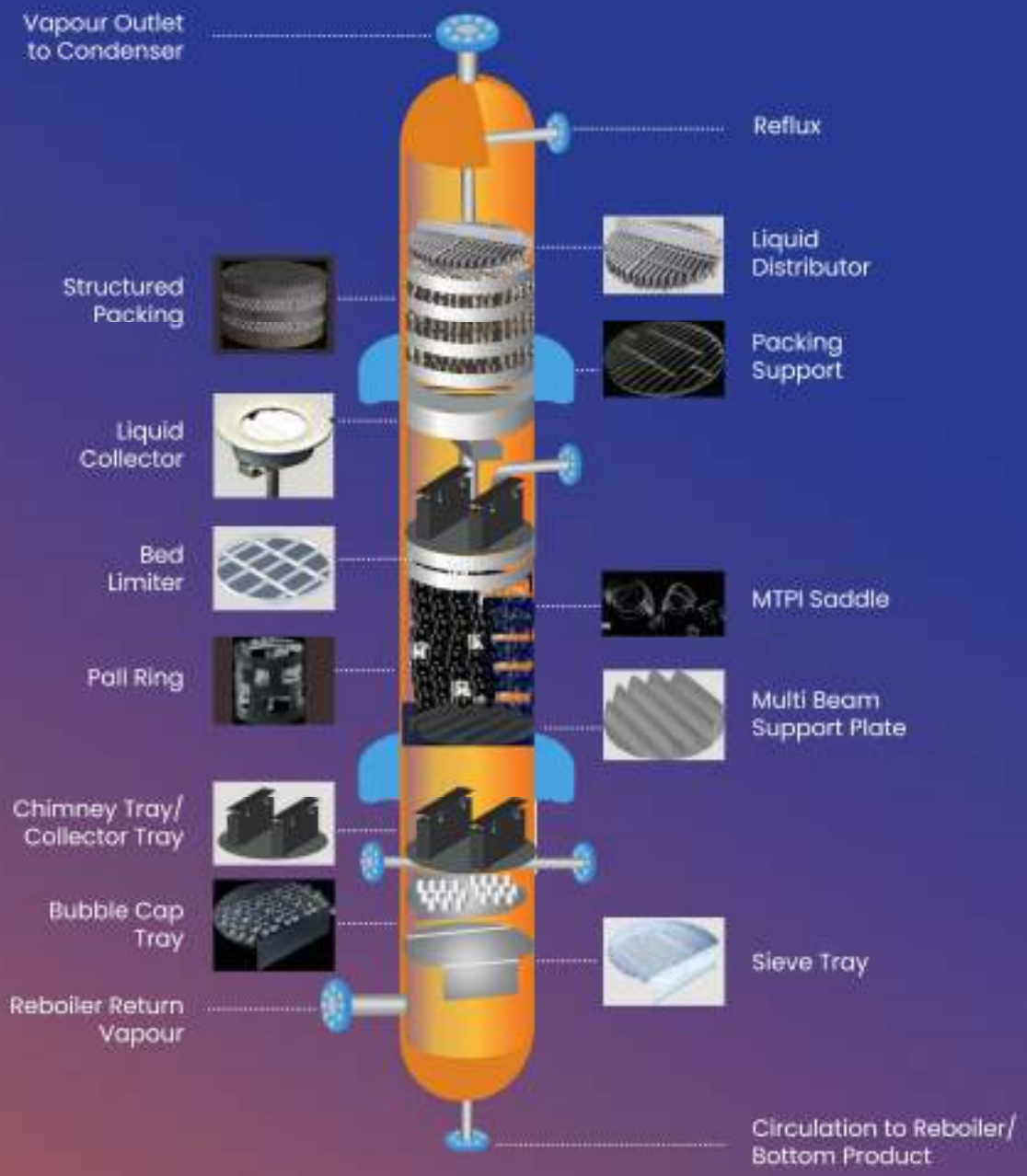
ABOUT US

MTPI Products Pvt. Ltd. is an ISO 9001:2015 company with over 40 years of experience in providing mass transfer solutions. We are one of India's largest manufacturers of mass transfer equipment and produce the complete range of Random Packing, Structured Packing, Tower Internals and Trays in both plastic and metal. Our client base extends to several countries including USA, Australia, South Africa, Middle East, Japan, China and others. We have dedicated facilities for manufacturing of metal and plastic mass transfer equipment. An experienced engineering and production team ensures our clients get optimized engineering and mass transfer solutions for enhanced performance.

