

	Specification	Engineering
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1. INTRODUCTION

The poor operation of the Duvha Seal Water system has been attributed to the frequent damage to the Dual Changeover Valves seats being unable to provide reliable tight Isolation. The Dual Changeover Valve serving the integral duplex type strainer housing at Duvha has been problematic.

Changing the Seal Water Strainer Dual Changeover Valve has been identified as being the most technically feasible solution for implementation on Duvha Power Station. It is also important that the BFP Seal Water Project is supported, so that tight valve isolation allows the strainer to be safely removed and replaced whilst the Unit is on load, thereby enabling redundancy of the system.

This document provides the technical specification of the work to be conducted, regarding the Seal Water Strainer Dual Changeover Valve Replacement for the Duvha Power Station project.

2. SUPPORTING CLAUSES

2.1 SCOPE

The scope of work is for the supply and delivery of the specified valves to Duvha Power Station.

2.1.1 Purpose

This document summarises the status and outcome of the technical specification phase design related activities and describe the achievement of the design goals in terms of meeting the stakeholder requirements. This document, together with the design output documentation of this design phase, is submitted to a project design review for technical assessment.

2.1.2 Applicability

This document shall apply to Duvha Power station.

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] 240-48929482: Tender Technical Evaluation Procedure

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2.2.2 Informative

N/A

2.3 DEFINITIONS

Definition	Description
Data sheet	A data sheet is a document supplied by the OEM that states all the technical information regarding the supplied component. In this case, the item description, differential pressure and flow at the pump speed and fluid, power required, direction of rotation, materials used, seal type, connection details and full characteristic curves.
Pump	In this document the term pump refers to a positive displacement pump that moves the fluid by means of rotating gears.
Strainer	A device (such as a sieve) to retain solid pieces while a liquid passes through
Valve / Dual Changeover Valve	A mechanical device by which the flow of liquid, gas or loose material in bulk may be started, stopped, or regulated by a movable part that opens, shuts, or partially obstructs one or more ports or passageways; also the movable part of such a device.

2.3.1 Classification

Controlled Disclosure: Controlled Disclosure to external parties (either enforced by law, or discretionary).

2.4 ABBREVIATIONS

Abbreviation	Description
BFP	Boiler Feed Pump
°C	Degrees Celsius
DN	Diameter Nominal
EoMR	End of Manufacture Report
L/min	Litres per minute
mm	Millimetre

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Abbreviation	Description
MPag	Mega Pascal Gauge
Max	Maximum
Min	Minimum
N/A	Not Applicable
OEM	Original Equipment Manufacturer
PTFE	Polytetrafluoroethylene
RF	Raised Face
RFQ	Request For Quote

2.5 ROLES AND RESPONSIBILITIES

N/A as per 240-48929482: Tender Technical Evaluation Procedure

2.6 PROCESS FOR MONITORING

N/A

2.7 RELATED/SUPPORTING DOCUMENTS

N/A

3. TECHNICAL REQUIREMENTS

3.1 TECHNICAL SPECIFICATION

TECHNICAL SPECIFICATION FOR SEAL WATER CHANGEOVER VALVE ASSEMBLY

Location : Eskom Duvha Power Station

Units: 1 to 6

System :Feed Pump Seal Water

Sub System: Seal Water Discharge Strainer Changeover Valve Assembly

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AKZ: RM71S519

Attachment : Figure 1

Supplier Information

Name of Company :

OLT Number : (If applicable)

RFQ Number: (If applicable)

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Table 1: Valve Specification

