ENGINEERING SERVICES DEPARTMENT			
SPECIFICATION SHEET FOR ELECTRICAL HEATER H83127			
Project	PTFE Filter Destruction Project	**Unit Tag No.**	H83127
Datasheet Document No.	ENS-FDP-SPE-24022	**Revision**	3

Description	Electrical heater (H83127) is used to heat up the off-gas exiting the scrubber from a temperature of 35 °C to 60 °C. The gas is drawn through the electrical heater using a blower downstream of the heater. Two in-line HEPA filters are installed in series between the heater outlet and blower inlet.
Plant location	NECSA, Pelindaba, North-West Province.
Equipment location	PTFE Filter Destruction Facility - Process area inside Laboratory-131, Building V-H2.
Safety Classification	SC-3 (N) and SC-2 (C) [a].
Quality Classification	QC-3 (N) and QC-2 (C) [b].
Process Fluid	Gas mixture containing (wt. %): CO_2 [79,1 %], HF [0,04 %], O_2 [7,3 %], N_2 [13,6 %].
Fluid state	Gas.
Solid content	PTFE and solid uranium compound particulates may be present in the off-gas.
Corrosive due to	Hydrogen Fluoride (HF) gas - produced at 7.92 gram / hour.

	UNITS	DESIGN CONDITIONS
Operating pressure	**kPa (abs)** [d]	78
Operating temperature	**K**	333
Mass flow rate	**kg/h**	22
Volume flow rate	**m^3/h**	18
Density	**kg/m^3**	1,21
Viscosity	**Pa.s**	$1,7 \times 10^{-5}$
Thermal conductivity	**W/m.K**	$1,57 \times 10^{-2}$
Specific heat capacity (Cp)	**kJ/kg.K**	0,90

ELECTRICAL INTERFACE

Heat load (min.)	**kW**	0,20	**Volt**	Supplier to Advise.	
Frequency	**Hz**	Supplier to Advise.	**Phase**	Supplier to Advise.	
Materials of construction		**Wetted**	Supplier to Advise.		
		Non-wetted	Supplier to Advise.		

FLANGE CONNECTION

Size	200 mm (8")
Flange rating	150#, RF
Flange Materials of construction	SS, ASTM A182-F304/304L, ASME B16.5
Gasket	1/16" thick flexible graphite w/304 SS or corrugated insert, ASME B16.5