Empanelments:

Our esteemed clients include:



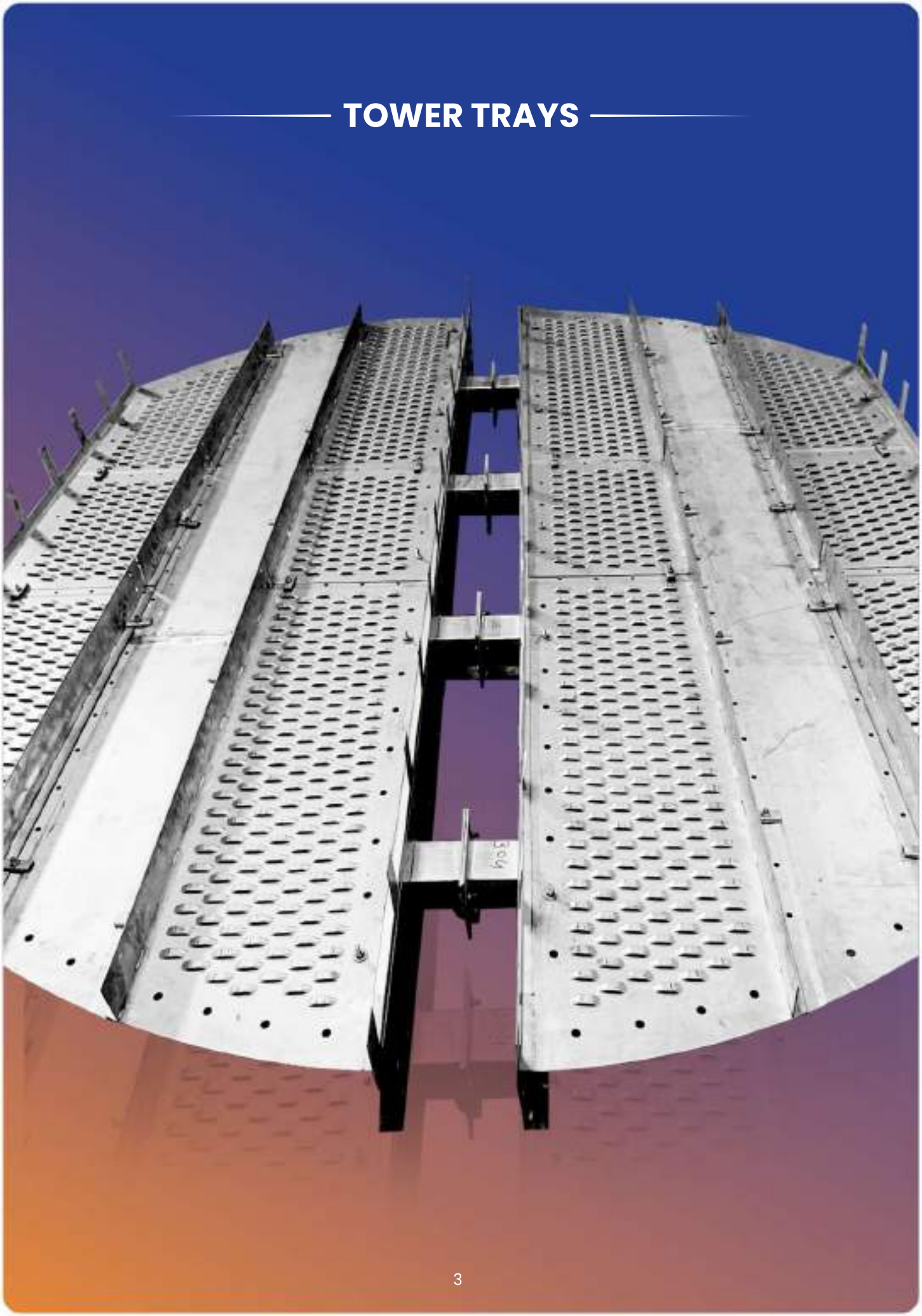
APPLICATIONS

- Tall Oil Fractionators
- Co_2 Absorbers H_2s Contactors
- Liquid-Liquid Extraction Columns
- Air Pollution Control Scrubbers
- Water Treatment Facilities
- Packed Bio-Reactors
- Demethanizers
- Coal Gasification
- CDU, VDU Units