Line			Details	Comments	Supplier Comments
	PLANT DESIGN CONDITIONS :				
1	Design pressure: min/max	MPag	min 0 max 4Mpag	Supplier to fill in information in supplier comments column or supply data sheet with this information	
2	Design temp min/max	°C	min 40°C max 80°C	Supplier to fill in information in supplier comments column or supply data sheet with this information	
3	Line Medium		De-mineralised Water	Supplier to fill in information in supplier comments column or supply data sheet with this information	
4	Flow rate min/max	L/min	min 233,33 L/min max 1208,33 L/min	Supplier to fill in information in supplier comments column or supply data sheet with this information	
	PLANT OPERATING CONDITIONS:				
5	Operating press: min/max	MPag	max 3MPag	Supplier to fill in information in supplier comments column or supply data sheet with this information	
6	Operating temp: min/max	°C	60°C	Supplier to fill in information in supplier comments column or supply data sheet with this information	
7	Flow rate	L/min	1080L/min	Supplier to fill in information in supplier comments column or supply data sheet with this information	
	VALVE MANUFACTURING CODE/STANDARDS :				
8	ASME B16.34			State the code to which valve is manufactured. If to other design code, than what is listed, state the code.	
9	ISO 7121				
10	API 608				
11	ISO 17292				
	VALVE CONSTRUCTION DETAILS:				
12	Valve Type		2 PieceThree Way Trunion Mounted Floating Ball	Supplier to detail valve type.	

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13	Valve Assembly Configuration		2 X Three Way Ball valves arranged top to bottom and connected together to operate in unison	Supplier to detail valve assembly configuration.	
14	Flow Configuration		L Shaped (90°) Flow	Supplier to detail valve flow direction of the valve.	
15	Flow Direction		Inlet to the left outlet when operated in one direction and inlet to the right when operated in the other direction	Reference when looking at the valve inlet flange in front of you.	
16	Valve Body Material		Cast Steel or Stainless Steel	State the material and relevant grade used	
17	Valve Internals- Ball		Stainless Steel Only	State the stainless steel grade used	
18	Seat Retaining Rings		Cast Steel or Stainless Steel	State the material and relevant grade used	
19	Seat material		PTFE	State the seat material grade used.	
20	O-ring/Other Seals/Softgoods/Packings/Gaskets		Fluorocarbon Viton A	State the O-ring/Other Seals/Softgoods/Packings/Gaskets material grades used	
	VALVE FLANGE SIZES & CONNECTIONS:			Per valve ,the bottom valve should be identical	
21	Valve Size	DIN	DN100		
22	Connection type		Flanged to EN	All flanges to this standard.	
23	Inlet Size/Pressure Rating/Flange Face Type		DN100/PN40/RF		
24	Outlet 1/Pressure Rating/Flange Face Type		DN100/PN40/RF	Facing the inlet outlet 1 is to the left	
25	Outlet 2/Pressure Rating/Flange Face Type		DN100/PN40/RF	Facing the inlet outlet 2 is to the right	
26	Equalising Valve and Line			Must posses an equalising valve with connecting line to balance the pressure when changing over. Equalising valve can be installed on any one valve or on both valves.	
	VALVE & VALVE ASSEMBLY DIMENSIONS				
27	Flange to Flange (Inlet1 to Inlet 2)	mm	350	Critical dimension, see attached sketch 1	
28	Flange to Flange (Outlet1 to Outlet 2)	mm	350	Critical dimension, see attached sketch 1	
29	Inlet Face to Inlet1 & Inlet 2 Centre	mm	175	Critical dimension, see attached sketch 1	
30	Outlet Face to Outlet1 & Outlet 2 Centre	mm	175	Critical dimension, see attached sketch 1	
31	Inlet Centre to Outlet Centre	mm	230	Critical dimension, see attached sketch 1	
	ACTUATION, INDICATION & INSTRUMENTATION				
32	Hand Lever/Hand Wheel Operated		Manually Operated	Valve must have a hand lever or hand wheel to operate	

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33	Hand Lever/Hand Wheel Position		Manually Operated	Hand lever or Hand Wheel can be top mounted or assembly centre mounted	
34	Flow Direction Indication		Clearly visible flow indication.	Valve Assembly must have a clear visible plate/indicator to show operator direction of flow.	
35	Gauges, transmitters, thermocouples etc.		List any additional gauges, instrumentation, thermocouples etc. that is supplied with the valve if any.		
	PAINTING / COATING:				
36	For Cast Steel Bodies		Standard Zinc Primer Coated		
37	For Stainless Steel Bodies		No Painting Required		
	INSPECTION, CERTIFICATION & QUALITY:				
38	Material Certificates		Body, Ball, Flanges(If Separate)	Supply material certificates for indicated components.	
39	Third Part Inspection		N/A	N/A	
40	Pressure Test Certificate		Body Pressure Test Certificate	Hydrostatic Pressure Test Cert of the Body	
41	Leak Test Certificate		Leak Tightness Test Certificate	As per the pressure/leak testing standard used state the seat tightness category.	
42	Valve Manufacturing Quality Processes & Certification		List the Quality Standards and Quality Process to which the valve conforms.	Provide copies of quality certification. Example ISO 9001 etc.	
	EoMR -End of Manufacture Report (Databook), Assembly Drawings, Catalogues				
43	EoMR/Databook		Copy of EoMR / Databook	Supply an example of a EoMR for a previously supplied valve. Preferably a hard copy.	
44	Assembly Drawings with Parts List		Copy of Assembly Drawing and Parts List	Supply an assembly drawing with drawing reference number detailing parts list of the valve intended for supply. Links to websites for assembly drawings and parts lists will be permitted, links must be listed in the supplier comments column.	

