION OF ROTATION CLOCKWISE, BEARING/LUBICATION PIN JOINTS/MINERAL OIL, IMPELLER TYPE HELICAL, CASING SUPPORT SUPPLIED ON BASE PLATE, **FLANGES** SUCT-SIZE/POSITION DN80/PN16, DRILLING DIN2501, DISCH SIZE/POSITION DN80/PN16, DRILLING DIN2501 **MATERIALS** PUMP CASING CAST IRON GG25, DISCHARGE COVER CAST IRON GG26, IMPELLER/ROTOR 1.2435 HARDENED TOOL STEEL, STATOR NEMOPLAST O65L, SHAFT1.2435 HARDENED TOOL STEEL , PEDESTAL STEEL, PAINITING MANUFACTURE STANDARD	NETZCH	3	WAT
Chemical Transfer Pump 021/031	0732003	0 0GDN85 AP021/031	DIAPHRAGM AIR PUMP, MODEL WILDEN P100 (No: 01-10803), 1 STAGE, FLOWRATE MORMAL 2.85 m^3/h, DELIVERY PRESSURE 100 Kpa, SPEED (CYCLE PER MINUTE) VARIABLE DEPENDING ON AIR FLOW VOLUME, DIAPHRAGM TYPE WIL-FLEX (SANTOPRENE), LIQUID MIXED CHEMICALS, TEMP AMBIENT, SG 1.1, AIR SUPPLY 34 Nm/Hr @ 410 KPa, HORIZONTAL/VETICAL, CASING MATERIAL POLYPROPERLENE, CASING SUPPORT FEET, CONNECTION SIZE: SUCT ½ INCH BSP, DISCH ½ INCH BSP, AIR IN ¼ NPT AND OUT ½ INCH BSP.	WIDEN	3	WAT
Vacuum Pump 011/021/031/041	663220	0 0GDK46 AP011/021/031/041	VACCUM PUMP, LPHX 65327 AB AG1 4B 1 LIQUID RING VACUUM PUMP, **SUCTION** MEDIUM GAS >95 % WITH SMALL TRACES OF O_2 & CO_2, FLOWRATE 400 m_3/Hr, PRESSURE 0.06 BAR abs, DISCHARGE PRESSURE 0.9 BAR,INLET TEMP 28 °C, OUTLET TEMP 38 °C, **DELIVERY** MEDIUM GAS >95 % WITH SMALL TRACES OF O_2 & CO_2, FLOWRATE 2.5 m_3/Hr, PRESSURE 0.9 BAR abs, TEMP 38 °C, POWER 14 KW, SPEED 1465 RPM, HORIZONTAL, SHAFT SEAL MECHANICAL DIN EN 12756, 2 X GREASE ANTIFRICTION BEARINGS, IMPELLER TYPE/FREE PASSAGE VANE WHEEL, CASING SUPPORT FRAME, FLANGES: GAS INLET DN 65/DIN 2633C, OUTLET DN 100/DIN 2633C, OUTLET DN 50/DIN 2633C, MAKE UP WATER PUMP DN	SIHI GERMANY (SPP PUMPS)	4	WAT

PLANT DESCRIPTION	MATERIAL NUMBER	APPLICABLE KKS NUMBER/S	MATERIAL ITEM CHARACTERISTICS (DETAIL DESCRIPTION WITH DEFINING DESIGN CHARACTERISTICS)	OEM	EXPECTED QUANTITIES OVER 5 YEARS	LAB CODE
			25/DIN 2633C, DRAIN DN 25/DIN 2633C, **PUMP MATERIAL** VACCUM CASING 1.4408 EN10283, CENTRAL BODY 1.4408 EN10284, IMPELLER 1.4517 EN10756, MECHANICAL SEAL GBVGG EN12756, SHAFT 1.4404 EN10088-1, SHAFT SEAL RING/O RING VITON A DIN ISO 1629, SELF ALIGNING ROLLER BEARINGS 1.301 DIN 635			
