Finepac® Structures Pvt. Ltd.
(An ISO 9001-2008 CERTIFIED COMPANY)

- Distillation
- Absorption
- Mixing
- Liquid-Liquid Extraction
- Petroleum Refinery
- Solid-Liquid Separation
  (Pusher Centrifuge)

For cost-effective
Mass-transfer & separation.
Our Company

Finepac® Structures Pvt. Ltd., which began its operations in 1993, has headquarters in Pune and has been active in manufacturing equipments for the chemical process industries. The company has an integrated portfolio of services and its USP is its constant innovation in terms of applying cutting-edge revolutionary technologies. Lead by technocrats P.K. Shah and Suhas Wakchure, the company has made available to the industry the advantages of high efficiency devices for separation technology solutions.

Our Products

The company manufactures products like column packing (Structured Packing, Random Packing) & internals, distillation trays, static mixer & centrifuge to enhance mass transfer operations like distillation, absorption, stripping, mixing and filtration. Application of latest technology in the field of mass transfer operations is need of the day to reach goals.

Our Clients

The Company has been able to win confidence from clients in the field of

1. Bulk drugs dye.
2. Intermediates.
3. Agrochemicals, Vegetable oil.
4. Refrigeration.
5. Petrochemicals and heavy chemicals be delivering quality product along with services.
Structured Packing

Structured / Tower Packing

Finepac offers a technically advanced product with assured performance in Process column for solvent purification by Distillation or solvent recovery by Absorption. A high surface area will provide efficient mass transfer. Available in specific mass transfer surface areas (m²/m³) of 60, 125, 250, 350, 500 & 750 Material of Construction: SS 304/304L, SS316/ 316L, Duplex, 904L, Alloy825, Hastelloy etc.

Applications

1. Ranging from laboratory columns to large scale process systems.
2. Solvent recovery.
3. Close boiling components distillation.
4. Azeotropic distillation.
5. High vacuum process columns.
6. Suitable for both batch & continuous distillation systems.
Structured Packing - Wire Mesh Packing

Finepac High Efficiency Structured Packing: High Capacity & Low pressure drop.

Finepac Wire Mesh Structured Packing is manufactured from woven wire mesh to provide the most efficient packing surface required for fine chemicals separations. Finepac wire mesh packing available in WM 5.0L, WM 7.5L.

1. Salient Features of Finepac WM5.0L (Surface Area 500 m²/m³)
   - High no. of theoretical stages per unit height.
2. Salient Features of Finepac WM 7.5L (Surface Area 750 m²/m³)
   - Maximum no. of theoretical stages per unit height.

The following table provides some typical performance characteristics for FINEPAC® Structured Packings:

<table>
<thead>
<tr>
<th>FINEPAC® TYPES</th>
<th>SURFACE AREA (SQ. m./CU.m.)</th>
<th>F-FACTOR</th>
<th>No. of Theoretical stages per meter ht. (NTSM)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.25 L/M</td>
<td>125</td>
<td>3.5</td>
<td>1.0</td>
</tr>
<tr>
<td>1.70 L</td>
<td>170</td>
<td>3.0</td>
<td>1.5</td>
</tr>
<tr>
<td>2.00 L</td>
<td>200</td>
<td>2.7</td>
<td>2.0</td>
</tr>
<tr>
<td>2.50 L</td>
<td>250</td>
<td>2.2</td>
<td>2.3</td>
</tr>
<tr>
<td>3.50 L</td>
<td>350</td>
<td>1.8</td>
<td>2.8</td>
</tr>
<tr>
<td>5.00 L</td>
<td>500</td>
<td>1.5</td>
<td>3.8</td>
</tr>
<tr>
<td>7.50 L</td>
<td>750</td>
<td>1.2</td>
<td>4.5</td>
</tr>
<tr>
<td>WM 5.0 L</td>
<td>500</td>
<td>2.2</td>
<td>6</td>
</tr>
<tr>
<td>WM 7.5 L</td>
<td>750</td>
<td>1.5</td>
<td>9</td>
</tr>
</tbody>
</table>

(This is for standard organic system)
Special Features

1. Suitable for coking and fouling applications due to its geometrical structure and smooth surface.
2. The structure and element height allow for easy cleaning; it can be removed, unscrewed and cleaned with a water jet.
4. Mechanically robust structure.
5. Much better separation efficiency than traditional grid.
6. Typical application (oil refineries).

