

“

**We specialize in  
human-centered and  
sustainable hydraulic  
design of process  
equipment.**

## **GET IN TOUCH**

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**Parmar Engineers**

MASS TRANSFER EQUIPMENT

## ABOUT US

Parmar Engineers is Indian company. it has established itself with new separation technology's and very well focusing primarily on providing quality mass transfer equipment and services to the Oil and Gas, Petrochemical, Chemical, Food industries and Power Industries in India.

We believe that how we do business is as important as what we do. We believe that how we do business is as important as what we do. Our goal is to provide our customers with a seamless experience at every touch point. In addition to a competitive price, we provide quick turnaround, on-time delivery, ordering flexibility and customer-focused solutions from our professional distillation Expert staff.

We are a team of passionate designers and chemical engineers.

## OUR WORK

### Hydraulic design

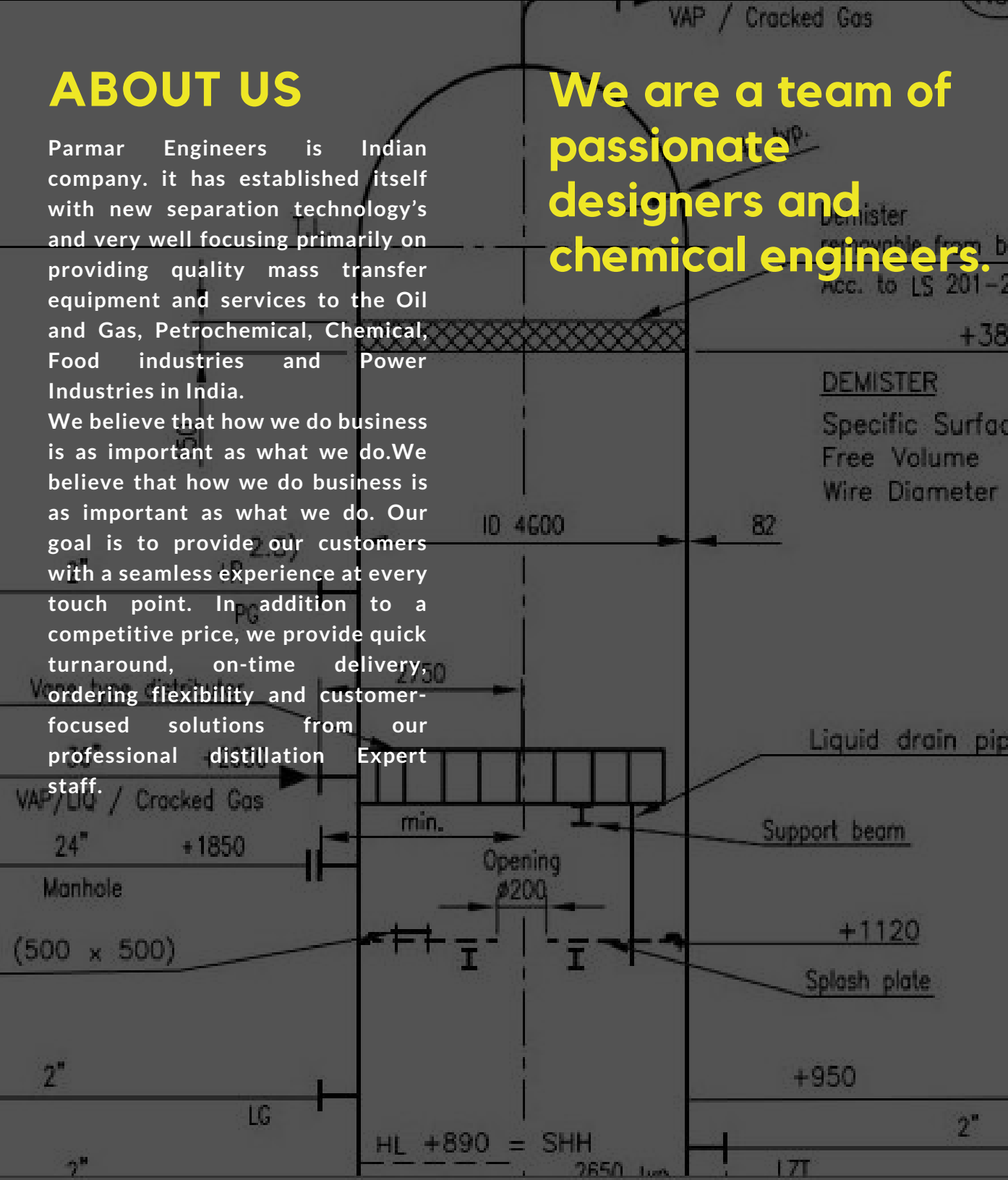
We at Parmar Engineers, do our most optimized hydraulic design and rating. we have gained our customer trust in vary short period of time with our Hydraulic ratings. Our hydraulics are approved by our valuable clients and engineering consultancies.