HCL Transfer Pump 001/011	0622842	0 0GDE20 AP001/011	DIAPHRAGM AIR PUMP, MODEL VA08 PP NULL PP TF (810.0616), 1 STAGE, FLOWRATE MORMAL 0.5 m^3/Hr – MAX 1 m^3/Hr, HEAD (DIFF PRESSURE) 31 m, DISCHARGE LINE LOSSES 6.9 m/79.1 Kpa, SUCTION PRESSURE MAX -11.46 (ASSUMING 1 m HEIGHT DEFFERENCE BETWEEN LIQUID LEVEL AND PUMP SUCTION), SUCTION PRESSURE RATED -28.70 Kpa (ASSUMING DRY SUCTION LINE), SPEED DEPENDS ON AIR FLOW VOLUME, DIAPHRAGM TYPE PTFE, LIQUID HYDROCHLORIC ACID ± 34 % CONCENTRATION, TEMP AMBIENT,VISCOSITY 1.9 mPa.s, DENSITY 1169 Kg/m^3, AIR CONSUMPTION 0.17 m^3/Hr @ 500 L/Hr, HORIZONTAL/VETICAL, CASING MATERIAL POLYPROPERLENE, CASING SUPPORT: SUPPLIED ON BASE TO BE BOLDED DIRECTLY TO SKID-M6 FASTENERS, CONNECTION SIZE: SUCT ¼ INCH, DISCH ¼ INCH, AIR IN ¼ NPT.	VERDER PUMPS SA	6	WAT
Polymer Dosing Pump 011/021/031	0754871	0 0GDN80 AP011/021/031	POSITIVE DISPLACEMENT DIAPHRAGM PUMP, MODEL NEMO NM021BY, STAGE 1, HORIZONTAL,FLOW RATE 1 m^3/Hr, HEAD (DIFF PRESSURE) 20 m, PUMP SPEED 239 RPM, EFFICIENCY 62 %, LIQUID POLY ELECTROLYTE 0.7% tig, TEMP AMBIENT, POWER 0.3 KW, MOTOR SIZE 0.75 KW-4P, VISCOSITY 50 – 100 mPa, DENSITY 1 – 1.1 Kg/dm^3, SHAFT SEAL MECHANICAL TYPE MG1-G60, DIRECTION OF ROTATION CLOCKWISE, BEARING/LUBICATION PIN JOINTS/MINERAL OIL, IMPELLER TYPE HELICAL, CASING SUPPORT SUPPLIED ON BASE PLATE, **FLANGES** SUCT-SIZE/POSITION DN32/PN16, DISCH SIZE/POSITION DN32/PN16, **MATERIALS** PUMP CASING CAST IRON GG25, DISCHARGE COVER CAST IRON GG26, IMPELLER/ROTOR AISI 316, STATOR NEMOPLAST O65L, SHAFT AISI 316, PEDESTAL STEEL, PAINITING MANUFACTURE STANDARD.	NETZCH	3	WAT
Neutralisation Sump Temporal Pump	0716822	0 0GDK76	PUMP: TYPE: SUBMISSIBLE; SIZE: 25 M; CAPACITY: 2500 L/MIN; SPEED: 1450 RPM; RATING: 30 KW; DRIVER: ELECTRICAL MOTOR;	CHEMICAL PUMPS	5	WAT

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			APPLICATION: NEUTRALISATION SUMP WATER; SUPPL P/N: 350CP ( ) 150H100Z			
Mobile plant						
SMBS Dosing Pump	0750070	0 2GDN01 AP011/021	DIAPHRAGM PUMP, MEMDOS LB 35, P/N 10407417, CAPACITY 0 – 10 L/Hr, PRESSURE 200 KPa, MOTOR 0.05 KW, PTFE DIAPHRAGM.	Lutz – JESCO	3	WAT
Antiscalent Dosing Pump	0750343	0 2GDN05 AP011/021	DIAPHRAGM PUMP, MAGDOS LT 06, P/N 10208338, MATERIAL PVC/FPM, CAPACITY 03 – 10 L/Hr, PRESSURE 200 KPa, MOTOR SS-316, 0.05 KW.	Lutz – JESCO	3	WAT
Caustic Dosing Pump		0 2GDN10 AP011/021	DIAPHRAGM PUMP, MEMDOS E 15, P/N: 10402188, S/N: 104E0004408, CAPACITY 0 – 60 L/Hr, PRESSURE 200 KPa, MOTOR 0.05 KW, SS-316.	Lutz – JESCO	3	WAT