INDUSTRIES

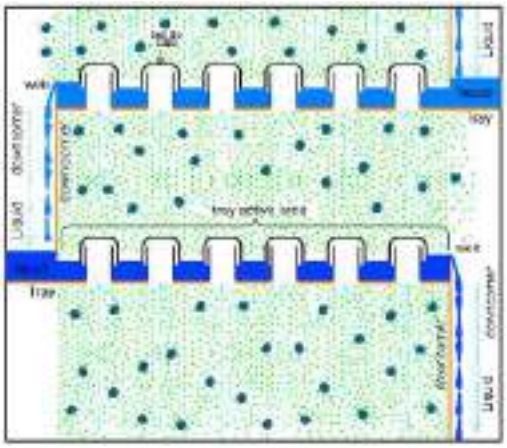
- Refinery
- Oil and Gas
- Petrochemicals
- Speciality Chemicals
- Fertilizer
- Pharmaceutical
- Water Effluent Treatment

TOWER TRAYS



Tower Trays

Trays are used in mass transfer operations where pressure drop limitations are not critical. They are mainly used in high pressure distillation operations. However, there are a few atmospheric, moderate pressure and vacuum operations where trayed towers are used. Trays are available in segmental or cartridge type construction to suit customer's requirements. Trays range from sieve and valve trays to bubble cap and cartridge trays. Valve trays are typically with covers provided to the perforations of the sieve trays. Valves are either movable (conventional) or fixed. Valves provide extra resistance to the rising vapour, which are discharged laterally. This helps better interactions with the liquid on the tray and increases efficiency.



Valve Tray

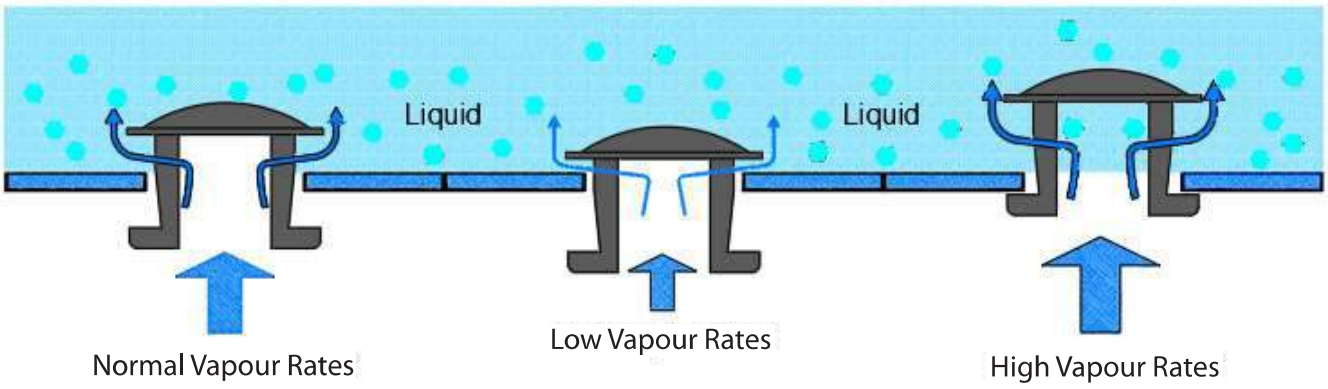
The holes in valve trays are covered with valves that vary in their opening according to the vapour pressure. As the vapour flow rate increases, the valve lifts, and vapour flows onto the tray deck. Liquid flows from the tray deck onto the weir through the downcomer to the lower tray.

These trays can operate over a wide range of flow rates with high separation efficiency because of the flexibility that variable valve openings provide.

Valve trays are designed to minimize weeping. Since the valve tends to close as the gas flow becomes lower, the total orifice area varies to maintain a dynamic pressure balance across the plate.

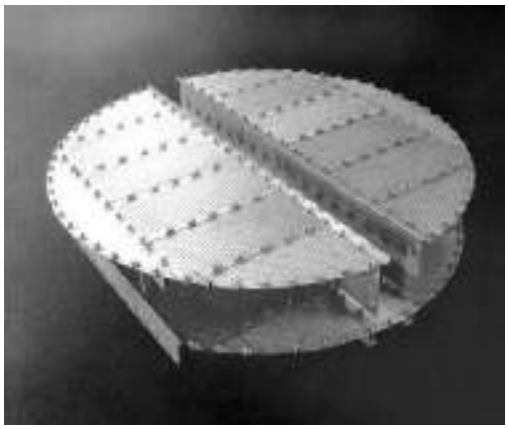
There are two types of valve trays - fixed and floating. Fixed valves are permanently open while the floating valves open and close according to the vapour flow rate.