### Procurement

Procurement is done based on our design, from our approved vendors who have more then 20+ years of experience in manufacturing of mass transfer equipment. our engineers do in process and final inspection of product at vendors manufacturing site.

### Supply

We supply equipment in competitive price, we provide quick turnaround, on-time delivery, ordering flexibility and easy payment options.



# Hydraulic Design

We Parmar Engineers believe in supplying quality product with our most optimized hydraulic design and rating. we have gained our customer trust in vary short period of time with our Hydraulic ratings. Our hydraulics are approved by our valuable clients and engineering consultancies.

We have developed in-build software and we regularly check our software. our software are so accurate they auto check and ensure all the important parameter. Our software highlights the problem arise due to selecting improper equipment or any parameter exceeding its correlation limit our engineers perform Hydraulic Design or Hydraulic Rating according to highlighted warning and give optimized output. We perform packed columns (Random & Structure) hydraulics to ensure and guarantee the pressure drop and flooding.

**We do below listed hydraulic calculations**

**Hydraulic rating of packed column (Random & Structure Packing).**

**Design of Liquid Distributor & Re distributor.**

**Design of Liquid Collector Tray.**

**Parting Box & Pipe Arm Distributor Design.**

**Bubble Cap Tray Design.**

LIQUID RATE		FS		PRESSURE DROP (MM OF LIQUID)	
(KG/HR)	500	TOWER	1.60		
TUAL (M3/HR)	7.692	RISER	5.33		
(KG/M3)	650	CS		RISER AREA (M2)	
(CP)	1	TOWER	0.06	RISER HEIGHT (MM)	
VAPOR LOAD		RISER	0.21	FROM LOWER ORI	
(KG/HR)	0000	TOWER DIA (MM)		NO. OF DIS POINT	
(KG/M3)	0.11	2000		DIS BETWEEN ORI	
(LB/HR)	13221.72	TOWER AREA (M2)		CALCULATED FLOW (M3/HR)	
		3.14			
FLOW (HR)	EFFECTIVE LIQUID HEAD (MM)	CLEAR LIQUID HEAD (MM)	ACTUAL LIQUID HEAD (MM)	AERATION FACTOR	ORIFICE CO-EFFICIENT
294	94	96	101	0.95	0.786
474	44	46	49	0.95	0.786
MIDDLE DES					
LIQUID RATE		FS		PRESSURE DROP (MM OF LIQUID)	
(KG/HR)	75000	TOWER	3.22		
TUAL (M3/HR)	72.816	RISER	16.10		
(KG/M3)	1030	CS		RISER AREA (M2)	
(CP)	1	TOWER	0.10	RISER HEIGHT (MM)	
VAPOR LOAD		RISER	0.50	FROM LOWER ORI	
(KG/HR)	76000	TOWER DIA (MM)		NO. OF DIS POINT	
(KG/M3)	0.86	3000		DIS BETWEEN ORI	
(LB/HR)	167551.1	TOWER AREA (M2)		CALCULATED FLOW (M3/HR)	
		7.07			
FLOW (HR)	EFFECTIVE LIQUID HEAD (MM)	CLEAR LIQUID HEAD (MM)	ACTUAL LIQUID HEAD (MM)	AERATION FACTOR	ORIFICE CO-EFFICIENT
1095	71	86	91	0.95	0.786
1831	21	36	38	0.95	0.786



# Products

Pall Ring

Raschig Ring

Saddles

Structure Packing

Tower Internals

Tower Trays

Mist Eliminator

Wire Mesh

## OUR GOAL

Our goal is to provide our customers with a seamless experience at every touch point. In addition to a competitive price, we provide quick turnaround, on-time delivery, ordering flexibility and customer-focused solutions from our professional staff.