Sulphuric Acid Dosing Pump	0750043	0 2GDE01 AP011/021	DIAPHRAGM PUMP, MEMDOS E 25, P/N: 10403150, S/N: 104E0008674, CAPACITY 0 – 50 L/Hr, PRESSURE 200 KPa, MOTOR 0.05 KW, PTFE DIAPHRAGM	Lutz – JESCO	3	WAT
CPP						
Acid Injection Pump	0715381	0 0LDN11/12 AP001	CHEMICAL INJECTION PUMPS, Piston Operated Diaphragm with inbuilt VFD, MODEL No: PKG144M100H3/9.C5.HS.HH3.	MILTON ROY	3	CCP
Caustic Injection Pump	0715394	0 0LDN21/22 AP001	CHEMICAL INJECTION PUMPS, Piston Operated Diaphragm with inbuilt VFD, MODEL No: PL96P115H3/9.C5.HH3	MILTON ROY	2	CCP
Low Conductivity Effluent Sump Pump	729166	0 0LDR11/12 AP001,	SELF PRIMING PUMP, MODEL No: ROTARY LOBE PUMP TYPE PL200 NO 10100276 1.1-2, CODE EIADDCDFA3NZ, DESIGN CAPACITY 30 m^3/h, DIFFERENTIAL PRESSURE 23 m, POWER @ MAX IMPELLER 4.64 KW	BORGER	2	CCP
U1/2/3/4/5/6 WET SMPL CNDTN CTRL U1/2 PUMP		1/2/3/4/5/6 1/LDK10/20 AP001	CENTRIFUGAL PUMP; MP 244 AS2.5x1.5; BN-CARBCM SEAL 6.6 DIA; 7 ½ HP TEFC 2900 RPM; 3/50/380 V; P/N 9625905; S/N 3414J1615503.	SENTRY EQUIPMENT	6	CCP
STP						

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Ferric Chloride/Coagulant Dosing Pump 001/002		0 0GRN10 AP001/002	DIAPHRAGM PUMP, MODEL DMX 35 – 10, DUTY 0 – 150 L/Hr, MOTOR 0.05 KW, VOLTAGE 400 V 50 HZ	ALLDOS	2	STP
Supernatant Pump 01/02	0528078	0 0GQB20 AP001/002	FLYGT SUBMERSIBLE CENTRIFUGAL PUMP, MODEL No: CP3045.181 HT252 – 1.2 KW, 80U2-1.5, 30 m^3/h	TSURUMI PUMP	3	STP
Booster Water Pumps 01/02		0 0GRK10 AP001/002	CENTRIFUGAL PUMP, MOTOR 0.75 KW VOLTAGE 415V/3/PHASE, COMPLETE WITH PVC PIPNG & SUCTION/DELIVERY VALVES, Y STRAINER	GRUNDFOS	3	STP
Sewage Forwarding sump 1 Primary Pumps	0640098	0GRK51/52 AP001/2	FLYGT SUBMERSIBLE CENTRIFUGAL PUMP; SIZE: 100 MM; CAPACITY: 144 M/HR; SPEED: 1465 RPM; RATING: 23.25 M; POTENTIAL: 400 V; APPLICATION: WASTEWATER; SUPPL P/N: NP 3153 HT3-455; REFERENCE NO: 3153.181-096 0393; SEMI PERMANENT; 7.5 KILOWATT; CURRENT 16 AMP; IMPELLER TYPE SELF CLEANING; SEMI-OPEN; CHANNEL IMPELLER; WET; INSTALLATION ON STAIONARY DISCHARGE FLANGE VIA TWINGUIDE RAILS;	TSURUMI PUMP	3	STP
AUX COOLING						
Sulphuric Acid Cooling North/South Dosing Pump 021/041		0 0GDE25/30 AP021/041	DIAPHRAGM PUMP, DMH 13-10 B-PV/T/T-X-O1B3B3	GRUNDFOS	6	AUX
Corrosion inhibitor Cooling North/South Dosing Pump 1/2		TBA	DIAPHRAGM PUMP, DDA 7.5–16 FCM-PV/T/C-F-31/001FG	GRUNDFOS	8	AUX
Bio-dispersant Cooling North/South Dosing Pump 1/2		TBA				