Applications

1. Atmospheric Crude Units.
2. Gas Quench Towers.
5. Coker or Visbreaker Fractionators: Wash Section.
6. Edible Oil Deodorizers.
7. FCC Main Fractionator: Slurry pumaround section.

<table>
<thead>
<tr>
<th>Finagrid</th>
<th>40 L</th>
<th>64 L</th>
<th>64 M</th>
<th>90 M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific surface area</td>
<td>40 m²/m²</td>
<td>64 m²/m²</td>
<td>64 m²/m²</td>
<td>90 m²/m²</td>
</tr>
<tr>
<td>Surface structure</td>
<td>Smooth, No Dimples, No Holes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material thickness</td>
<td>0.5 to 1.6 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material</td>
<td>SS316L, SS304, 410S &amp; other materials as per request</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Efficiency Graph for Structured Packing

Finepac 5.0L (500m²/m³)

F - factor (m/s /Kg/m²)

NTSM

Finepac 3.5L (350m²/m³)

F - factor (m/s /Kg/m²)

NTSM

Finepac 2.5L/2.5M (250m²/m³)

F - factor (m/s /Kg/m²)

NTSM

Finepac 7.5L (750m²/m³)

F - factor (m/s /Kg/m²)

NTSM

Pressure Drop

Pressure Drop

NTSM - NO. of Therotical stages per mtr.
Random Packings / Tower Packing

Finepac offers an array of conventional and customized random packings that enable organizations to choose the best possible option for maximum outputs.

**Finepac's® range includes**

1. Finalox (FINEPAC® Metal Saddles).
2. C-Rings.
3. Pall Rings.

This range is available in CS & all types of Stainless Steel, Plastic, Ceramic and any other metal as per process requirements.

**Benefits of Random Packing**

1. Greater efficiency than fractional trays and other random packings.
2. Ideal in a wide range of Mass transfer services.
3. Available in various sizes as per requirement.

**Metal Saddles**

Metal Packings are available In MOCs. Like S.S. 316/304 And S.S. alloys, C.S., Copper & Aluminum Etc.

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NOS/Cu.m.</th>
<th>Surface m²/m³</th>
<th>Voidage %</th>
<th>Packing Factor F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saddle No.15</td>
<td>3,47,500</td>
<td>290</td>
<td>95</td>
<td>51</td>
</tr>
<tr>
<td>Saddle No.25</td>
<td>1,36,500</td>
<td>226</td>
<td>96.2</td>
<td>41</td>
</tr>
<tr>
<td>Saddle No.40</td>
<td>50,000</td>
<td>150</td>
<td>97.3</td>
<td>24</td>
</tr>
<tr>
<td>Saddle No.50</td>
<td>14,750</td>
<td>99</td>
<td>98</td>
<td>18</td>
</tr>
<tr>
<td>Saddle No.70</td>
<td>4,625</td>
<td>59</td>
<td>98</td>
<td>12</td>
</tr>
</tbody>
</table>
## Random Packings / Tower Packing

### Metal Pall Rings

<table>
<thead>
<tr>
<th>SIZE</th>
<th>NOS/Cu.m.</th>
<th>Surface m²/m³</th>
<th>Voidage %</th>
<th>Packing Facto F</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 mm</td>
<td>4,00,000</td>
<td>430</td>
<td>90</td>
<td>73</td>
</tr>
<tr>
<td>16 mm</td>
<td>2,10,000</td>
<td>345</td>
<td>93.1</td>
<td>71</td>
</tr>
<tr>
<td>19 mm</td>
<td>1,00,000</td>
<td>250</td>
<td>94</td>
<td>63</td>
</tr>
<tr>
<td>25 mm</td>
<td>51,000</td>
<td>208</td>
<td>94.5</td>
<td>48</td>
</tr>
<tr>
<td>38 mm</td>
<td>13,500</td>
<td>131</td>
<td>95</td>
<td>28</td>
</tr>
<tr>
<td>50 mm</td>
<td>6,500</td>
<td>98</td>
<td>96</td>
<td>20</td>
</tr>
<tr>
<td>75 mm</td>
<td>1,820</td>
<td>71</td>
<td>96</td>
<td>18</td>
</tr>
</tbody>
</table>