Valve trays have the advantages of low probability of weeping, higher flexibility at varying feed compositions and flow rates and more efficiency at lower flow rates than sieve trays. Valve trays also have lower pressure drop than bubble cap trays. However, the floating valves can sometimes get fouled due to deposits and can reduce their open area and efficiency.

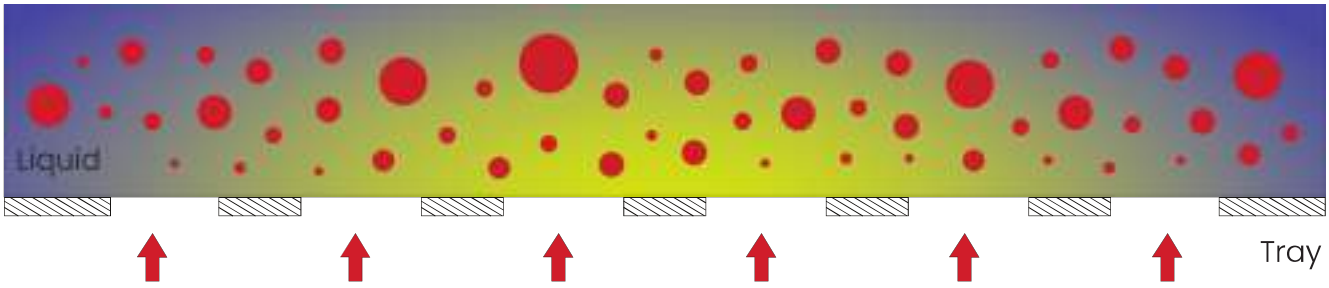


Sieve Tray

The sieve tray contains small round holes on the tray deck through which vapours rise and bubble through the liquid on the tray. The liquid flows across the tray deck over the weir, through the downcomer to the tray below. The liquid is prevented from flowing through perforations by the upward-flowing action of the vapour. Hence, if the gas flow rate is low, weeping of liquid through the perforations may occur.



Sieve trays are simple, easy to operate and maintain and have low pressure drop compared to other tray types. However, they may have less optimal performance during turndown and may have weeping during low flow rates. Sieve trays can also have higher frothing and thus higher liquid entrainment.

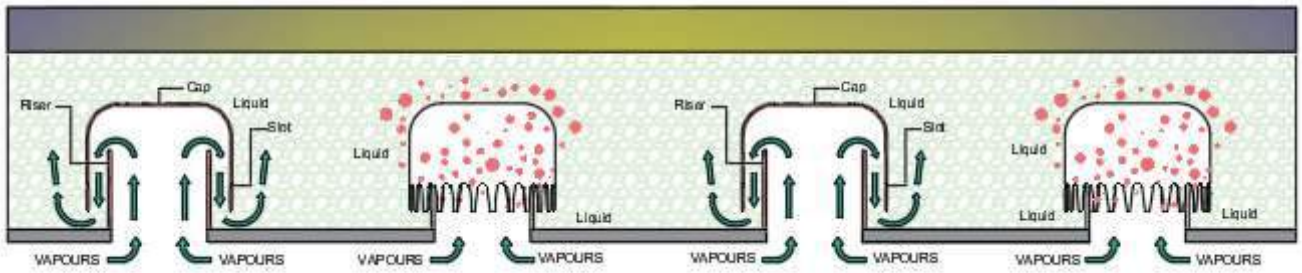


RISING VAPOURS THROUGH HOLES

Bubble Cap Tray

In these trays, vapours rise up through risers into a cap, and escape from slots in the cap and bubble through the surrounding liquid on the tray where mixing and mass transfer occurs. The depth of the liquid is maintained so that bubble caps are fully covered.

Bubble Cap Trays are used during low vapour and liquid flow rates. They have lower probability of weeping. However, they may have a high pressure gradient, are more costly and require more space.



Cartridge Tray

Cartridge trays are typically used in small flanged columns where manholes are not available. In smaller diameter columns (typically below 1 meter), cartridge trays are often used as an alternative to conventional tray systems due to their modular design. It is assembled in bundles for easy and fast installation and can be equipped with all types of tray decks and downcomers. Cartridge trays are designed as pre-fabricated, removable modules that can be installed or removed in one piece.