Biocide Cooling North/South Dosing Pump 1/2		TBA	DIAPHRAGM PUMP, DMH 100-10 B-PP/V/G-X-01B4B4; TYPE DMH-253; 100 L/H; 10 BAR; 50 HZ.	GRUNDFOS	4	AUX
COMPRESSORS						
Air Blowers		0 0LDC11/12/13 AN001	ROOT TYPE AIR BLOWER, MODEL No: ROBUSCHI ES35/1C, S/N 10 00892/3/4, MOTOR 19KW (2 POLE)	HOWDEN	2	CCP

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U1/2/3/4/5/6 WET SMPL CNDTN CTRL U1/2 CMPR		1/2/3/4/5/6 1/LDK11/12 AN001	COMPRESSOR; COPELAND SCROLL WITH CORESENSE TECHNOLOGY; MODEL ZP182KCE-TED-455; SERIAL 18DC7257D; R-410A USE ONLY.	SENTRY EQUIPMENT/EMERSON CLIMATE TECHNOLOGES	6	CCP
Nitrogen PSA 2 Compressor		0 0QJD02 AN001	SCREW AIR COMPRESSOR, MODEL No: RS30 – 371/ RS301 – A10, S/N UCV1019814, 30 KW, 400V, MAWP: 10 BAR.	INGERSOLL RAND INDUSTRIAL TECHNOLOGY	1	WAT
OXYGEN PSA Compressor		0 0QJB20 AN001	SCREW AIR COMPRESSOR, MODEL No: R4 – 111/ R111 – A8.5, S/N UCV1019989, 11 KW, 400V, MAWP: 11 BAR.	INGERSOLL RAND INDUSTRIAL TECHNOLOGY	1	WAT
Mobile plant Compressor		0 2CFL01 AN001	COMPRESSOR, Piston, Model LE5 – 10CV TM270 400/3/50 CE, S/N ITR1431434, 3.85 KW, MAWP 11 BAR, Motor Speed 1500 rev/min, 3 Phase, 50Hz, 8.4 l/s	ATLAS COPCO	2	WAT
Air blower units		0 0GRP10 AN001/002	AIR BLOWER, MODEL URAI 33 C/W SOUND ENCLOSURE, VOLTAGE 7.5 KW 400V 2 POLE, 258 NM^3/HOUR @ 65 KPa	DRESSER ROOTS/ SOWERBY ENGINEERING	2	STP
Sewage Treatment Plant Air Compressor		0 0SCA10/20 AN001	AIR SUPREME COMPRESSOR, MAKE FINI, MODEL NO: SKM12-3M 200 LT (BELTDRIVEN). CAPACITY: 323 LT, DISCHARGE PRESSURE: 10 BAR; VOLTAGE 220 V; MOTOR 2.2 KW	AIR SUPREME	3	STP
GEARBOXES						
Sludge Thickener 01 Rake 005/015		0 0GDS01 AM005/015	GEARBOX, Model DF128-Z38-K4-(71), ASORBED POWER 0.25 KW, SERVICE FACTOR 3.1 TORQUE, OUTPUT POWER 0.55 RMP, OUTPUT TORQUE $t_{2normal}$ 1000 Nm, OUTPUT SHAFT d_2 70 SOLID, OUTPUT FLANGE DIEMETER 350, MAX TORQUE T2 3100 Nm, AMBIENT TEMP MIN 5°C MAX 19°C	SIEMENS	3	WAT
Sulphuric Acid Mixer 02/03		0 0GDE02/03 AM001	GEARBOX: TYPE SEW: 1087; RATIO: 11.9; SPEED: 1440/121 RPM; SPEED RATIO 11.9; POWER: 1.1 KW; BEARING SIZES -GEARBOX 6308/6220 DE/NDE; REFERENCE NO: C21573/02/A&B; SUPPL P/N: C21573/02/A&B; TO INCLUDE OUTPUT SHAFT FLANGE COUPLING HALF AND MOTOR ADAPTER 90 FOR STANDARD FLANGED MOTOR FRAME SIZE 90.	MIXTEC	2	WAT