### Ceramic Saddles

<table>
<thead>
<tr>
<th>SIZE</th>
<th>Wt. Kg/m³</th>
<th>Surface m²/m³</th>
<th>Voidage%</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-7 mm</td>
<td>850</td>
<td>984</td>
<td>90</td>
</tr>
<tr>
<td>12-13 mm</td>
<td>725</td>
<td>623</td>
<td>71</td>
</tr>
<tr>
<td>20 mm</td>
<td>700</td>
<td>334</td>
<td>72</td>
</tr>
<tr>
<td>25 mm</td>
<td>660</td>
<td>255</td>
<td>73</td>
</tr>
<tr>
<td>38 mm</td>
<td>625</td>
<td>165</td>
<td>74</td>
</tr>
<tr>
<td>50 mm</td>
<td>585</td>
<td>121</td>
<td>75</td>
</tr>
<tr>
<td>75 mm</td>
<td>545</td>
<td>91</td>
<td>77</td>
</tr>
</tbody>
</table>
Plastic Packing

Available in PP, HDPE, LTHA grade PP & PVDF, mostly used for acidic & alkaline media in gas absorbers & aeration plants. Homo Polymer grade PP is suitable up to 95 °C and LTHA grade PP is suitable up to 130 °C, HDPE is suitable up to 85 °C, PVDF is suitable up to 140 °C. (Check chemical compatibility at maximum operating temperature.) These are available in 25, 38, 50 and 75mm sizes.

Plastic Pall Rings

These are available in 16, 19, 25, 38, 50, 75 and 90mm sizes.
A mass transfer tower also requires other internal equipments. Liquid Distributor, for equal distribution of liquid and vapour within the tower. Collector plates capture liquid for removal from the tower. Packing support plates are used to physically support and retain packings inside the tower. Finepac manufactures tower internals in a variety of metals for use in virtually all mass transfer processes.

- **Liquid Distributor**
  1. Channel type Distributor: It is in single piece or segmented distributor with integral channel.
  2. Liquid Distributor VEP: Large hole dimension than conventional discharge systems.
  3. Liquid Distributor Trough type.
  4. Pipe Type Liquid Distributor.
  5. Chimney Tray.

- **Liquid Collector**

- **Lamella (Vane) type Collector**
  The collector is used as a separate unit to accumulate liquid from pallet section within column. This collector required a ring channel welded to the column wall. The pressure drop of the collector is negligible to collector flange.

- **Flange Type Collector**
  The collector is used for small column diameter and which sandwich between body flanges.
• Column Internals: Random Packing

• Liquid Distributor
  1. Channel Type
  2. Antenna Type
  3. Pan distributor

• Bed Limiter

This Bed Limiter is normally recommended for metal and plastic random packings. It is designed to withstand an upward thrust. The opening size can be varied to suit various packing sizes and the beams can be designed to support a prescribed man-load. The normal bed limiter is clamped on to a support ring.

• Multi Beam Support

This type of support plate is designed in multi-piece or single piece construction depending upon whether the support plate will be installed through a column body flange or man way. The slot size is based on the size of packing to be supported.
Column Trays

Column Trays - FINEPAC® offers following different type of trays

1. Sieve Trays
2. Bubble cap trays
3. Fixed valve trays
4. Cartridge trays
5. Float valve trays

• Tray Configuration

We give maximum attention to the below key tray design parameters, which impact on column operation.

1. Active area (or Bubble area).
2. Down Comer Area.
3. Open Area (or Hole area).
4. Tray Spacing.
5. Down comer Clearance.
6. Outlet Weir Height.
7. Flow Path Length.
8. Number of Flow Paths.

• Floating Valve Trays

1. The floating valve elements are rectangular or round.
2. Valves are floating due to vapor flow from the underneath.
3. This maintains near constant pressure drop with respect to variation in vapor flow rates. Due to this characteristics valve trays provide higher sustain efficiency.
4. There is no liquid flow under valves.
5. The construction offers improved turn down ratio.
6. Wide legs and locking of valve rotation increases stability and reduces damage to the valves.
• Fixed Valve Trays

1. Fixed valves are bridge like construction, extruded from the tray deck.
2. These valves have larger vapour passage.
3. The trays operate at low pressure drops with higher capacities.
4. Entrainment of liquid droplets is reduced appreciably.
5. The type of construction offers increased stiffness to the tray deck.
   No movement of valves and hence no wear and trays.
6. Excellent fouling resistance.