Tray Valves

MT V1

MT Cage A

MT Cage B

MT MVG

MT VG0

MT VG10

MT Trapezoidal Valve

MT Rectangular Valve

TOWER INTERNALS

Vapour / Liquid Distribution Devices

Packed tower design is based on the fundamental concept of equal liquid and gas distribution across the column section. The pressure drop across the packing provides an impetus for the upward flowing gas to become uniformly distributed across the column area. A packed bed irrigated by an optimally designed distributor allows the process to realise it's full separation potential (number of stages) of the packed bed. To get the optimum Mass Transfer in the packed bed, distribution of both liquid and gas is important.

Deck Type
Distributor

Pan Type
Distributor

Deck Type
Distributor

Deck Type
Distributor

Trough Type
Parting Box

Trough Sump
Distributor

Trough
Distributor

Trough Type
Parting Box

Vapour / Liquid Distribution Devices

Flow
Multiplier

Spray
Nozzle

V Weir
Notch

Header
Lateral

Collector Trays

A collector tray, also known as a chimney tray collects liquid for drawing off a product, or pump around stream, or combining with a liquid feed or ensuring uniform distribution across the tray area or improving mixing. These can be manufactured in metals, plastics and FRP.

Vane Type
Collector

Vapour
Inlet Device

Chimney
Collector
Tray

Gallery
Tray

Bed Limiters

Bed limiters and hold down plates are retaining devices used above packed beds to prevent fluidization and restrict packing movement, which can occur during upset conditions. Bed limiters are used for metal and plastic random packings as well as structured packing. Hold down plates are used for ceramic and carbon packing. They rest directly on the packing and prevent packing from breaking up due to fluidization when operated at high pressure drops or during temporary surges. These can be manufactured in metals, plastics and FRP.

Bed
Limiter

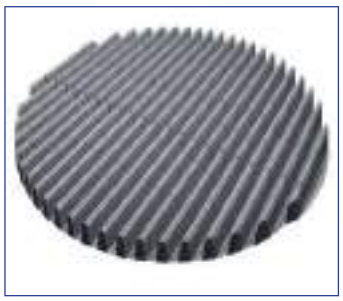
Hold
Down Grid

Bed Limiter
FRP

Support Plates

Support plates are provided to physically support the cumulative weight of the random/structured packing and the operating "liquid hold-up" in the packed bed. Support plates are shaped and designed to provide maximum open area and minimal pressure drop. These can be manufactured in metals, plastics and FRP.

Support
Plate Metal



Support
Plate Plastic

Support
Plate FRP

Mist Eliminators

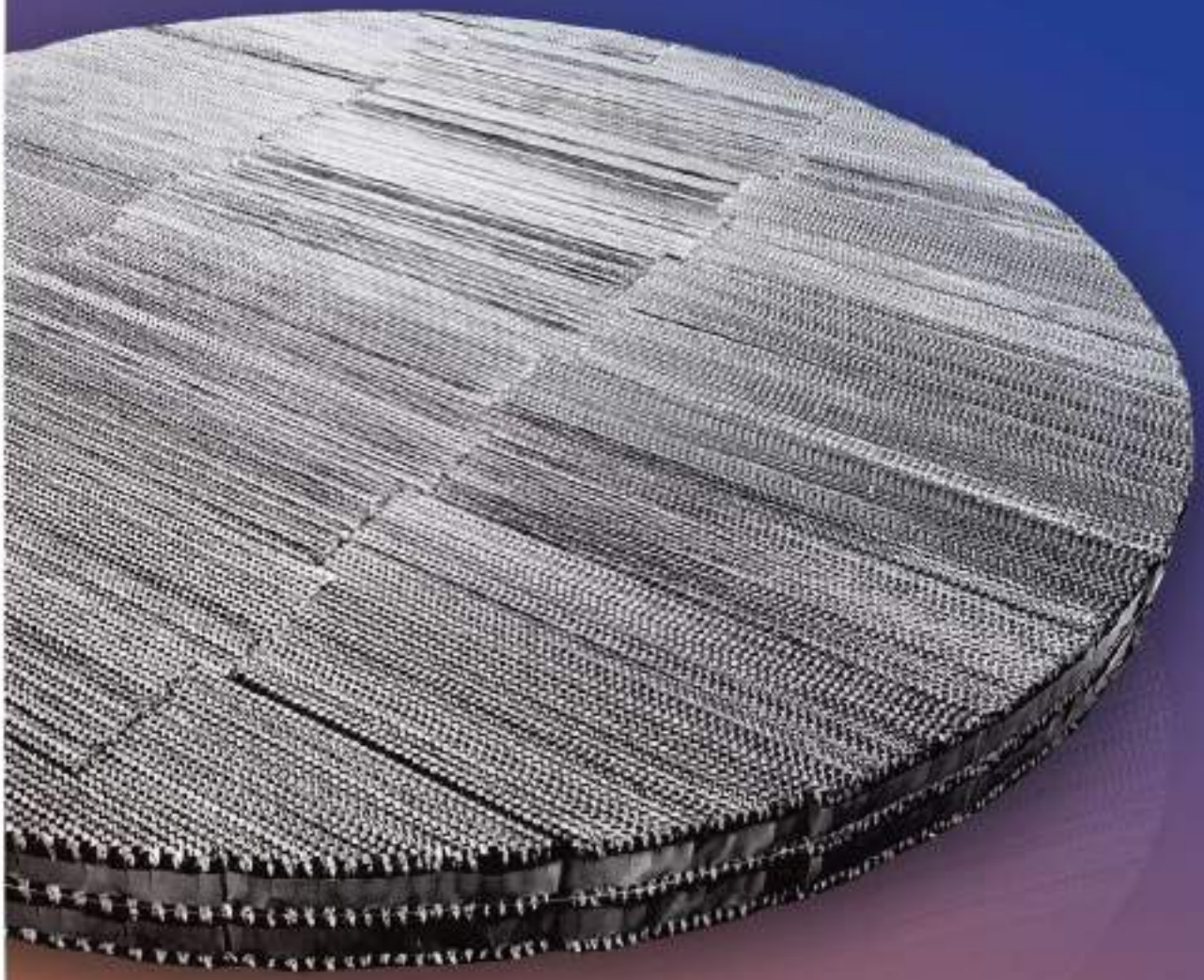
Mist elimination, or the removal of entrained liquid droplets from a vapour stream, is one of the most commonly encountered processes of unit operation. Droplets are removed from a vapour stream through a series of three stages: collision & adherence to a target, coalescence into larger droplets, and drainage from the impingement element. These can be manufactured in metals and plastics.

