Tube Rupture Scenario

E-2025

**1. Heat Exchanger Data Input**

|  |  |
| --- | --- |
| **High pressure side** | **Reformed Gas** |
| **Low pressure side** | **DMW** |
| **Design Pressure of high-pressure side** | **29 barg** |
| **Design Pressure of low-pressure side** | **14 barg** |
| **Operating Pressure** | **24.5 barg** |
| **M** | **11.24** |
| **Cp/Cv** | **1.36** |
| **Z** | **1** |
| **Relieving Temperature** | **138** |
| **Tube OD** | **25.4** |
| **Tube Thk.** | **1.65** |

**2. Check if a PSV is needed** In order to perform this step, do the calculation below:

 multiply design pressure of high-pressure side by 10/13:

 29 \* 10/13 = 22.3 barg

 So, design pressure of low-pressure side should be at least 22.3 brag in order not to

 need a PSV. Here it is 7.5 bars, thereby requiring a PSV.

**3. Use the formula below to calculate Relief Load**

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**4. Relief Load Result**

|  |  |  |  |
| --- | --- | --- | --- |
| **Standard** | **API-521** | **Licensor** | **TCC** |
| **Wg** | **6250 kg/h** | **7107 kg/h** | **5197 kg/h** |

**5. Use the formula below to calculate orifice area**

**Results**

|  |  |  |
| --- | --- | --- |
| **Standard** | **API-521** | **Licensor** |
| **Orifice area** | **8.53 cm2** | **9.68 cm2** |

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 According to table above 3K4 is selected



