Mass transfer trays for
- Refineries
- Chemical and petrochemical industries
- Environmental applications
Our program
Products, installation and technical support

We offer solutions...
...to increase the performance of your columns:
- design and optimization of mass transfer trays
- process simulation
- design of exposed column sections or column sumps

We supply...
...conventional mass transfer trays:
- various valve trays
- sieve trays, including dual-flow trays
- bubble cap trays

...and special tray constructions:
- cascade trays
- chimney trays
- shower decks
- retention trays
- trays for fouling or other contaminated media

Installation
We can offer installation supervision or we can install trays at your plant site or at the column vendor’s premises.

Materials
We manufacture trays of carbon steel, stainless steel, nickel alloys, titanium, zirconium etc..

All tray types (with the exception of valve trays) can be manufactured of the following plastic materials: PPH, PE, PVC, PVC-C, PVDF, ECTFE, PTFE, TFM and PTFE/graphite combinations.

Our team is certified to process all these materials.

Technical support
For emergencies and quick turn-arounds, we are equipped to provide spare parts and organize rapid replacement deliveries.

RVT Process Equipment has been certified according to ISO 9001 since 1996, and according to ISO 14001 since 2010.

We have been a member of Fractionation Research, Inc. (FRI) since 2005.
Sieve tray
Sieve trays are an economical type of mass transfer trays. The operation range of these perforated trays is lower than that of valve trays.

Dual flow tray
Dual flow trays are specialized sieve trays without downcomers where the gas and liquid compete to flow through the holes on the tray. They are typically used when fouling or polymerization is expected.
Valve tray
The multi-purpose type

Valve tray
Valve trays are the most commonly used tray types because of their suitability for a large variety of mass transfer applications. They are characterized by a high capacity and a large load range, which results in high mass transfer rates.

MRV valve tray

V1 valve tray

A3 caged valve tray
**SRV valve**
Large fixed valve.
- suitable for contact with corrosive substances
- available in carbon steel up to 5 mm tray deck thickness

**A3 valve**
Moveable valve with non-moving cage and sharp-edged orifices in tray plates.
- low-wear and tear
- suitable for most applications, including fouling systems

**MRV valve**
Newly developed, small fixed valve (patent issued).
- tapered lateral vapour outlets
- good turndown capability
- multi-purpose suitability

**V1 valve**
Movable standard valve with integrated legs and sharp-edged orifices in tray plates.
- initial rise is defined by three integrated spacers
- can be equipped with anti-rotation device
- valve adjusts to gas flow rates
- suitable for most applications

**V4 valve**
Same basic valve design as the V1 valve. However a venturi-shaped orifice in the tray deck is used to reduce pressure drop.

The range of V1 and V4 valves is completed by valves without initial rise (V1X/V4X) and their heavier models (V1XS/V4XS).

**A11 valve**
The A11 valve is a variation of the caged valve with reduced orifice diameter. At lower vapor loads, more valves can be fed on the active area of the tray.

**A4 valve**
A variation of the A3 caged valve providing lower pressure drop by venturi-shaped orifice in the tray deck.
**Bubble cap tray**

Conventional bubble cap trays are well-proven in applications with the following conditions:

- very large loading ranges
- very low liquid loads
- very low gas loads
- continuous liquid hold up
- low leakage rates

We provide a wide variety of bubble cap shapes and diameters.

We also assemble bubble caps specified or supplied by our customers.
**Tunnel tray**

The reliable type

**Tunnel tray**

The tunnels of our tunnel trays can be arranged parallel or crosswise to the flow direction. Trays with tunnels crosswise to the flow direction provide long residence times. An increase of the operating life in processes with risk of solids deposition can be achieved with both constructions.

**Tunnel caps**

The long vapor channels of the tunnel trays are covered by caps. Shape and number of slots in the caps are variable, dependent on the application.
Plastic trays
The acid resistant types

The following tray types are available in acid resistant thermoplastics:
- sieve trays
- dual flow trays
- bubble cap trays
- tunnel trays

In case of extreme mechanical loads, the plastic trays can be reinforced by CFC-components.

Characteristics of thermoplastic materials in tray applications

<table>
<thead>
<tr>
<th>Material</th>
<th>Characteristics</th>
<th>Resistant against</th>
<th>Max. operating temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVC (Polyvinylchloride)</td>
<td>hard and stiff thermoplastic, suitable for moderate temperatures</td>
<td>alkalis, acids, salts, oils, fats, benzine, aliphatic hydrocarbons</td>
<td>approx. +60°C / 90°C</td>
</tr>
<tr>
<td>PE (Polyethylene)</td>
<td>highly stiff material suitable for low temperatures, low water absorption</td>
<td>alkalis, acid, salts, many organic solvents (alcohols, ketones, esters)</td>
<td>approx. +60°C</td>
</tr>
<tr>
<td>PP (Polypropylene)</td>
<td>hardness and stiffness greater than PE, poor strength at low temperatures, higher temperature resistance than PE</td>
<td>alkalis, acids, salts, many organic solvents (alcohols, ketones, esters)</td>
<td>approx. +80°C</td>
</tr>
<tr>
<td>PVDF (Polyvinylidenfluoride)</td>
<td>fluorine containing thermoplastic, good heat and cold resistance</td>
<td>alkalis, acids, salts, many organic solvents (alcohols, ketones, esters) nitric acid, H₂O₂</td>
<td>approx. +120°C</td>
</tr>
<tr>
<td>PTFE (Polytetrafluorethylene)</td>
<td>excellent temperature resistance, reduced stiffness value, high creeping tendency</td>
<td>almost all chemicals</td>
<td>approx. +180°C</td>
</tr>
</tbody>
</table>
Plastic tunnel trays

- suitable for lowest liquid loads
- liquid-tight
- preferred type for application in acid recovery

Owing to the self-sealing cartridge construction, minimal liquid loads (approx. 0.02 m³ / m²h) can be handled at medium gas loads. The trays can be equipped as well with deentrainment devices.

Installation of tunnel caps at a tunnel tray

PPH tunnel tray
Complete column with tunnel trays

Column with plastic trays: the prefabricated sections with welded trays can be installed through the column flange separately or in packages.
Tray hardware

We provide all tray hardware and tools required for tray installation. Commonly used materials and standard types are kept in stock.

Services

Our range of services includes

- engineering
- construction
- CAD-office (AutoCAD, Solidworks)
- custom-built equipment
- storage of standard equipment
- delivery of equipment and assistance in case of emergencies
- installation/supervision
The way to RVT Process Equipment

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