Mist Elminiator
Metal

Mist Elminiator
Plastic

Vane Type
Plastic

STRUCTURED PACKING



M-PAK Structured Packing

M-PAK Structured Packing has all the desirable characteristics like predictable throughput, low pressure drop, good efficiency and flexibility which plays vital role in separations. M-Pak Structured Packings are available in two different inclination angles, i.e. Type "X" and Type "Y".

Packing Type	Specific Surface Area (M2/M3)	Packing Type	Specific Surface Area (M2/M3)
M-PAK 65 X/Y	65	M-PAK 250 X/Y	250
M-PAK 125 X/Y	125	M-PAK 350 X/Y	350
M-PAK 170 X/Y	170	M-PAK 500 X/Y	500
M-PAK 200 X/Y	210	M-PAK 750 X/Y	750

M-PAK High Capacity Structured Packing

MTPI's high capacity structured packing, has a unique texture to provide an excellent liquid spread & thus lateral distribution. Owing to it's fluid dynamic curved shape, our high capacity structured packing smoothens the gas passage and minimizes localized hold-up, thus compounding the advantage. High capacity packing is available in sizes M-Pak 252Y, M-Pak 452Y & M-Pak 752Y.

M-PAK Wire Gauze Structured Packing

M-PAK Wire Gauze Packing has enhanced self-wetting characteristics; as the fiber is woven from single diameter wires. It is available in three models **MiBX-402** having **500m2/m3** specific surface area and **MiCY-403** having 7**50m2/m3** and **MiFX-404** having specific surface area **2000 m2/m3**.

MTPI Directional Grid Packing

Grid Packing are recommended for applications with fouling, choking and solid contents. The Grid Packing has robust mechanical structure, fabricated in modules for ease of installation and cleaning. These packing provide lesser pressure drop even in fouling services, due to it's unique directional design.

RANDOM PACKING

Random Packing

Random packing efficiency lies in its ability to create a random path maximizing surface area for mass transfer processes. The random arrangement promotes turbulent flow, enhancing contact between gas and liquid phases. This heightened interfacial area results in increased mass transfer rates, crucial for efficient absorption, distillation, and liquid-liquid extraction. Metal Random Packing are avaiiable in CS, MS, all grades of SS, Monel, Titanium, Copper, Aluminum etc. Plastic Random Packing are available in PP, LTHA PP, PVDF, PFA, FEP, ECTFE, HDPE, PPS, PEEK, Talc and Glass Filled PP etc.