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45	Valve Catalogue		Copy of Valve Catalogue	Supply a copy of a valve catalogue. Links to websites for catalogues will be permitted, links must be listed in the supplier comments column.	
	ADDITIONAL INFORMATION				
46				List any other relevant technical information that might have been omitted.	
	Note if additional space is required for the Supplier Comments Column, additional sheets may be attached to this document just reference the correct corresponding line number (highlighted in green) on the additional sheet/s, and state in the Suppliers Comment column see attached sheet/s .				

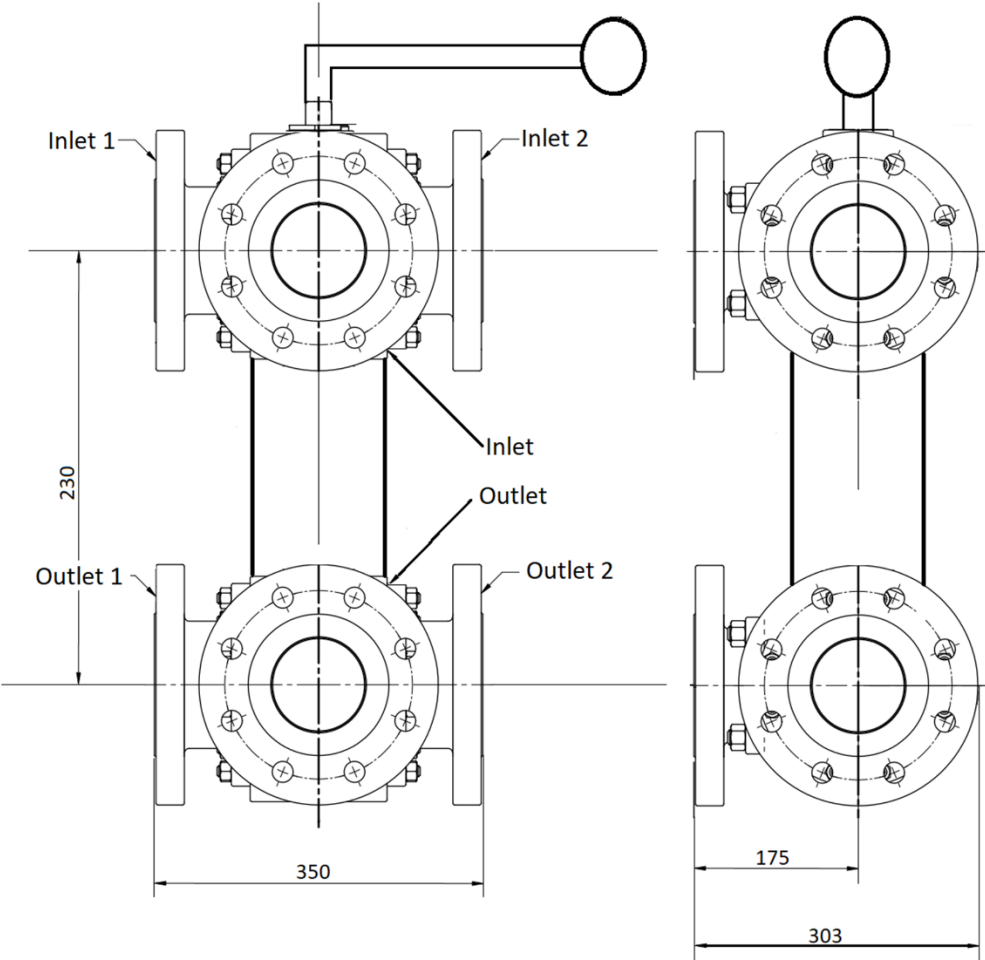


Figure 1: Required Valve Dimensions

3.2 MANADATORY TECHNICAL EVALUATION CRITERIA

Table 2: Mandatory Technical Evaluation Criteria

	Mandatory Technical Criteria Description	Reference to Technical Specification / Tender Returnable	Motivation for use of Criteria	Deliverables	Criteria Met Y	Criteria Met N
1.	Reference list of at least 10 similar valves supplied in the past 10 years (either as one quote or more), preferably for the same or similar application in the power generation industry or industry in general in South Africa.		Mitigation of Risks associated with critical valves.	List with reference(s).		
2.	Provide a copy of the end of manufacture data book for any one of the referenced valves above.		Mitigation of Risks associated with critical valves.	Copy of the data book if valve reference is available.		
3.	The valves must be supplied as one assembled unit.		To ensure interchangeability and similar operation of the existing design.	General Arrangement Drawing showing the valve arrangement		

3.3 QUALITATIVE TECHNICAL EVALUATION CRITERIA

Table 3: Qualitative Technical Evaluation Criteria

	Qualitative Technical Criteria Description		Reference to Technical Specification / Tender Returnable	Criteria Weighting (%)
1	Document Requirements relative to the scope of work			
	1.1	The supplier shall meet the technical requirements set out in document titled: 240-162201061 - Duvha BFP Seal Water Changeover Valve Technical Specification	Supplier to complete and submit document Table 1 – Valve Specification	80
