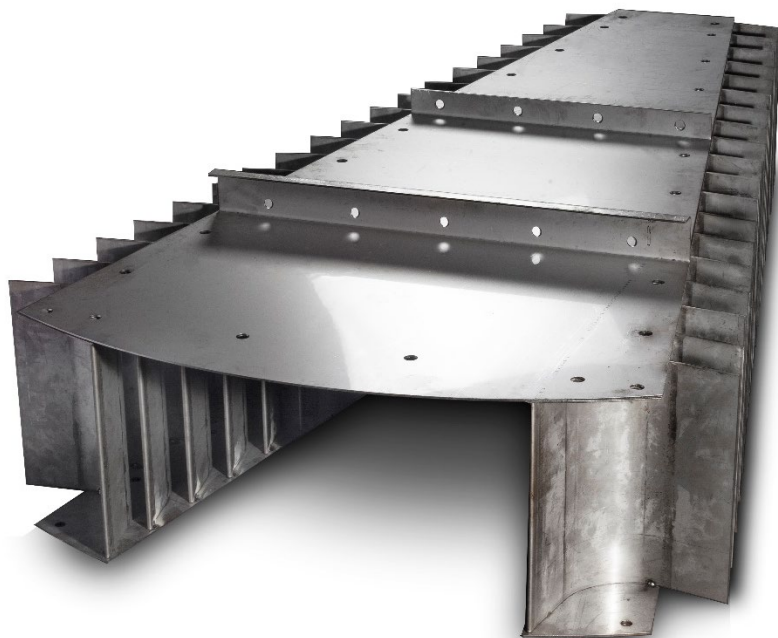


DISTRIBUTORs



CHEM GROUP
AZAR ENERGY Co.

Distributors

Azar Energy's dedication to provide state-of-the-art separation equipment is demonstrated in a complete line of vessel internals, developed through extensive testing and years of experience with separation equipment. By understanding the important role of liquid and vapor distribution, Azar Energy can confidently design vessel to provide predictable performance.

Hydraulic flow testing is used to confirm the performance of liquid, vapor and liquid-vapor distributors. Computational Fluid Dynamics (CFD) analysis is available for verification of distribution designs. Ask your Azar Energy representative about these optional services. Azar Energy recognizes that not all vessels require state-of-the-art vapor distribution uniformity. Azar Energy offers a wide range of traditional style internals, used over many years in less demanding services.

Contents

- Liquid Distributor
- Vapor Distributor

Liquid Distributor

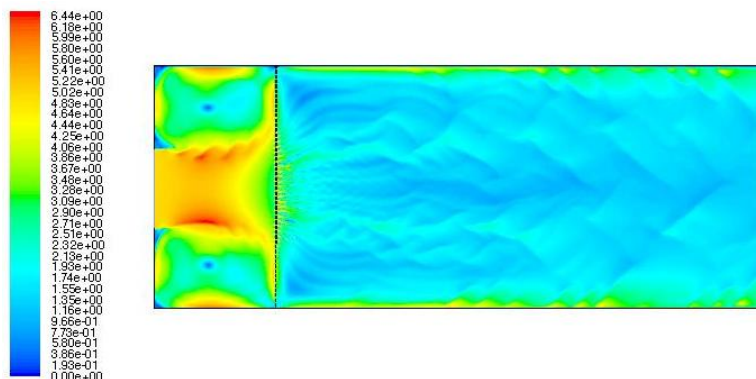
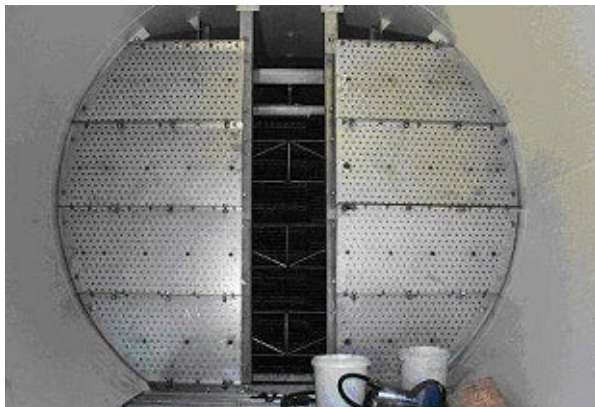
Perforated Baffle Plates

Perforated Baffle Plates are available in a range of perforations and styles for installation in horizontal or vertical vessels.