Raschig Ring

Nominal Size	Surface Area m^2/m^3	Void Space %
25mm	209	94
38mm	136	95
50mm	100	95

Pall Ring

Nominal Size	Surface Area m^2/m^3	Void Space %
16mm	345	93
19mm	250	94
25mm	209	94
38mm	136	95
50mm	100	96
75mm	70	96
90mm	65	97

'I' Pack

Equivalent to Hy-Pak® of Koch-Glitsch

Nominal Size	Surface Area m^2/m^3	Void Space %
#1	179	96
#1.5	125	96
#2	98	97
#3	85	98

Mini Pack

Equivalent to CMR® of Koch-Glitsch

Nominal Size	Surface Area m^2/m^3	Void Space %
#1	251	96
#1.5	202	96
#2	145	97
#2.5	123	97
#3	103	97
#4	76	99
#5	43	99

Saddle Ring

Equivalent to IMTP® of Koch-Glitsch

Nominal Size	Surface Area m^2/m^3	Void Space %
15mm	290	95
25mm	230	97
40mm	150	97
50mm	98	97
60mm	73	98
70mm	59	98

Super Pack

Equivalent to Raschig Super Rings® of Raschig

Nominal Size	Surface Area m^2/m^3	Void Space %
0.5	250	97
0.7	180	98
1	150	98
2	100	98
3	80	98

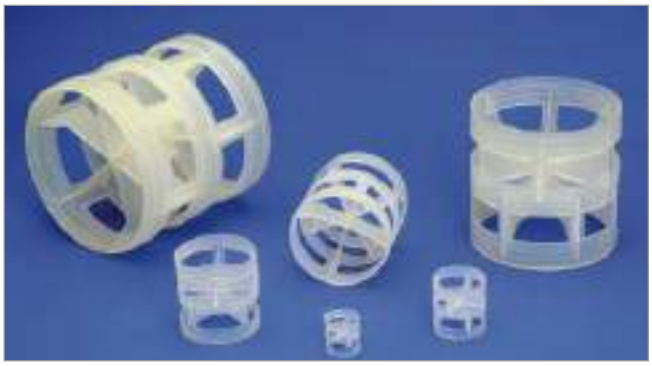
'N' Ring

Equivalent to Nutter Ring™ of Sulzer

Nominal Size	Surface Area m^2/m^3	Void Space %
1	168	98
2	89	98
3	83	98

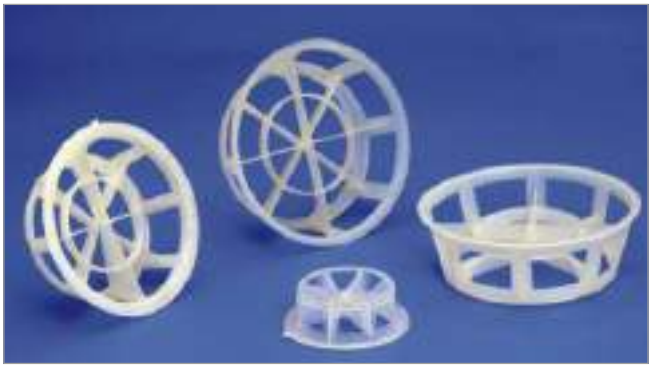
Pall Ring

Nominal Size	Surface Area m^2/m^3	Void Space %
16mm	360	84
25mm	215	90
38mm	150	91
50mm	100	92
75mm	92	93
90mm	85	94



Mini Rings

Equivalent to CMR® of Koch-Glitsch



Nominal Size	Surface Area m^2/m^3	Void Space %
#1 A	200	95
#2 A	150	96
#3 A	74	97

Super Saddle

Nominal Size	Surface Area m^2/m^3	Void Space %
25mm	240	90
50mm	110	93
75mm	89	94

Tel Ring

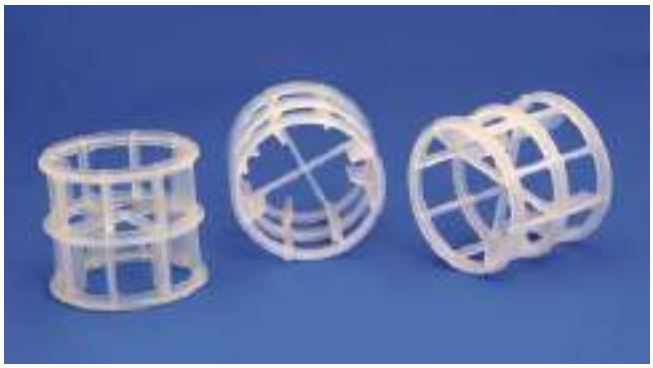
Nominal Size	Surface Area m^2/m^3	Void Space %
"S"	180	89
"M"	127	89
"L"	102	90

