ENGINEERING SERVICES DEPARTMENT

FLAME ARRESTER SPECIFICATION SHEET

Project	PTFE Filter Destruction Project	**Unit Tag Number**	Y83350
Datasheet Doc. No.	ENS-FDP-SPE-24048	**Revision**	2.0
Description	Flame arrester Y83350 is installed on the methane gas supply line 15-833-MGVP-063 to the Depolimerisation Reactor R82014 in the PTFE Filter Destruction Facility [1], downstream of the pressure regulator PCV83344B. Its function is to allow flow of methane, but prevent the transmission of flame from a downstream source, in the event of ignition taking place.		
Plant Location	Necsa, Pelindaba, North-West Province		
Equipment Location	PTFE Filter Destruction Facility - Process area outside Laboratory-131, Building V-H2		
Safety Classification	SC-3(C) and Non-classified(N)		
Quality Classification	SC-3(C) and Non-classified(N)		

Cylinder banks Note 1

☑ Above ground	Diameter	Note 1		m	Design pressure	Note 1	kPa(g)
☐ Buried	Height	Note 1		m	Design vacuum	Note 1	kPa(g)
☐ Insulated	Wall thickness		Note 1	m	Pumping-in rate	Note 1	m^3/h
☐ Ins. Thickness	Note 1			mm	Pumping-out rate at 25 °C and 20000 kPa(g)	0,0042	m^3/h
☐ Blanketed	Blanketing gas		N/A		Design standard	Note 1	

Stored product

Component Name	Formula	Vol%	Mass%	Flashpoint °C	Haz. Group	MESG (mm)	Ex-Gr
Methane	CH_4	>99%	>99%	-104	2,1	0,3	N/A

Process information

Design temperature	93 [3]	°C	Design pressure	20685 [3] and Note 4	kPa(g)
Operating temperature	Ambient [4]		Operating pressure	100 [5]	kPa(g)
			Back pressure	N/A	kPa(g)

Installation

☑ In-line		☑ Horizontal	Distance to source of ignition	3	m
☐ End-of line		☐ Vertical	☐ Top of Tank/vessel		

Function

☐ Pressure		☐ Endurance burning proof	☐ Temperature monitored
☐ Vacuum		☐ Short term burning proof	
☐ Pressure & Vacuum		☑ Deflagration proof	☐ Pressure monitored
☑ Flame arrester		☑ Detonation proof	☐ Bi-directional

Flame arrester data

Size nominal	15 [5], Note 2	mm	Flow	0,6 [4]	m^3/h	Density	1,13 [5]	kg/m^3
Pressure nominal	100 [5]	kPa(g)	Inlet flange type		Screwed female BSPT			
Adjusted set pressure	Supplier to advise	kPa(g)	Outlet flange type		Screwed female BSPT			
Adjusted set vacuum	Supplier to advise	kPa(g)	Pressure drop		Supplier to advise Note 3			kPa(g)

Material Construction for body / flanges

Pressure carrying parts SS 304/304L Class 1500	**Internals** SS 304/304L Class 1500	**Lining** Carbon Steel
End connection / Facing Threaded	**Special drilling of flange connections** Supplier to advise	
Paint finish Supplier to advise	**Weather hood** Supplier to advise	**O-ring Seal** Supplier to advise

Inspection / Documentation (to be provided by supplier)

☑ Material certificate	☑ Work certificate	☑ Performance certificate

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REFERENCE DRAWINGS AND DOCUMENTS

[1] ENS-FDP-PID-24005, PTFE Filter Destruction System P&ID Diagram - Gas Supply System 833

[2] ENS-OWPVR-FDM-24001, Uranium Contaminated Waste Oil Plasma Gasification Basic Engineering Design: P&ID - Gas Supply System (CH4)

[3] MES-PIPE-SPE-0015, Piping Material Specification Line Class MGVP, May 2024

[4] ENS-FDP-CLC-24014, Mass Balance Calculation for the PTFE Filter Destruction System

[5] ENS-FDP-CLC-24004, PTFE Filter Destruction Piping System Design Calculations - Line Sizing

NOTES

Note 1: Methane is supplied from a cylinder bank containing 2 cascades, each with three 8,1 kg gas cylinders. The cylinder bank will be installed outside the laboratory area [2]. During operation, one cascade will be on-line, while the other is on standby. Each gas cylinder has a full pressure of 200 Bar(g) at 20°C.

Note 2:This is the size of the schedule 40 pipeline in which the flame arrester will be installed.

Note 3: Pressure drop across flame arrester to be minimized to facilitate control of gas supply pressure to downstream user.

Note 4: Supplier to advise if a flame arrestor can be provided to meet the stipulated operating pressure, but not the design pressure. Alternative design pressures will be taken under consideration.

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