Common applications include:

- Calming the inlet zone in horizontal separators
- Liquid flow redistribution in long vessels
- Surge suppression in vessels installed in off shore FPSO applications
- Gas distribution upstream or downstream of mist eliminators

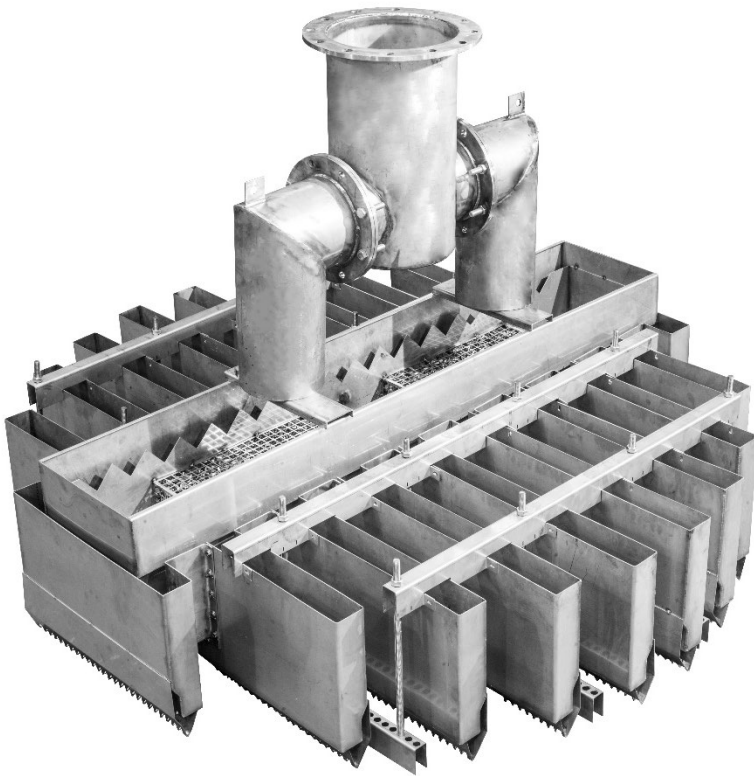
The flow distribution characteristic of perforated baffles is well established, but modern design tools such as CFD enable today's designers to tailor the baffle design to achieve optimum distribution by adjusting the hole size, % open area, number of baffles and their overlap as illustrated below. Construction of the BP's is usually in stainless steel and, thanks to the integral Stiffening mentioned above, it is possible to utilize thicknesses as low as 2 or 3 mm for many applications, reducing both installed cost and weight.



INTALOX Trough Distributor with Enhanced Baffle Plates

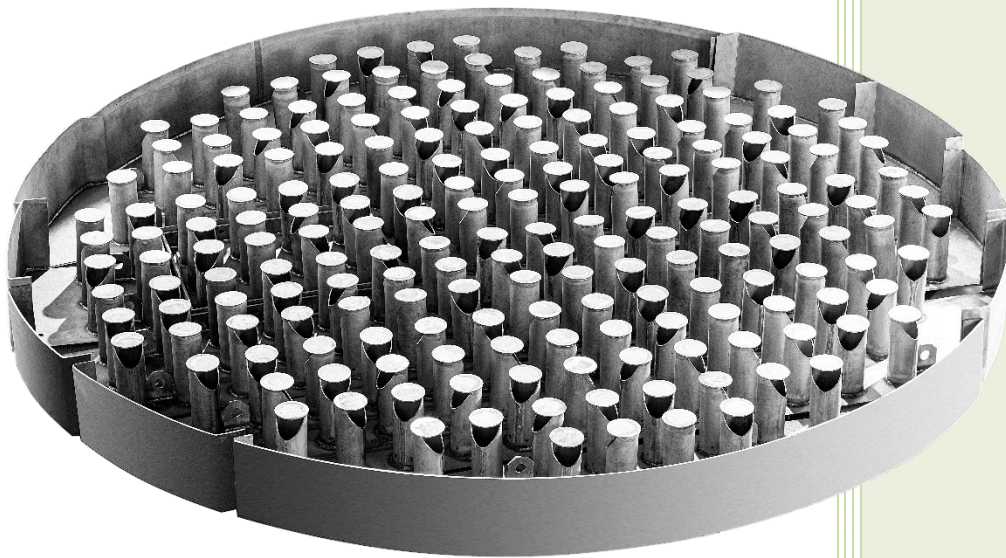
The baffle plate distributor has excellent distribution performance characteristics particularly at low liquid rates. Total wetting of the packing surface is completed in only one layer of packing. Vapor passage is provided by the space between the troughs. The baffle also acts to shield the liquid from the vapor stream to avoid entrainment, thereby making this an excellent distributor choice when operating at high vapor rates.