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Ammonia Mixer 02/03/04		0 0GDN02/03/04 AM001	GEARBOX TYPE SEW; MODEL TYPE: 1000; MODEL NO: 1087; POWER: 1.1KW; SPEED: 1440/121 RPM; SPEED RATIO 9.39; SERVICE FACTOR: 6.36 BEARING SIZES -GEARBOX 6206/6208DE/NDE; MIXER GEARBOX; REFERENCE NO: C21573/09/A,B&C; SUPPL P/N: C21573/09/A,B&C; TO INCLUDE OUTPUT SHAFT FLANGE COUPLING HALF AND MOTOR ADAPTER 90 FOR STANDARD FLANGED MOTOR FRAME SIZE 90.	MIXTEC	2	WAT
Caustic Mixer 21/22		0 0GDN21/22 AM001	GEARBOX TYPE SEW; MODEL TYPE: 1000; MODEL NO: 1087; POWER: 1.1KW; SPEED: 1440/121 RPM; SPEED RATIO 11.9; SERVICE FACTOR: 6.36 BEARING SIZES -GEARBOX 6206/6208 DE/NDE; MIXER GEARBOX; REFERENCE NO: C21573/09/A,B&C; C21573/10/A&B SUPPL P/N: C21573/09/A,B&C; C21573/10/A&B; TO INCLUDE OUTPUT SHAFT FLANGE COUPLING HALF AND MOTOR ADAPTER 90 FOR STANDARD FLANGED MOTOR FRAME SIZE 90.	MIXTEC	2	WAT
Tri-Sodium Phosphate Mixing Tank 011 Mixer 011	0635383	0 0GDN50 AM011	GEARBOX: TYPE: 1027 HELICAL MIXER; RATIO: 6.56; SERVICE FACTOR 6.49; SPEED: 212 RPM; POWER: 0.37 KW; BEARING SIZES -GEARBOX 6206/6208DE/NDE; REFERENCE NO: C71573/03/A&B; SUPPL P/N: C21573/03/00; TO INCLUDE OUTPUT SHAFT FLANGE COUPLING HALF AND MOTOR ADAPTER 71 FOR STANDARD FLANGED MOTOR FRAME SIZE 71.	MIXTEC	3	WAT
Tolyltriazole Mixing Tank 011 Mixer 011		0 0GDN51 AM011				
Coagulant Mixer 011	0635384	0 0GDN54 AM011	GEARBOX: SEW TYPE: 1027 HELICAL MIXER; SPEED RATIO 9.33; SPEED: 1400/149 RPM; POWER: 0.37 KW; SERVICE FACTOR 6.49; BEARING SIZES -GEARBOX 6206/6208DE/NDE REFERENCE NO: C21573/07/00; SUPPL P/N: C21573/07/00; TO INCLUDE OUTPUT SHAFT FLANGE COUPLING HALF AND MOTOR ADAPTER 71 FOR STANDARD FLANGED MOTOR FRAME SIZE 71.	MIXTEC	1	WAT
Antiscalant Mixer 011	0635382	0 0GDN55 AM011	GEARBOX: TYPE: 1027 HELICAL MIXER; RATIO: 10.43; SPEED: 1440/138 RPM; POWER: 0.55 KW; SERVICE FACTOR 2.85; BEARING SIZES - GEARBOX 6206/6208DE/NDE; REFERENCE NO: C21783/02/A; SUPPL P/N: C21783/02/A; TO INCLUDE OUTPUT SHAFT FLANGE COUPLING HALF, AND MOTOR ADAPTER 80 FORFLANGED MOTOR FRAME SIZE 80.	MIXTEC	2	WAT
Coagulant Mixer 54		0 0GDN54 AM011	GEARBOX; MODEL TYPE: 1000; MODEL NO: 1027; POWER: 0.37KW; SPEED: 1390; SPEED RPM 149; SERVICE FACTOR: 4.86 BEARING SIZES -	MIXTEC	2	WAT

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			GEARBOX 6202 – 2RS/6202 – 2RS DE/NDE MIXER GEARBOX; REFERENCE NO: C21783/01/A; SUPPL P/N: C21783/01/00; TO INCLUDE OUTPUT SHAFT FLANGE COUPLING HALF, AND MOTOR ADAPTER 71 FORFLANGED MOTOR FRAME SIZE 71			
