


PROJECT :			DATE :	03-May-13
CLIENT:			BY :	S.Rahimi
PROJ. NO. :			REV :	0
UNIT :	Produced Water Tank		DOC NO.:	

Atmospheric Tank Relief Valve Sizing (Pressure)

Input Data					
Emergency Case	---	PV-27008B Fully Close	PV-27008A Fully Open	Gas Blowby (LV-27005 FO)	Fire
Required Relieving Rate	Nm3/hr	100.2	760.0	1568.0	7250.0
Gas Specific Heat Ratio	----	1.4	1.4	1.4	1.4
Gas MW	----	28	28	20	18
Gas Compressibility Factor	----	1	1	1	1
Relieving Temperature	C	50	50	65	100

Relief Valve Inputs		
Set Pressure	mbarg	40
Overpressure	%	10
Backpressure	barg	0
Atmospheric Pressure	bara	1.01
Effective Discharge Coeff (Kd)	----	0.65

Calculation Results					
Required Relieving Rate	kg/hr	125.3	950.0	1400.0	5825.9
Relieving Pressure	bara	1.054	1.054	1.054	1.054
Relieving Temperature	K	323	323	338	373
Backpressure	bara	1.01	1.01	1.01	1.01
F Coefficient	----	0.20	0.20	0.20	0.20
Calculated Area	in ²	0.87	6.63	11.83	54.50
Relief Valve Calculated ID	in	1.1	2.9	3.9	8.3

Valve Specification					
Relief Valve Selected ID	in	10			
Selected Area	in ²	78.50			
Actual Relieving Rate	Nm3/hr	8996.9	8996.9	10406.4	10442.0
Actual Relieving Rate	kg/hr	11246.1	11246.1	9291.4	8390.9

Note					

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Atmospheric Tank Relief Valve Sizing (Vacuum)

Input Data		
Relieving Rate (Inbreathing)	Nm3/hr	137.1
Air Specific Heat Ratio	----	1.4
Air MW	----	29
Air Compressibility Factor	----	1

Relief Valve Inputs		
Set Pressure	mbarg	-5
Overpressure	%	0
Ambient Temperature	C	48.5
Atmospheric Pressure	bara	1.01
Effective Discharge Coeff (Kd)	----	0.55

Calculation Results		
Required Relieving Rate	kg/hr	177.5
Relieving Pressure	bara	1.010
Relieving Temperature	K	321.5
Backpressure (tank)	bara	1.005
F coefficient	----	0.070
Calculated Area	in2	4.2
Relief Valve Calculated ID	in	2.3

Valve Specification		
Relief Valve Selected ID	in	3
Selected Area	in2	7.07
Actual Relieving Rate	Nm3/hr	229.9
Actual Relieving Rate	kg/hr	297.7

Note