







OWNER:  شرکت سست و سویی توهمه ایران (سایه و شیشه)	BUSHEHR PETROCHEMICAL COMPANY MEG PLANT							EPC CONTRACTOR:  Chagalesh-Enerchimi-Steam Joint Venture BUPC-MEG PLANT PROJECT	
	CALCULATION & DATA SHEET OF SAFETY VALVE FOR NITROGEN GAS BOOSTER							 Netherlands	
MC :  شرکت سست و سویی توهمه ایران (سایه و شیشه)	Project	Area	Phase	Unit	Dis.	Doc.	Seq.	Contract No : 52-98/445	
Owner Document Number: 17811-52A	BU	20	VD	303	IN	DSH	0015	Rev.:	Page
								00	1 of 7

- All page of data sheet to be in project title block.
- P&ID number to be modified as per related P&ID document number for all instruments.
- Line number of each PSV shall be specified.
- Required capacity for each PSV shall be specified by Airpack.
- All valves shall be furnished with a threaded cap over the spring-adjusting screw.
- Lifting levers shall be furnished for all safety valves in air services.
- Test gags shall be furnished on all safety and relief valves
- Body bonnet bolt & nut material to be specified.
- PSVs pre-calculation shall be submitted by Airpack.

CALCULATION & DATA SHEET OF SAFETY VALVE FOR NITROGEN GAS BOOSTER

 شرکت سست و سویی توهمه ایران (سایه و شیشه)		 Chagalesh-Enerchimi-Steam Joint Venture BUPC-MEG PLANT PROJECT		BUSHEHR PETROCHEMICAL COMPANY MEG PLANT	
Document Review					
Issue Purpose:			IFA		
Result Code: AP,AN,CM,RE,NC			AN		
Next Status : IFC,IFA,IFI,AFC,AB			AFC		
Responsible Department			MECHANICAL		
Commented Date			Oct /02/2021		
Approval or review hereunder shall not be construed to relieve Vendor / Subcontractor of his responsibilities and liability under the contract.					


00	20/09/2021	For approval	TVt	KP	LdM	
Rev.	Date	Purpose of Issue	Prepared	Checked	Approved	AC Code
					Class: 1	Phase: P

INDEX			
No.	Device	Tag Number	Page
1	Pressure Safety Valve	PSV-10001	4
2	Pressure Safety Valve	PSV-10002	5
3	Pressure Safety Valve	PSV-10003	6
4	Pressure safety valves calculations	PSV-10001, PSV-10002, PSV-10003	7
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Notes:


GENERAL	1	Tag Number	PSV-10001		
	2	Service	Pressure Safety Valve		
	3	P&ID No.	17811-03		
	4	Location	Compressor upstream After-cooler		
	5	Nozzle	Full nozzle		
	6	Design type	Safety		
	7	Conv., Bellows, Pilot op.	Conventional type		
	8	Bonnet Type	Open		
	9	Bonnet connection	Bolted		
PROCESS CONDITIONS	10	Fluid	State	Nitrogen	Dry Gas
	11	Pressure	Norm. Max.	14 Bar(a)	16 Bar(a)
	12	Temperature	Norm. Max.	160°C	170°C
	13	Design	Press. Temp.	21 Bar(a)	200°C
	14	Ambient Temp.	Min. Max.	5 °C	55 °C
	15	Flow	707 Kg/hr / 565 Nm3/hr		
BASIS AND SELECTION	16	Set Pressure	16 bar(g)		
	17	Molecular Weight	Oper. Sp. Gr.	28,97 kg/mol	1
	18	Back Pres. (bar(g))	0 bar(g)		
	19	Allowable Overpressure (%)	10 %		
	20	Compressibility Factor (Z)	1		
	21	Ratio of Specific Heat (Cp/Cv)	1.4		
	22	Operating Viscosity (cP)	-		
	23	Barometric Pressure	1,013		
	24	Max. Allowable Relief Pressure	18,613		
	25	Design Code	API 520, API 521, API 526		
	26	Size Basis	Blocked discharge		
	27	Calculated Area (sq.mm)	To be advised by supplier		
	28	Selected Area (sq.mm)	To be advised by supplier		
	29	Orifice Designation	To be advised by supplier		
CONNECTIONS	31	Inlet Size	Outlet Size	1"	VTA
	32	Inlet Connection	Outlet Conn.	RF	RF
	33	Inlet Rating	Outlet Rating	300#	150#
	34				
	35				
MATERIAL	36	Body and Bonnet	Carbon steel (SA-216 Gr. WCB)		
	37	Seat and Disc	To be advised by supplier		
	38	Guide and Rings	SS 316		
	39	Spring	Chrome Alloy / SS 316		
	40	Nozzle	To be advised by supplier		
	41				
	42				
OPTIONS	43	Lever: Plain or Packed	N/A		
	44	Test Gag	N/A		
	45				
	46				
	47				
CERTIFICATES	48	3.1 Material certificate	Yes		
	49	Calibration certificate	Yes		
	50	Leakage test acc to API STD 527	Yes		
	51	Functional test	Yes		
CALCULATIONS	52	Sizing calculation	Yes		
	53				
	54				
PURCHASE	55	Manufacturer	According to aproved vendor list		
	56	Model	Supplier to advise		
	57				