# Pall Ring

Over the years many shapes have been proposed for tower packing elements, but only a few are widely used in distillation column. Pall Rings are the most commonly used packing in industry due to its greater surface area and better void fractions. Pall ring is a second generation packing. This Packings are simple cylinder in shape, having slots on its walls.

## MOC

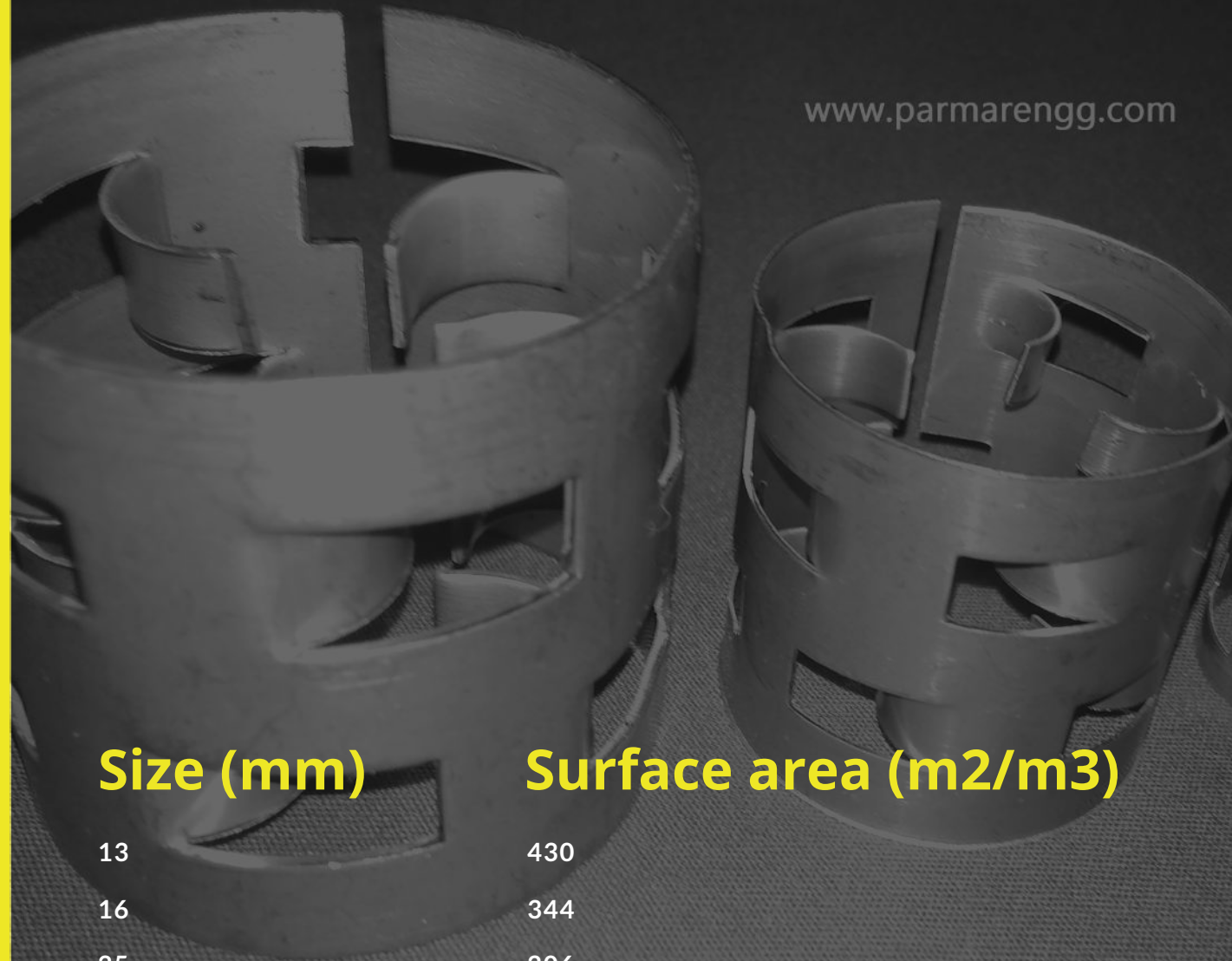
SS 304/ SS 304L

SS 316/ SS 316L

PP, PVDF, PVC, PTFE

Ceramic

All Exotic MOC's



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## Size (mm)

13

16

25

38

50

75

## Surface area (m<sup>2</sup>/m<sup>3</sup>)

430

344

206

130

102

71

# Raschig Ring

Raschig rings are one of the type of Random Packing & we are the leading supplier of it. its been using in industry from long. Pall rings are the first generation packing. This is a simple cylindrical shape packing. it have great surface area.

## MOC

SS 304/ SS 304L

SS 316/ SS 316L

PP, PVDF, PVC, PTFE

Ceramic

All Exotic MOC's

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### Size (mm)

### Surface area (m<sup>2</sup>/m<sup>3</sup>)

8	603
10	500
12	430
15	350
25	220
35	150
38	130
50	110
80	65
100	48



# Saddles/ IMTP

IMTP Packing is the fourth generation random packing, which is been used in distillation column for separation. Shape of IMTP packing produces less pressure drop. IMTP packing have great surface area & higher the voidage. Now a day industry replacing their existing packing with IMTP packing.

## MOC

SS 304/ SS 304L

SS 316/ SS 316L

PP, PVDF, PVC, PTFE

Ceramic

All Exotic MOC's



**Size (mm)**

**Surface area (m<sup>2</sup>/m<sup>3</sup>)**

15

290.2

25

226.1

40

150.1

50

98

70

59.2

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# Structured Packing

Structure packing have relatively low pressure drop as compared to random packing. This Packings are manufacturing from thin-gauge sheets or woven wire mesh. Structure Packing have of 30 degree and 45 degree. It has a more surface area so that in result it gives more efficiency. It has a high void fraction therefore capacity is more. We supply structure packing in 304 stainless steel & 316 stainless steel..

