Wire Mesh DEMISTERS

Features

- *Easy to install*
- *No moving parts*
- *Low pressure drop*
- *Light weight*
- *Fits all process equipment*
- *Requires no maintenance*
- *Wide variety of materials of construction available**
- *Shipped promptly*

What are DEMISTER mist eliminators?

The DEMISTER is an assembly of EIT knitted wire mesh supported on, and held down by, high open area grids. It is made to any size and shape and may be installed in all new and existing process vessels. Wire used in DEMISTER fabrication is of the highest quality. It is smooth, clean and bright for rapid liquid drainage. Stainless steels and exotic alloys are fully annealed to provide maximum corrosion resistance. Perfect fit is assured even in out-of-round vessels, eliminating all vapor by-passing.

How do DEMISTER mist eliminators work?

When a vapor stream carrying entrained liquid droplets passes through the EIT Mesh but the inertia of the droplets causes them to contact the wire surfaces and be held there briefly. As more droplets collect, they grow in size, run off and fall free. Properly applied to specific process conditions, DEMISTER mist eliminators achieve 100% separation of liquid entrainment from any vapor stream, assuring pure product overhead. Pressure drop is usually less than 25.4 mm H_2O (1" WC).

*** Construction Materials:** All 300 and 400 series SS, alloys 200, 400, 600, 800, etc., alloy 20, aluminum and copper, polypropylene, Teflon, Halar, and Kynar and any other materials which can be drawn or extruded.

DEMISTER units can be engineered to fit the smallest laboratory still, the largest refinery or petrochemical tower.

Where are DEMISTER units used?

- ***knockout drums and separators*** – save on capital costs by decreasing vessel size-recover costly fatty acids from stream-reduce compressor maintenance by preventing scale build-up
- ***absorbers*** – reduce overhead losses of glycols in dehydrators to no more than 0.1 gal/MMSCF natural gas-cut losses of absorption oil and amines in CO_2 systems
- ***scrubbers*** – reduce chemical discharges from Kraft mill smelt dissolver tank to less than 0.11 kg/dry ton (0.25 lb/dry ton) of pulp-improve scrubber efficiency by removing particulates carried in entrained liquids
- ***distillation columns*** – improve product purities and increase throughput capacities for petrochemicals, organic intermediates, fine chemicals
- ***evaporators*** – prevent carryover loss of valuable products, keep condensate TDS <10 ppm for highest quality boiler feed water-clean up vacuum ejector stream discharge-lower maintenance in vapor re-compression systems
- ***high pressure steam systems*** – provide dry steam-cut TDS to <10 ppb in condensate-eliminate build-up on turbine blades
- ***refinery towers*** – increase throughput capacity-take deeper cuts for greater product yields – prolong catalyst life in downstream cracking and reforming units by reducing carbon and metals in side draws-use lower grade crudes.

Design parameters

Variables that affect design of a DEMISTER include vapor velocity, gas and liquid density, liquid viscosity and surface tension, liquid entrainment loading, particle size distribution, content of dissolved and suspended solids, operating temperature and pressure, materials of construction and required performance. For purposes of preliminary selection abbreviated data are presented here for design capacity factors, pressure drop and particulate removal efficiency.

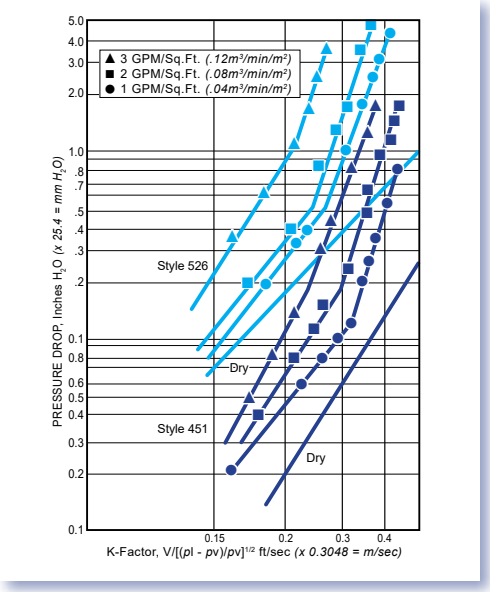

Figure 1
Pressure drop vs capacity factor for Style 526 DEMISTER at three different liquid loadings.

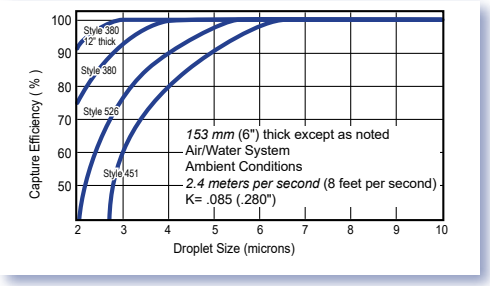

Figure 2
Capture efficiency vs particle size for four types of DEMISTER knitted mesh mist eliminators.

Design velocity and pressure drop

V = K[(ρl-ρv)/ρv]1/2
V = velocity in ft/sec
ρv = density of vapor in lb/cu ft
ρl = density of liquid in lb/cu ft
K = capacity factors for free flowing systems

Excellent performance is obtained in most systems for velocities 30-110% of the calculated value. For all other conditions, consult EIT for recommendations. For process equipment applications at normal operating velocity. ΔP is usually negligible–almost always < 25 mm H_2O (1" WC). In vacuum service, high performance is routinely achieved with ΔP on the order of 2.5 mm H_2O (0.1" WC).

Particulate removal efficiency

The DEMISTER is extremely versatile, regularly providing virtually 100% removal efficiency in most mist control applications. Furnished in a great variety of mesh styles, the DEMISTER offers capture efficiency and pressure drop that can be suited exactly to specific process requirements. Curves in graph show typical performance in an air/water system. Actual droplets size separation efficiency in other systems will be affected by gas velocity and liquid and gas densities.

Various DEMISTER Styles

Style 840 Fluoropolymer construction for extremely corrosive service.

Style 644 Polypropylene construction for corrosion resistance at moderate temperatures.

Style 380 Ultra-efficient design for maximum separation of fine particle entrainment.

Style 526 Heavy duty, high efficiency design for heavy entrainment loading.

Style 390 General purpose style. Efficient performance.

Style 451 High open area construction for high gas capacity and low solids retention. For viscous or dirty liquids. Excellent economy.

Style 700 Multifilament glass supported by wire mesh for maximum efficiency on fine particles.

Style 453 A combination of wire mesh styles to obtain high efficiency and capacity in dirty service or high solids applications.

Style 462 High capacity style for de-bottlenecking separators and towers without loss of efficiency.

Most common thickness is 153mm (6"), but thicknesses from 100mm (4") to 305mm (12") are frequently used. Thickness has a significant effect on capacity as well as efficiency.

EIT Chemical Engineering Division
South Plainfield, New Jersey 07080 USA
TEL. +1-908-510-5949 http://www.eit-us.com