This type of distributor is suspended from beams. The troughs are continuous across the column diameter and are fed with one or more parting boxes. Details of baffle arrangement are variable depending upon specific liquid rates and are determined at the time of design. There are no joints to seal, therefore, no gaskets are required for this distributor.



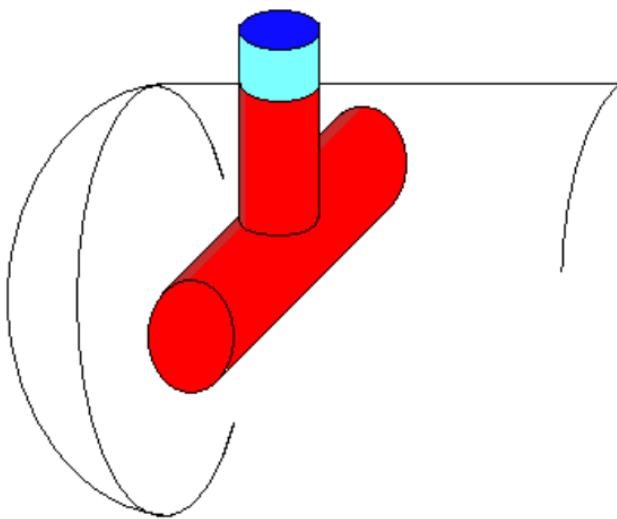
Pan Distributor with V-Notch Risers

In pan distributor with V-Notch Risers, Cylindrical risers with "V" shaped weirs act as liquid downcomers as well as vapor risers. A high liquid turndown ratio is possible due to the weirs. However, the vapor velocity in the riser limits both liquid and vapor flow rates since both phases are flowing counter-currently in the same passages. This distributor is supported either by a full support ring or by lugs.



Slotted Tee Distributor

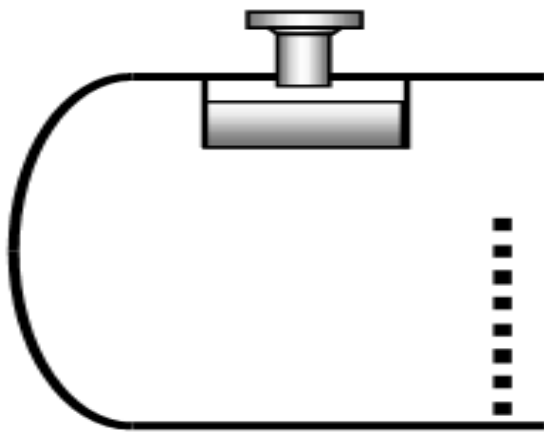
The slotted T shaped distributor consist of a vertical pipe extended inside the vessel to bring the distributor to the right elevation and a slotted pipe with large holes or rectangular slots (perpendicular to the inlet pipe) ensuring a reduced feed stream velocity and minimized flow turbulence. It can be used in both vertical and horizontal separators. The openings of the slots are usually 120° (60) and towards the dish end and liquid interface in horizontal and vertical vessels, respectively.