## MOC

SS 304/ SS 304L

SS 316/ SS 316L

PP, PVDF, PVC, PTFE

Ceramic

All Exotic MOC's

## Size (mm)

## Surface area (m<sup>2</sup>/m<sup>3</sup>)

25X

250

25Y

250

35X

350

35Y

350



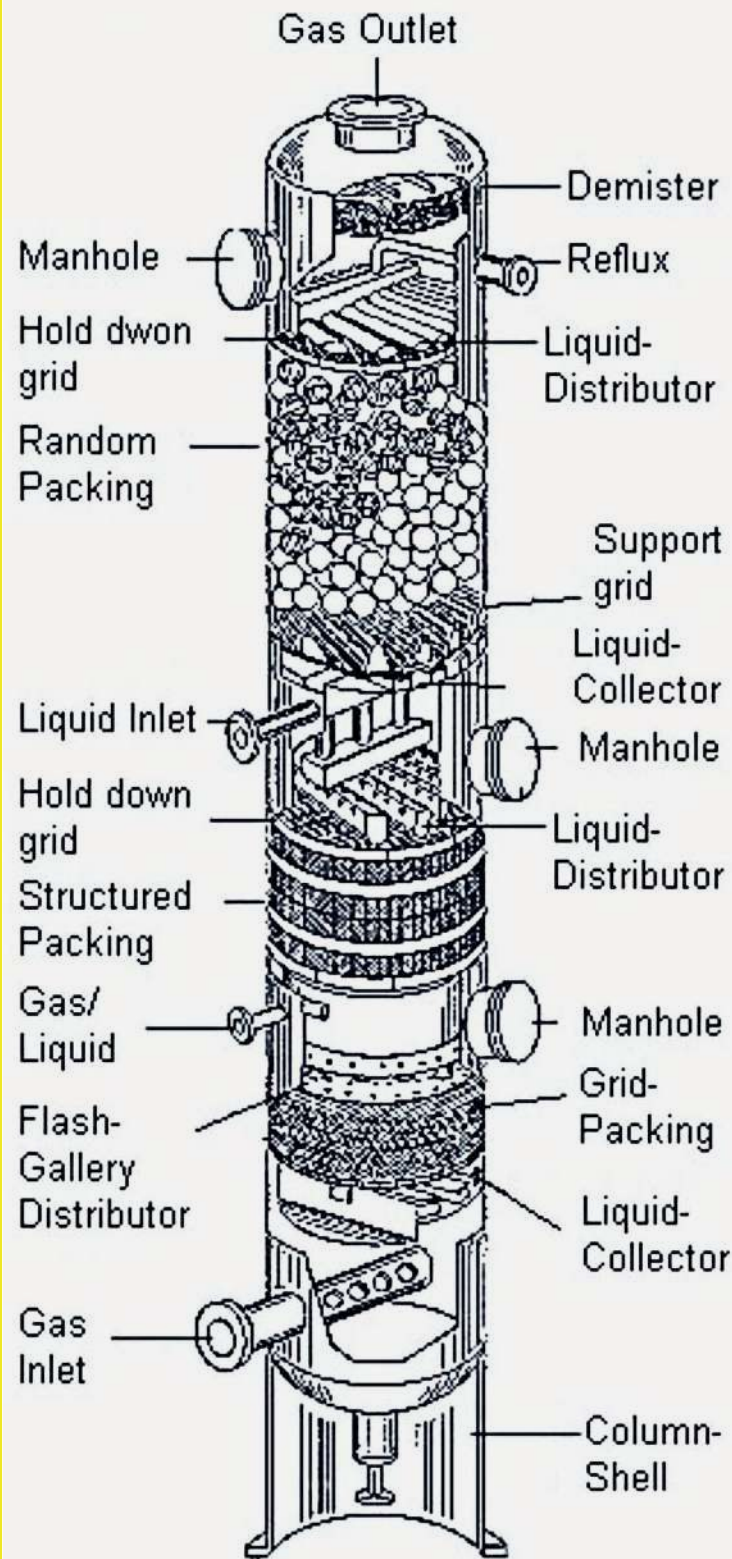
# Tower Internals

## Bed limiter/ Hold Down plate

Hold down plate/Bed limiter are tower internals generally use at top of the bed to restrict the fluidization of packing. during turbulent condition, there may be chance that packing may lift upward so that bed limiters restricts the movement of packing. pressure drop is negligible in bed limiters or hold down plates. Bed limiters are fabricated in pieces for large diameter column and for small diameter its fabricated in one piece. Bed limiter is used random packing whereas hold down grid is used for structured packing.

## Liquid Collector tray

Liquid collector tray is of the tower internals used to collect liquid from bottom section of the column. Its collects the liquid and allow vapor to passed through it. Liquid collectors are used when there is partial or total draw-off and collection of liquid for mixing.



## Support plates/ support grid

The primary function of the packing support (tower internals) plate is to serve as a physical support for the tower packing plus the weight of the liquid holdup. In the design of the packing support plate, no allowance is made for the buoyancy due to the pressure drop through the packed bed nor for the support offered by the column walls. In addition, the packing support plate must pass both the downward flowing liquid phase as well as the upwardly flowing gas phase to the limit of the capacity of the tower packing itself.

## Liquid distributor/ Redistributor

From a process standpoint, the most important column internals are the liquid distributors and Liquid Redistributor . A liquid distributor is required at all locations in the tower where an external liquid stream is introduced. In addition to providing a uniform liquid distribution pattern to the top of the packed bed, the distributor also must provide sufficient gas passage area to avoid a high pressure drop or liquid entrainment.

# Tower Trays

## Sieve Tray

Sieve Trays are the tower trays consists of flat perforated deck. Passage for the vapours is through holes provided. The vapour pressure is such that it prevents liquid into the perforation. These trays have good capacity and moderate efficiency. Sieve Trays have low maintenance cost. Sieve Trays consists of flat perforated deck. Passage for the vapours is through holes provided. The vapour pressure is such that it prevents liquid into the perforation. These trays have good capacity and moderate efficiency. Sieve Trays have low maintenance cost.