Star Flake

Equivalent to Snow Flake® of Koch-Glitsch

Nominal Size	Surface Area m^2/m^3	Void Space %
90mm	100	95

Flo Ring



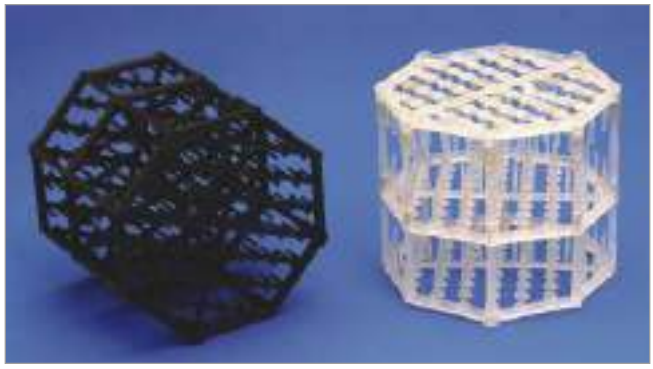
Nominal Size	Surface Area m^2/m^3	Void Space %
25mm	150	94
50mm	110	94

'T' Pack

Nominal Size	Surface Area m^2/m^3	Void Space %
50	157	94

Hex Pack

Equivalent to Q- Pac® of Lantec®



Nominal Size	Surface Area m^2/m^3	Void Space %
82x95	98	96

SERVICES

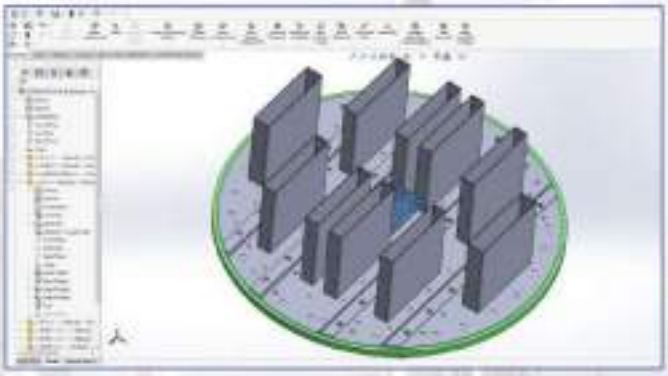
Engineering Services

HYDRAULIC DESIGN

MTPI has in depth capability for hydraulic design including HETP, pressure drop, and tower diameter assessments for grassroot and revamp projects. MTPI also provides process simulation design services using industry standard software.

MECHANICAL DESIGN

Designing and drafting of entire range of tower internals and trays is performed using design softwares. MTPI designs equipments for uniform distribution of liquids, and mechanical strength analysis for internals and structural elements.



Site supervision and installation

MTPI has a team of site supervisors with extensive experience in oil and gas, refining and chemical industries. This ensures accurate and timely installation and commissioning of plants leading to down-time.

MTPI's services extend to a variety of activities, including:

- Equipment acceptance: Receiving equipment from the plant and ensuring it meets quality standards.
- Technical consulting: Providing support and guidance for installation work.
- Quality control: Ensuring the installation is performed to the required standards.
- Staff training: Teaching customer staff how to install and replace equipment during shut down.
- Commissioning: Participating in the commissioning process if required.
- Compliance: Ensuring compliance with supplier manuals.
- Fitment to Existing Equipment: Checking and adjusting fitting to existing equipment if necessary.

Distributor testing facility

Performance testing of liquid distributors is critical to ensure even distribution of liquid across the packed bed in a column, which affects mass transfer efficiency, pressure drop, and flooding behavior. MTPI has in house testing facility to test distribution quality of distributors. Basic steps for distributor testing:

1. Visual Inspection

- Inspecting the distributor for any damage, clogged holes, or maldistribution points before testing.
- Ensuring that all orifices or drip points are open and in good condition.

2. Flow Uniformity Test

- **Flow Rates:** Testing at various flow rates, typically covering the minimum, design, and maximum operating rates.
- **Collection Points:** Using a grid of collection points evenly spread across the cross-section.

3. Hydraulic Loading Capacity

- Testing the distributor at the highest expected flow rate to ensure it does not exceed its hydraulic capacity, which can lead to maldistribution or flooding.
- Checking for liquid overflow, excessive dripping, or channeling within the distributor.