NOTES :

				INSTRUMENT AND VALVE DATASHEET	
				Pressure Safety Valve	
					
00	TT	20/09/2021	For Approval		Sheet 4 of 7
Rev	By	Date	Description		Based on P&ID Rev.00


GENERAL	1	Tag Number	PSV-10002		
	2	Service	Pressure Safety Valve		
	3	P&ID No.	17811-03		
	4	Location	Compressor upstream After-cooler		
	5	Nozzle	Full nozzle		
	6	Design type	Safety		
	7	Conv., Bellows, Pilot op.	Conventional type		
	8	Bonnet Type	Open		
	9	Bonnet connection	Bolted		
PROCESS CONDITIONS	10	Fluid	State	Nitrogen	Dry Gas
	11	Pressure	Norm. Max.	23 Bar(a)	25 Bar(a)
	12	Temperature	Norm. Max.	135°C	140°C
	13	Design	Press. Temp.	25 Bar(a)	170°C
	14	Ambient Temp.	Min. Max.	5 °C	55 °C
	15	Flow	707 Kg/hr / 565 Nm3/hr		
BASIS AND SELECTION	16	Set Pressure	25 bar(g)		
	17	Molecular Weight	Oper. Sp. Gr.	28,97 kg/mol	1
	18	Back Pres. (bar(g))	0 bar(g)		
	19	Allowable Overpressure (%)	10 %		
	20	Compressibility Factor (Z)	1		
	21	Ratio of Specific Heat (Cp/Cv)	1.4		
	22	Operating Viscosity (cP)	-		
	23	Barometric Pressure	1,013		
	24	Max. Allowable Relief Pressure	28,513		
	25	Design Code	API 520, API 521, API 526		
	26	Size Basis	Blocked discharge		
	27	Calculated Area (sq.mm)	To be advised by supplier		
	28	Selected Area (sq.mm)	To be advised by supplier		
	29	Orifice Designation	To be advised by supplier		
CONNECTIONS	31	Inlet Size	Outlet Size	1"	VTA
	32	Inlet Connection	Outlet Conn.	RF	RF
	33	Inlet Rating	Outlet Rating	300#	150#
	34				
	35				
MATERIAL	36	Body and Bonnet	Carbon steel (SA-216 Gr. WCB)		
	37	Seat and Disc	To be advised by supplier		
	38	Guide and Rings	SS 316		
	39	Spring	Chrome Alloy / SS 316		
	40	Nozzle	To be advised by supplier		
	41				
OPTIONS	43	Lever: Plain or Packed	N/A		
	44	Test Gag	N/A		
	45				
	46				
CERTIFICATES	48	3.1 Material certificate	Yes		
	49	Calibration certificate	Yes		
	50	Leakage test acc to API STD 527	Yes		
	51	Functional test	Yes		
CALCULATIONS	52	Sizing calculation	Yes		
	53				
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PURCHASE	55	Manufacturer	According to aproved vendor list		
	56	Model	Supplier to advise		
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				INSTRUMENT AND VALVE DATASHEET	
				Pressure Safety Valve	
					