## Valve Tray

Valve Trays one of the tower trays have caps over the perforation on the trays. These caps are either fixed or floating. Fixed valves are set at a defined height and remain in open condition. The floating valves are either circular or rectangular and move up and down based on the vapour pressure. Floating valve trays are more efficient than fixed valve trays.

## Bubble Cap Tray

These tower trays trays consist of deck with fitted risers on which, inverted caps are fixed keeping a gap for vapour passage. This results in greater pressure drop. Bubble Cap Trays are used for low liquid loads & very high turn down ratios.

# Mist Eliminator

Style	Bulk Density (Kg/m3)	Surface Area (m2/m3)
PE1	192	640
PE2	144	480
PE3	115	383
PE4	192	350
PE5	173	315
PE6	144	262
PE7	112	204
PE8	80	145

## MOC

SS 304/ SS 304L

SS 316/ SS 316L

PP

## Mesh Type ME

Mist Eliminators is one of the mass transfer equipment and its used to eliminate the liquid droplet from vapor outlet stream. Eliminator is made from knitted wire gauze specifically designed to arrest liquid droplets as per process requirement. liquid droplets are impinged and arrested by wire mesh or mesh screen.

## Vane Type ME

The Vane type mist eliminators are high capacity separators. Delivering excellent separation performance. Upto particle range of 8 to 40 microns. They consist of a series of vane modules. Spaced appropriately. That causes the gas to change direction a number of times. Forces the entrained liquid to impinge on the vane and drain off. These mist eliminators separate liquid by impingement, coalescence and drainage on vane surface.