• Bubble cap Trays

1. Bell shaped inverted bubble caps having vertical slots are fixed over cylindrical risers.
2. Vapors travel upwards through risers and diffuse through the bubble caps.
3. Effective diffusion of gas through liquid pool maintained around bubble caps.
4. Wide range of turn down ratios without weeping.
5. Lower vapor / liquid loads are possible.
Static Mixer

Static Mixers are a series of geometric mixing elements fixed within a pipe, which use the energy of the flow stream to create mixing between two or more fluids. Static Mixers are used to mix liquid-liquid, liquid-gas and gas-gas.

Finepac study mixing application & accordingly design the efficient device & fabricate the static mixer.

Features

1. The device consists of mixer elements contained in a cylindrical or squared housing and element consist of series of Multidirectional channels.
2. Material of Construction in Ss316, Ss304, Special Alloy Exotic Metal, PTFE lining.

Advantages

1. No needs of Tanks, agitator etc.
2. Available in very compact size.
3. No moving parts.
4. Low pressure dry.
5. Shorter in length.

Static Mixer is used in different mixing task

1. Blending: Two Soluble components are mixed together to achieve homogeneity.
2. Dispersing: Two insoluble components are mixed together to achieve required droplet size and Mass transfer.
Parameter for Designing Mixer

1. Flow Rate of each component to be mixed.
2. Viscosities, surface tension and specific gravity.
3. Viscosity is important parameter in mixer designing. Viscosity ratio of various streams is most important for mixing efficiency.

Typical Examples

1. Mixing of reactants in nitration plant.
2. Waste water treatment plant & sugar industry.
5. Water Heating.
7. Diluting Concentration & Mixing Flavoring.
Pusher Centrifuge

Main Features

1. Solid liquid separation in continuous operation.
2. Higher wash efficiency.
3. Simple in operation.
4. Low energy consumption per unit production.
5. Eliminating Manual Handling.
6. Minimum floor space requirements.
7. No spillage, Higher yields.
8. Low maintenance cost with simple maintenance methods.

Note: Available in hydraulic and mechanical versions.

Special Features

1. Higher solid throughput with minimum residual moisture.
2. Cylindrical basket, multistage machines are possible.
3. Easy rotor assembly, simpler dismantling and installation process.
4. Compact structures, easy and low maintenance.
5. Lower pusher pressures, and reduced axial pressure, low energy consumption.
6. Relatively thick cake formation, high wash efficiency can be achieved.
### Machine Data

<table>
<thead>
<tr>
<th>SIZE</th>
<th>P-180</th>
<th>PM-230</th>
<th>P-300</th>
<th>P-360</th>
<th>P-500</th>
<th>P-600</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basket Diameter (MM)</td>
<td>180</td>
<td>230</td>
<td>300</td>
<td>360</td>
<td>500</td>
<td>630</td>
</tr>
<tr>
<td>Maximum Speed</td>
<td>3000</td>
<td>3000</td>
<td>3000</td>
<td>3000</td>
<td>2100</td>
<td>1900</td>
</tr>
<tr>
<td>Pusher Motor (KW)</td>
<td>1.5</td>
<td>2.2</td>
<td>7.5</td>
<td>7.5 /11</td>
<td>18</td>
<td>30</td>
</tr>
<tr>
<td>Rotor Motor (KW)</td>
<td>2.2</td>
<td>3.7</td>
<td>11</td>
<td>11</td>
<td>22</td>
<td>30</td>
</tr>
<tr>
<td>Throughput (KG/HR)reg. NaCl</td>
<td>400</td>
<td>1000</td>
<td>3000</td>
<td>6000</td>
<td>12500</td>
<td>25000</td>
</tr>
<tr>
<td>Machine Weight (KG)</td>
<td>750</td>
<td>1000</td>
<td>2750</td>
<td>3500</td>
<td>4500</td>
<td>5000</td>
</tr>
</tbody>
</table>

### Spectrum of Applications

Common Salt, Metallic Salts, Nitrates, Chlorates, Carbonates, Phosphates, etc.