	1.2	Typical QCP		10
	1.3	Typical Coating Procedure		10
				TOTAL: 100

3.4 TET MEMBER RESPONSIBILITIES

Table 4: TET Member Responsibilities

Mandatory Criteria Number	TET 1	TET 2	TET 3	TET 4
1	X	X	X	X
2	X	X	X	X
3	X	X	X	X
Qualitative Criteria Number	TET 1	TET 2	TET 3	TET 4
1.1	X	X	X	X
1.2	X	X	X	X
1.3	X	X	X	X

3.5 FORESEEN ACCEPTABLE / UNACCEPTABLE QUALIFICATIONS

3.5.1 Risks

Table 5: Acceptable Technical Risks

Risk	Description
1.	Variations in QCP steps taking in mind all aspects of construction must be included
2.	Design and manufacturing code stated is not ASME B16.34
3.	Hand wheel or lever is at the top or at the bottom of the valve
4.	The valve is painted different to what is specified

Table 6: Unacceptable Technical Risks

Risk	Description
1.	Any of the design conditions (Lines 1, 2, 3 or 4) are not met.
2.	No design / manufacturing code is stated.
3.	The valve construction is not a 2 Piece Three Way Trunion Mounted Floating Ball (L-shaped)
4.	The flow direction is different to what is specified
5.	The valve connection sizes are different to what is specified (Lines 21, 22, 23, 24 or 25) in terms of size and flanged type
6.	No equalizing valve (Line 26)
7.	The valve dimensions differ by more than 1mm of what is specified (Lines 27, 28, 29, 30 or 31)
8.	No hand wheel or lever (Line 32)
9.	Flow direction is not indicated on the valve (Line 34)
10.	It is indicated that the Material Certificates, Third Part Inspection, Pressure Test Certificate, Leak Test Certificate will not be supplied (Line 38, 39, 40 or 41)

3.5.2 Exceptions / Conditions

Table 7: Acceptable Technical Exceptions / Conditions

Risk	Description
1.	N/A

Table 8: Unacceptable Technical Exceptions / Conditions

Risk	Description
1.	All requirements must be adhered to.

4. AUTHORISATION

This document has been seen and accepted by:

Name	Designation	Signature
	Chief Engineer – Turbine Engineering	
	Turbine Engineering Manager	
	Senior Technologist	

5. REVISIONS

Date	Rev.	Compiler	Remarks
March 2021	1		First Issue

6. DEVELOPMENT TEAM

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

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7. ACKNOWLEDGEMENTS

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