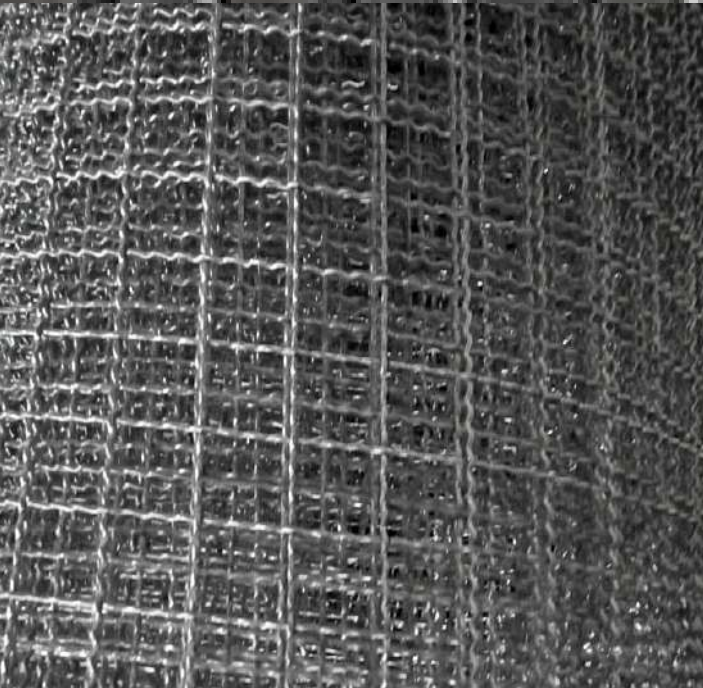
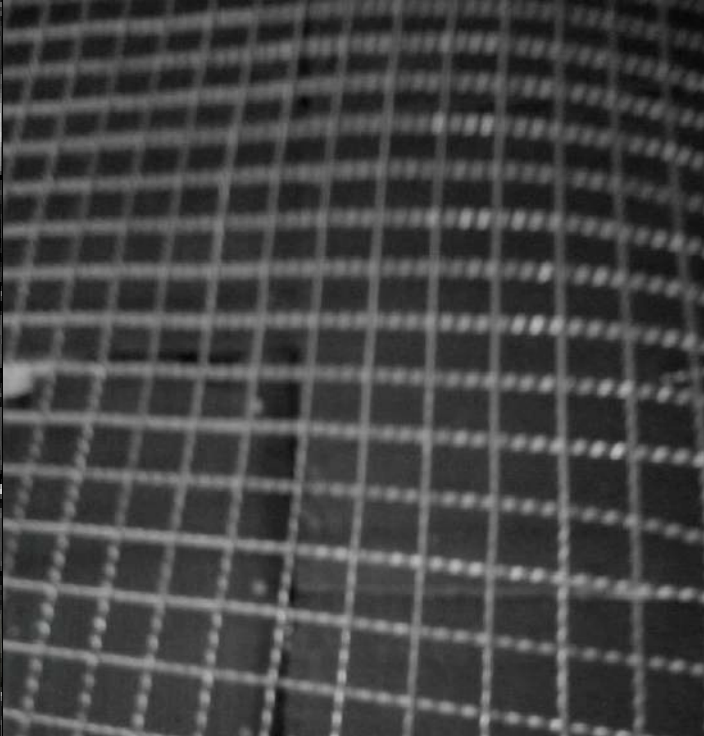
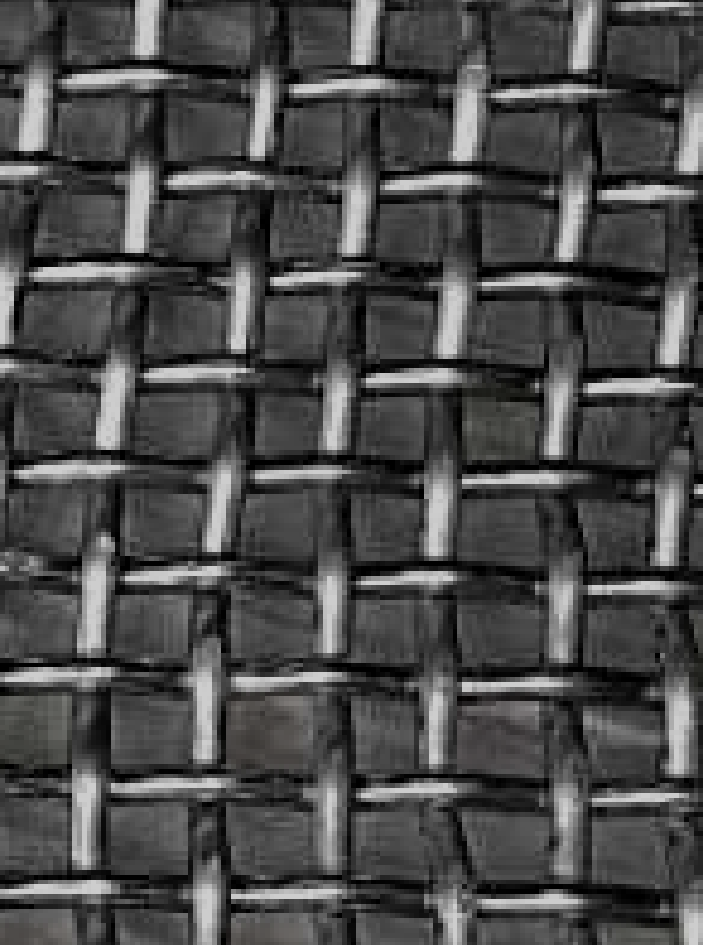
Style	Pass	Hooks
PEV1	2	NO
PEV2	3	NO

## MOC

SS 304/ SS 304L

SS 316/ SS 316L





# Wire Mesh

- 1) Knitted WM
- 2) Crimped WM
- 3) Galvanized WM
- 4) Welded WM
- 5) Hexagonal WM

## MOC

Stainless steel

Copper, Brass, Monel 400, CS

Phosphorus Bronze, Nickel

Hastelloy C276

PP

# Major Clients

Hindustan Zinc Ltd.

Baroda Equipment And Vessels Pvt Ltd.

Kedia Organic Chemicals Pvt Ltd.

SWAM Pneumatics Pvt Ltd.

Utkal Hydrocarbons. (PORWAL GROUP)

Our Social Media Presence,



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