Vapor Distributor

Bifurcator Inlet Distributor

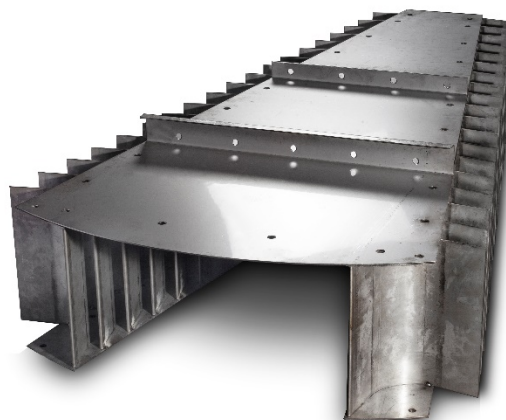
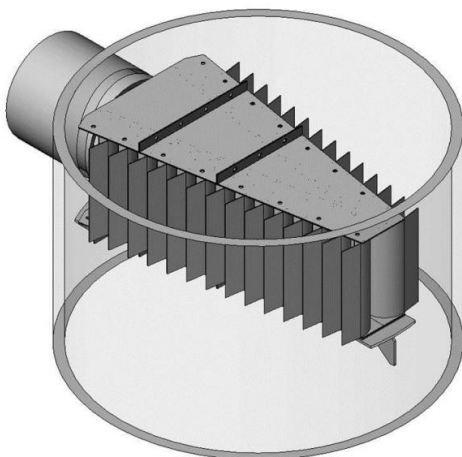
The Bifurcator Inlet Distributor is a simple, dual Vane inlet device used in horizontal Separators where there is a requirement for reasonable flow distribution with low Shear and pressure drop. In horizontal vessels the bifurcator is suited to top entry. Benefits of this device compared With simpler deflectors such as deflector Plates or dishes include reduced agitation and hence improved 2 and 3 phase operational performance, more stable level control, and reduced foaming. For liquid slugging applications, usually Where there is a long incoming flow line, the bifurcator provides excellent mechanical strength. The bifurcator works by smoothly dividing the incoming flow into two segments using curved vanes to suit the overall geometry of the inlet nozzle. The gas phase readily Separates and disperses along the vessel, whilst the liquid phase velocity is reduced and the flow directed at the vessel walls where it further disperses and falls in to the bulk liquid layer at relatively low velocity. When sizing the inlet nozzle for a bifurcator installation, we recommend the fluid momentum $p v^2$ does not significantly exceed 6,000.



SEPARATOR DISTRIBUTORS

Schoepentoeter (Vane Inlet Distributor)

The Schoepentoeter is a multi-vane inlet device used in horizontal and vertical separators where there is a requirement for good flow distribution with minimum shear and pressure drop. In horizontal vessels the Schoepentoeter is suited to both end entry, and top entry by means of an elbow directed towards the head. Benefits of this device compared with simpler deflectors include reduced agitation and hence improved 2 and 3 phase operational performance, more stable level control, and reduced foaming. For vertical vessel installations, usually where there is a high gas flow relative to the liquid flow, the Schoepentoeter provides excellent vapor distribution allowing a reduced height to the mass transfer or mist eliminator internals. The Schoepentoeter works by smoothly dividing the incoming flow into various segments using an array of curved vanes to suit the overall geometry of the inlet nozzle and distributor length. To achieve this effect the vanes start with a wide spacing and gradually reduce the gap, giving the unit its characteristic tapering shape. Based on the well proven Shell Schoepentoeter™ design, Schoepentoeter units are installed in a wide range of applications. The Schoepentoeter is usually constructed from stainless steel and is designed to be installed in sections through a vessel manway and assembled in the vessel. When sizing the Schoepentoeter to match the inlet nozzle, we recommend the fluid momentum pv^2 is in the range of 6,000 - 10,000.



Half open pipe inlet device

Half open pipes are the modified versions of 90° elbow devices, suitable for both vertical and horizontal separators, with slightly improved bulk liquid removal and reasonable gas distribution. In this type, a piece of pipe with a length up to three times the inlet nozzle diameter is welded to the inlet 90° elbow. In horizontal vessels, the last section of the half open pipe should be horizontal, pointing opposite to the flow direction in the vessel and with its opening directed upward. In vertical vessels, the last section is closed and its opening is directed downward. The same configuration is used when the half open pipe is used for a horizontal vessel with a side nozzle.