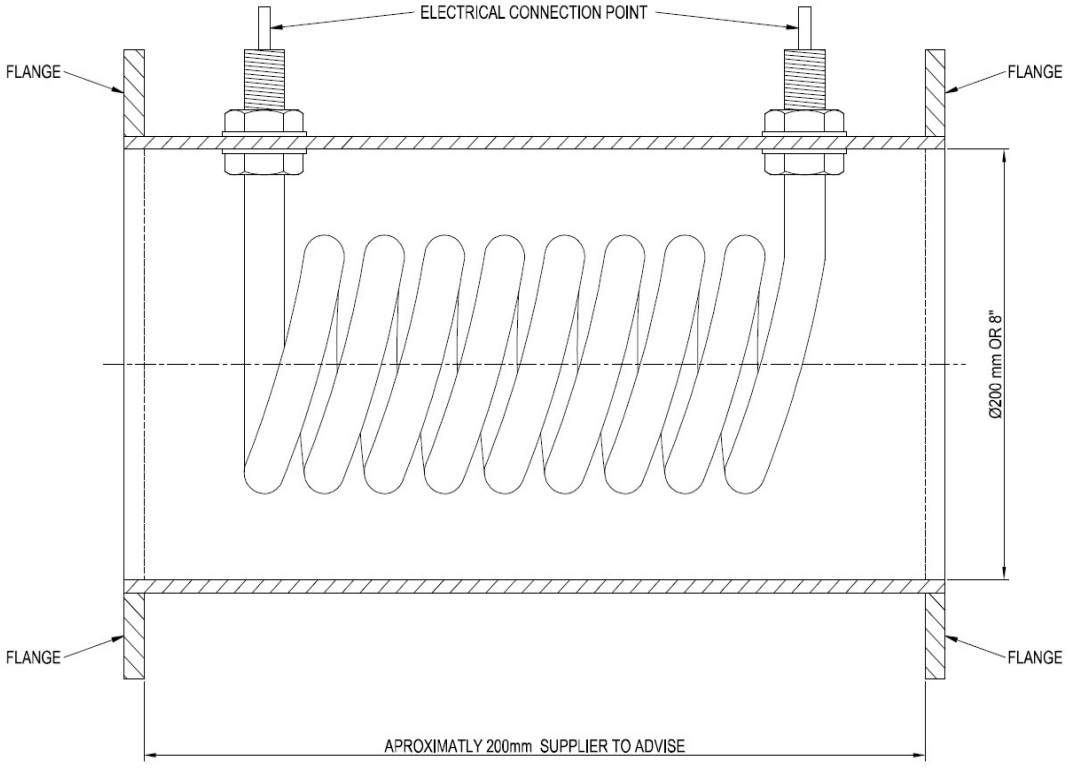
MATERIAL OF CONSTRUCTION

Available working length (along the pipe) of the electric heater	1000 mm
Available working Width of the electric heater	1500 mm
Element sheath material	Supplier to Advise.
Tube sheet material	Supplier to Advise.
Baffles/element supports	Supplier to Advise.
Terminal box material	Supplier to Advise.
Tube sheet-to-vessel flange bolting material	Supplier to Advise.
Tube sheet-to-vessel flange joint gasket	Supplier to Advise.

ENGINEERING SERVICES DEPARTMENT			
SPECIFICATION SHEET FOR ELECTRICAL HEATER H83127			
Project	PTFE Filter Destruction Project	**Unit Tag No.**	H83127
Datasheet Document No.	ENS-FDP-SPE-24022	**Revision**	3

Information on electric heater potential parts:

1. Electric heater coil.
2. Suitable flanges for a 200mm (8") pipe, class 150, RF (or supplier to advise)
3. Pipe diameter of 200mm (8") 40S or advised by the supplier to be able to fit an electric heater coil inside.
4. Suitable fasteners for the electric heater coil to hold and give leak proof connection between the pipe and the electric heater coil.
5. Electrical connection points.



GENERAL	
Heater type	Flanged In-line heater. Direct contact between process fluid and heater element.
General notes	Factory acceptance test required.

REFERENCES

[1] ENS-FDP-CLC-24014: Mass Balance Calculation for the PTFE Filter Destruction System.

[2] ENS-FDP-CLC-24019: Pressure Balance across the PTFE filter Destruction System.

ENGINEERING SERVICES DEPARTMENT	necsa We're in your world South African Nuclear Energy Corporation SOC Limited
SPECIFICATION SHEET FOR ELECTRICAL HEATER H83127	

Project	PTFE Filter Destruction Project	**Unit Tag No.**	H83127
Datasheet Document No.	ENS-FDP-SPE-24022	**Revision**	3

NOTES AND ABBREVIATIONS

[a] SC - Safety Class

[b] QC - Quality Class

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

[d] Atmospheric pressure = 87 kPa on NECSA Site.

	Name	Signature & Date
Compiled by	L Dlamini (Process Engineer)	Signed by Lungelo Wesley Brandon Dlamini, lungelo.dlamini@necsa.co.za 29/07/2025 14:04:49(UTC+02:00) SIGNIFLOW
Checked	MB Msane (Mechanical Engineer)	Signed by Mangoba Msane, Mangoba.Msane@necsa.co.za 29/07/2025 14:06:22(UTC+02:00) SIGNIFLOW
Checked	B Khumalo (Senior Process Engineer)	Signed by Bheka Khumalo, bheka.khumalo@necsa.co.za 29/07/2025 14:08:13(UTC+02:00) SIGNIFLOW
Checked	G Manuel (Chief C&I Engineer)	Signed by Grant Manuel, grant.manuel@necsa.co.za 30/07/2025 09:57:32(UTC+02:00) SIGNIFLOW
Checked	S Mngoma (Chief Mechanical Engineer)	Signed by Sibongeleni Mngoma, Sibongeleni.mngoma@necsa.co.za 30/07/2025 13:28:39(UTC+02:00) SIGNIFLOW
Checked	W van den Berg (Chief Electrical Engineer)	Signed by Willem Van Den Berg, willem.vandenberg@necsa.co.za 30/07/2025 14:39:03(UTC+02:00) SIGNIFLOW
Approved	K Moodley (Chief Process Engineer)	Signed by Kasuren Moodley, kasuren.moodley@necsa.co.za 30/07/2025 16:26:12(UTC+02:00) SIGNIFLOW
Distribution	1. ES Records 2. Docman 3. Dr K Moodley 4. Mr D Ngwenya	