

Industry: Chemical Processing

Application: Area Distribution

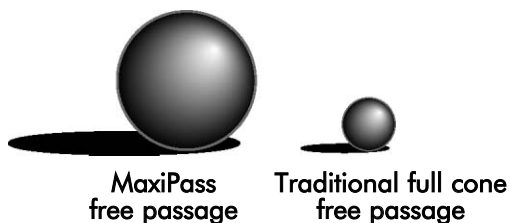
Product Description: MaxiPass Nozzles for Distillation Column Distribution

Situation: A BETE customer had asked for guidance in selecting several nozzles. The application was in distillation towers for distribution onto packing. This increases the available surface area for the evaporation (distillation) to take place. They had several similar applications with a number of different flow rates. In all cases, the viscosity of their pumped fluid was relatively high (40-120 cP, varying by case). The operating pressures were generally around 20 psi (1.4 bar), and the flows were from 10-400 gpm (38-1500 lpm).

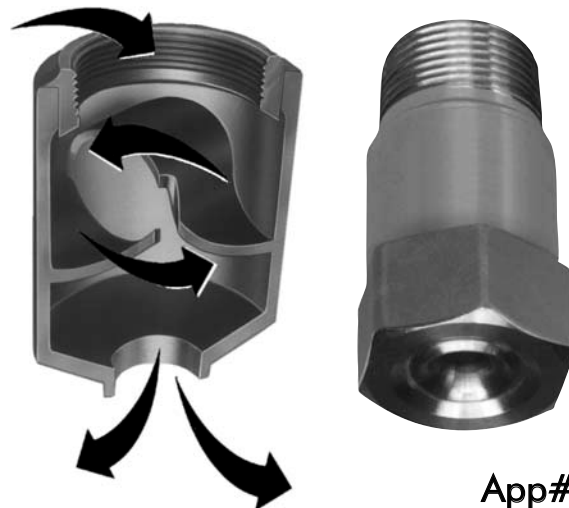
BETE's solution: This application is very similar to the distillation seen in refining, except the viscosity is usually much lower. In the case of refining, MaxiPass nozzles are selected for their clog resistance. Coke (hard chunks of carbon) is everywhere in refineries, and it is a calculated matter of time before something fouls or plugs. BETE, the inventor of the MaxiPass, has historically selected this nozzle above our other full cone nozzles for this reason. Recently, refineries have been reporting that the MaxiPass outperforms similar copycat designs, both in spray uniformity and clog resistance.

For this application, the free passage of the MaxiPass was essential for a different reason; large free passages are less affected by a high viscosity fluid. A conventional full cone nozzle has a free passage as low as 60% of the orifice size. The BETE MaxiPass has a free passage equal or greater to the orifice size. This minimizes the pressure increase required to compensate for the fluid's high viscosity. The difficulties with high viscosity can also be minimized by using a single larger nozzle, rather than a group of small nozzles, for the same reason.

With this knowledge, BETE Applications Engineers were able to select a nozzle that performed well in each of their applications.



A comparison of the free passage available with the BETE MaxiPass nozzle compared to the free passage of a traditional full cone nozzle. The BETE MaxiPass is designed to pass solid particles that are 2-3 times larger in diameter than particles that will pass through a traditional full cone nozzle.



Technical Questions?

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