Sodium Chloride Mixer 001		0 0GDN65 AM001	GEARBOX; MODEL TYPE: 1000; MODEL NO: 1027; POWER: 0.37KW; SPEED RATIO 6.56; SPEED: 1390/212 RPM; SERVICE FACTOR: 6.49; BEARING SIZES -GEARBOX 6206/6208DE/NDE; REFERENCE NO: C21573/06/A; SUPPL P/N: C21573/06/00; TO INCLUDE OUTPUT SHAFT FLANGE COUPLING HALF, AND MOTOR ADAPTER 71 FORFLANGED MOTOR FRAME SIZE 71	MIXTEC	2	WAT
SMBS Mixer 001		0 0GDN70 AM001	GEARBOX; MODEL TYPE: 1000; MODEL NO: 1027; POWER: 0.37KW; SPEED RATIO 9.33; SPEED: 1390/149 RPM; SERVICE FACTOR: 4.86; BEARING SIZES -GEARBOX 6206/6208DE/NDE; REFERENCE NO: C21573/07/A; SUPPL P/N: C21573/07/00; TO INCLUDE OUTPUT SHAFT FLANGE COUPLING HALF, AND MOTOR ADAPTER 71 FORFLANGED MOTOR FRAME SIZE 71	MIXTEC	2	WAT
Coagulant Mixer 75		0 0GDN75 AM011	GEARBOX; SEW; MODEL TYPE: 1000; MODEL NO: 1027; POWER: 0.37KW; SPEED RATIO 6.56; SPEED: 1390/212 RPM; BEARING SIZES -GEARBOX 6206/6208DE/NDE; REFERENCE NO: C21573/08/A; SUPPL P/N: C21573/08/00; TO INCLUDE OUTPUT SHAFT FLANGE COUPLING HALF, AND MOTOR ADAPTER 71 FORFLANGED MOTOR FRAME SIZE 71	MIXTEC	2	WAT
Polymer tank mixer 001/003/005		0 0GDN80 AM001/003/005	GEARBOX TYPE SEW; MODEL TYPE: 1000; MODEL NO: 1027; POWER: 0.25KW; SPEED: 1400/149 RPM; SPEED RATIO: 9.33; SERVICE FACTOR: 7.2 BEARING SIZES -GEARBOX 6206/6208DE/NDE; REFERENCE NO: C21573/11/A, B & C; SUPPL P/N: C21573/11/00; TO INCLUDE OUTPUT SHAFT FLANGE COUPLING HALF, AND MOTOR ADAPTER 71 FORFLANGED MOTOR FRAME SIZE 71	MIXTEC	2	WAT
Clarifier Floc Mixer		0 0GDS01 AM001/003/011/013	GEARBOX TYE: SEW; MODEL TYPE: 2000 MODEL NO: 2087; POWER: 2.2; RATED MOTOR SPEED:1455RPM SPEED RATIO: 26,18; SERVICE FACTOR 3.18; BEARING SIZES -GEARBOX: 6308/6220 DE/NDE	MIXTEC	3	WAT
Coagulant Transfer Pump 001/021		0 0GDN74 AP001/021	GEARBOX, Model BREVINI ET3020/MR1/52/00, RATIO 52 TO 1	BREVINI	2	WAT

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Polymer Dosing Pump 011/021/031		0 0GDN80 AP011/021/031	GEARBOX, Model NORD SK01FAL-80L/4 TF, RATIO 5.62, SPEED 245 RPM	NORD	3	WAT
Sludge Thickeners Sludge Waste Pump 011/021/031		0 0GDS03 AP011/021/031	GEARBOX, Model NORD SK25F AL-100LA/4 TF, RATIO 6.29, SPEED 225 RPM	NORD	3	WAT
Aerator 01/02/03		0 0GRL01/02/03 AM001	HELICAL FLENGER GEARBOX, MODEL No ZR-168-K2-S200L4-W, REFERENCE NO: JHK-0812-3001323047/3, POWER: 63.64 KW, APPLICATION: SEWEGE TREATMENT SURFACE AERORATOR AGITATOR VERTICAL; ROTATION DIRECTION: BI – DIRECTIONAL MOTOR 30 KW IP55 CAST IRON, VOLTAGE 400 V 3 PHASE 50HZ, RIANHOOD	FLENGER	3	STP