00	TT	20/09/2021	For Approval		Sheet 5 of 7
Rev	By	Date	Description		Based on P&ID Rev.00


GENERAL	1	Tag Number		PSV-10003	
	2	Service		Pressure Safety Valve	
	3	P&ID No.		17811-03	
	4	Location		Compressor Cooling water outlet	
	5	Nozzle		Full nozzle	
	6	Design type		Safety	
	7	Conv., Bellows, Pilot op.		Conventional type	
	8	Bonnet Type		Open	
	9	Bonnet connection		Bolted	
PROCESS CONDITIONS	10	Fluid	State	Water	Liquid
	11	Pressure	Norm. Max.	2,5 Bar(g)	3 Bar(g)
	12	Temperature	Norm. Max.	45°C	55°C
	13	Design	Press. Temp.	5 Bar(g)	60°C
	14	Ambient Temp.	Min. Max.	5 °C	55 °C
	15	Flow		14,5 m3/hr	
BASIS AND SELECTION	16	Set Pressure		3,5 bar(g)	
	17	Molecular Weight	Oper. Sp. Gr.	18,015 g/mol	1
	18	Back Pres. (bar(g))		0 bar(g)	
	19	Allowable Overpressure (%)		10 %	
	20	Compressibility Factor (Z)		1	
	21	Ratio of Specific Heat (Cp/Cv)		1.4	
	22	Operating Viscosity (cP)		-	
	23	Barometric Pressure		1,013	
	24	Max. Allowable Relief Pressure		4,863	
	25	Design Code		API 520, API 521, API 526	
	26	Size Basis		Blocked discharge	
	27	Calculated Area (sq.mm)		To be advised by supplier	
	28	Selected Area (sq.mm)		To be advised by supplier	
	29	Orifice Designation		To be advised by supplier	
	CONNECTIONS	31	Inlet Size	Outlet Size	1"
32		Inlet Connection	Outlet Conn.	RF	RF
33		Inlet Rating	Outlet Rating	150#	150#
34					
35					
MATERIAL	36	Body and Bonnet		Carbon steel (SA-216 Gr. WCB)	
	37	Seat and Disc		To be advised by supplier	
	38	Guide and Rings		SS 316	
	39	Spring		Chrome Alloy / SS 316	
	40	Nozzle		To be advised by supplier	
	41				
	42				
OPTIONS	43	Lever: Plain or Packed		N/A	
	44	Test Gag		N/A	
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	46				
	47				
CERTIFICATES	48	3.1 Material certificate		Yes	
	49	Calibration certificate		Yes	
	50	Leakage test acc to API STD 527		Yes	
	51	Functional test		Yes	
CALCULATIONS	52	Sizing calculation		Yes	
	53				
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PURCHASE	55	Manufacturer		According to aproved vendor list	
	56	Model		Supplier to advise	
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NOTES :

				INSTRUMENT AND VALVE DATASHEET	
				Pressure Safety Valve	
					
00	TT	20/09/2021	For Approval		Sheet 6 of 7
Rev	By	Date	Description		Based on P&ID Rev.00

GENERAL	1	Tag Number	PSV-10001, PSV-10002, PSV-10003	
	2	Service	Pressure Safety Valve	
	3	P&ID No.	17811-03	
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	5			
	6	Calculations	VTA	
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				INSTRUMENT AND VALVE DATASHEET	
					
00	TT	20/09/2021	For Approval		Sheet 7 of 7
Rev	By	Date	Description		Based on P&ID Rev.A