ENGINEERING SERVICES

DIAPHRAGM PUMP P1002 SPECIFICATION SHEET

Project	WOPG Demonstration Facility	**Unit Tag Number**	P1002
Datasheet Document No.	ENS-OWPVR-SPE-25005	**Revision**	1
Description	Pump P1002 will be used in the Uranium Contaminated Waste Oil Plasma Gasification (WOPG) Demonstration Facility to transfer the contents of the Waste Oil Storage & Feed Tank T1001 to the Plasma Reaction Chamber R1205.		
Plant Location	NECSA, Pelindaba, North-West Province		
Equipment Location	WOPG Demonstration Facility - Inside the process area of Laboratory 150 Building V-H2.		
Safety Classification	SC-3(N) & SC-2(C) [a]		
Quality Classification	SC-3(N) & SC-2(C) [b]		

FLUID PROPERTIES

Process fluid	Uranium contaminated waste oil [e]			
Solids content	Uranium-containing solids.			
Corrosive due to	None.			
PROPERTIES	**UNITS**	**MINIMUM**	**NORMAL**	**MAXIMUM**
Operating temperature	**°C**	18	25	60
Fluid density	**kg/m^3**	938,0	933,1	908,6
Viscosity	**Pa.s**	0,00086	0,00076	0,00045
Vapor pressure	**kPa**	2,065	3,165	19,946

HYDRAULIC PROPERTIES

PARAMETERS	**UNITS**	**MINIMUM**	**NORMAL**	**MAXIMUM**
Flow rate	**m^3/h**	0,0032	0,0107	0,0129
Pump inlet pressure	**kPa (a)**	101,43	101,29	100,89
Pump outlet pressure	**kPa (a)**	1177,39	1172,27	1144,02
Differential Pressure	**kPa**	1075,96	1070,98	1043,13
Required Pump Head	**m**	116,93	117,00	117,03
NPSH available	**m**	10,73	10,72	10,72

MECHANICAL PROPERTIES

Pump type	**Electrical Operated Single Diaphragm Pump**		
Diaphragm type	Supplier to advise	**Diaphragm diameter**	Supplier to advise

Process Connections

Pipe Suction	**Size**	3/8"	**Rating**	N/A	**Flange (SW)**	Screwed female NPT
Pipe Discharge	**Size**	3/8"	**Rating**	N/A	**Flange (SW)**	Screwed female NPT
	Vent	Supplier to advise			**Drain**	Supplier to advise
Seal Fluid	Supplier to advise					
Material of Construction	**Casing**	Stainless Steel			**Diaphragm**	PTFE
	Shaft	Supplier to advise			**Seal**	PTFE
	Packing	Supplier to advise			**Other**	Supplier to advise

ELECTRICAL PROPERTIES

Electrical (Y/N)	Y	**Volts**	Supplier to advise	**Phase**	Supplier to advise	**Hz**	Supplier to advise

VENDOR DATA REQUIRED WITH TENDER

1 Pump technical data
2 Utility Requirements
3 Pump dimensions with baseplate

REFERENCE DRAWINGS AND DOCUMENTS

[1] ENS-OWPVR-PID-24002, P&ID – Waste Oil Feed System

[2] ENS-OWPVR-CLC-25001, Positive Displacement Pumps Sizing Calculations for Uranium Contaminated Waste Oil Plasma Gasification (CWOPG) Facility

[3] ENS-OWPVR-REP-25013, Positive displacement pumps sizing report for Uranium Contaminated Waste Oil Plasma Gasification (CWOPG) Facility

NOTES

[a] SC - Safety Class

[b] QC - Quality Class

[c] Supplier to advise on special requirements for installation of pump.

[d] The composition of waste oil (% mass) is: 3.22% C_7H_8 , 7.95% $C_{16}H_{34}$, 16,61% $C_{17}H_{36}$, 18,52% $C_{18}H_{38}$, 53,34% $C_{19}H_{40}$, 0.11% U , 2.11×10^{-6} S , 0.04% HF and 0.21% HCl.

[e] Pump must be able to communicate with a PLC.

	Name	Date and Signature
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