### Organics like

Cellulose Acetate, Hexamine, Hydroquinine, Melamine, Oxalic Acid, Dichloro Benzene & many other chemicals.
Internals For Oil & Gas

Finepac is a leading supplier of process systems for a wide range of products within the oil and gas industry.

Vane Inlet Device

The vane type inlet device dissipates the momentum of the inlet gas via a change in direction & velocity hence allowing more efficient separation via the main separation internal. Vane type inlet device reduces gas velocities flowing over the liquid surface preventing reentrainment of previously collected liquid off the liquid surface.

<table>
<thead>
<tr>
<th>INLET DEVICES</th>
<th>FOAM BREAKERS</th>
<th>MIST ELIMINATORS</th>
<th>DISTRIBUTORS</th>
<th>COALESCER PACKS</th>
<th>OTHER INTERNALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Half-Pipe</td>
<td>Mesh Pads</td>
<td>Mesh Demisters</td>
<td>Perforated Baffles</td>
<td>Mesh Pads</td>
<td>Vortex Breakers</td>
</tr>
<tr>
<td>Bilurcator</td>
<td>Structured Packs</td>
<td>Plain Vane Packs</td>
<td>Slotted Baffles</td>
<td>Dual Media Mesh</td>
<td>Submerged Weirs</td>
</tr>
<tr>
<td>Splash Plate</td>
<td>Cyclones</td>
<td>Pocketed Vanes</td>
<td>Pipe Distributors</td>
<td>Corrugated Plates</td>
<td>Overflow Weirs</td>
</tr>
<tr>
<td>Multi-Vane</td>
<td>Angled Plates</td>
<td>Combination Packs</td>
<td>Troughs</td>
<td>Matrix Packs</td>
<td>Sand Jet Systems</td>
</tr>
<tr>
<td>Schoepentoeter</td>
<td></td>
<td>High Surface Packing</td>
<td>Wave Breakers</td>
<td>Plate Packs</td>
<td></td>
</tr>
<tr>
<td>Cyclone</td>
<td></td>
<td>Axial Cyclones</td>
<td>Gas Outlets</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Process design knowhow from M/s KIRK PROCESS SOLUTIONS LTD, UK.

Baffles

In liquid-liquid Separation, it is essential to achieve laminar flow through Vessel. Perforated Plates are used to promote this condition. Baffles Plates can have either single or multiple skins (Double Plate).

Demister Pad (Mesh Pad)

In the most familiar application of knitted mesh, the crimped strips are stacked to form a pad with typical thickness of four or six inches. Rigidity is provided by a frame (usually metal) consisting of a grid on each side and rods passing through the mesh. Pads larger than about three feet across are fabricated in sections narrow enough to pass through a man way for assembly inside a vessel. Such mesh can efficiently capture mist droplets as small as 5 microns.
Vane Pack

Vane Pack is designed to separate entrained liquid from gas stream. The basic design consideration are particle size of the liquid droplets entrained & physical properties of the fluid to estimate pressure drop throughout & efficiency. Vane Pack offer a complete range of efficient vane packs for both horizontal & vertical flow. Size of mist droplets which Finepac internals separate 10 microns or larger.
To provide the most efficient packing, we design our products around a set of interrelated performance goals.

**Our engineers can provide you with this service**

1. Heat Transfer Efficiency
2. Control of Fouling and Plugging.
4. Liquid and Gas Distribution.
5. Low Pressure Drop.
8. Economy.

We are using state-of-the-art simulation packages for Thermal & Hydraulic Design of Process Equipments.

We are specialized in design and simulation of TEG Contractor for Oil & Gas Industry.

**Distributor Testing**

We have a state-of-the-art facility for testing the performance of the liquid distributors.
Laboratory Packing

Finepac Laboratory Packing specially designed for 20 to 80 MM Diameter. There are two types of Laboratory Packing DM & EM. These packing used for getting highest number of theoretical stages per unit height.

DM & EM Packing

Application

1. Laboratory Column from 20 to 80 MM.
2. Where a high number of theoretical stages is required (DM, EM).
3. With low pressure drop & high capacity.
4. NTSM remain constant over wide range of liquid loading.
5. Available made of wide pallet of stainless steel and alloys.