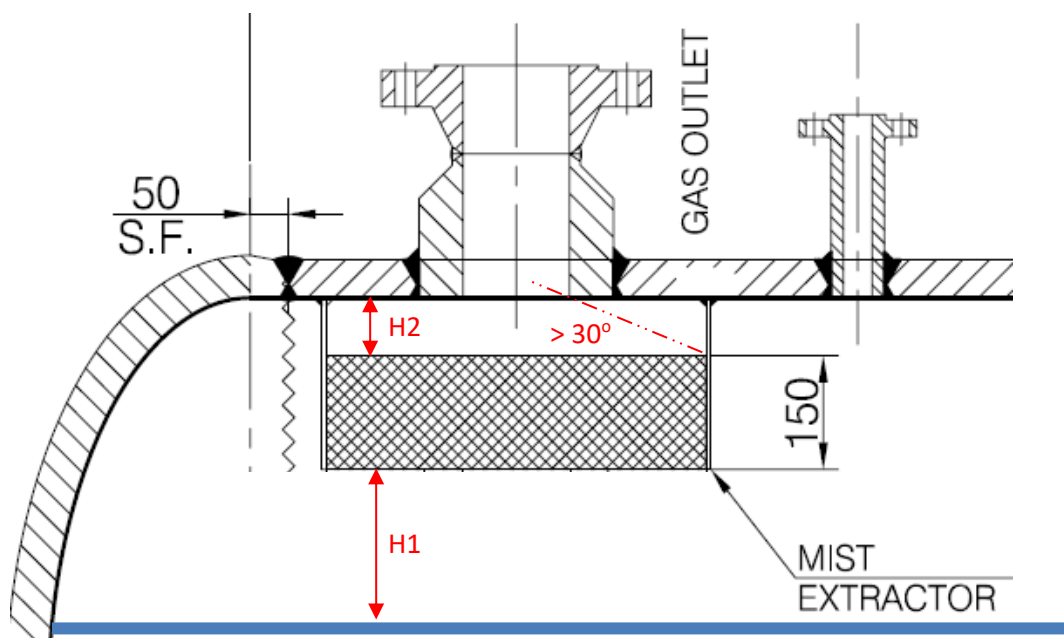


HORIZONTAL SEPARATORS: OUTLET MIST ELIMINATOR CLEARANCE

Fig.1: Elevation of a standard UPFLOW mist eliminator needs care:



Where:

H1 is the height from base of demister assembly above liquid level (normally HH level)
 H2 is the height from top of demister assembly to top of vessel

HEIGHT ABOVE LIQUID LEVEL

Although there may be an industry practice of, for example, setting 100-150mm (4-6") minimum clearance, there are several factors to be considered also:

Potential for waves – this depends on the uninterrupted liquid surface length and also the flowing gas K factor. For K factors below approx 0.1 m/s (0.35 ft/s) consider 100mm clearance for each 3m of free surface length i.e. after last baffle (4" per 10'). If K factor is 50% higher then consider 50% greater clearance.

Example: $K = 0.13 \text{ m/s}$ and $L = 5\text{m}$; Clearance = $1.3 * (5/3) * 100\text{mm} = 217\text{mm}$

Perimeter area check – Check that the flow area around the demister is equal to or greater than the demister face area. $Pd \times H1 \geq Ad$

Example: Demister area = 0.8 m², L=1000mm, W=800mm. Pd = 3.6 m. H1 = 222mm

Consequence of flooding – In some applications such as test separators where the flow is split for metering and then recombined, there may be limited consequence if the oil carries over and so the height H1 may be reduced or redefined above N or H settings. But in other

TECHNICAL BULLETIN

cases such as compressor suction or filter installations the consequence of flooding could be unsafe or commercially damaging, hence greater clearances than normal can be considered.

HEIGHT BELOW OUTLET NOZZLE

The primary aim here is to ensure reasonable flow distribution through the demister into the gas outlet and avoid channelling or dead spots. Mist eliminators may be square or circular or rectangular, but check the following:

The 30 Degree Rule – Ideally, the shallowest angle between any part of the demister (normally the perimeter) and the edge of the gas outlet nozzle (not the centreline) should be greater than 30 degrees from the horizontal (ideally 45 degrees). If 'flatter' than this, the clearance H2 is likely to be insufficient.

Example: H2 = 200mm and Distance from edge of nozzle to corner of demister = 500mm

Then: Angle = $\text{Tan}^{-1} (200/500) = 22 \text{ Deg}$ so raise H2 to 300mm for 30 Deg