

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 turnarounds, we are equipped to provide spare parts and organize rapid replacement deliveries.

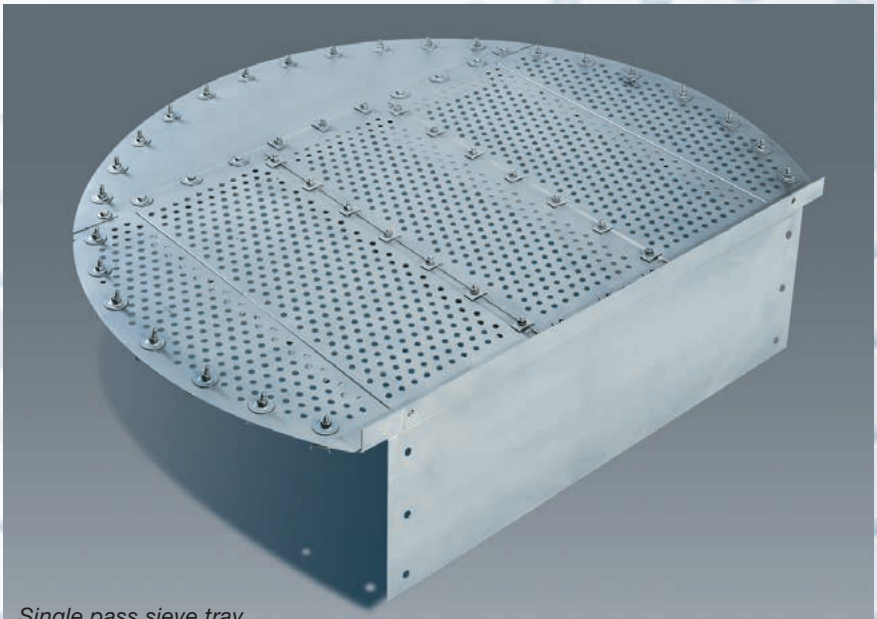
RVT Process Equipment has been certified according to ISO 9001 since 1996, and according to ISO 14001 since 2010.

We have been a member of Fractionation Research, Inc. (FRI) since 2005.

Sieve tray and dual flow tray
The economical and the specialized type

Sieve tray

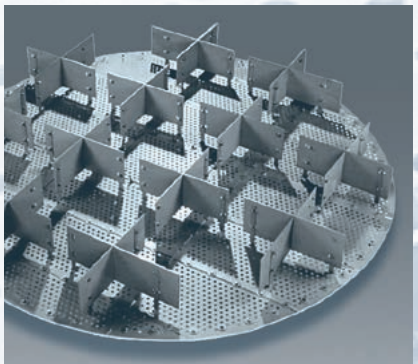
Sieve trays are an economical type of mass transfer trays. The operation range of these perforated trays is lower than that of valve trays.



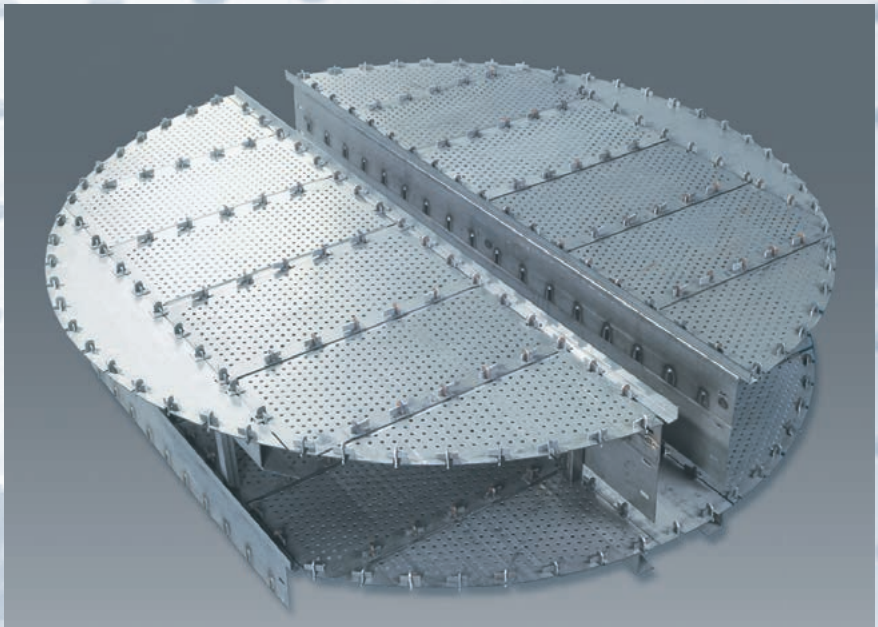
Single pass sieve tray

Dual flow tray

Dual flow trays are spezialized 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.



Dual flow tray



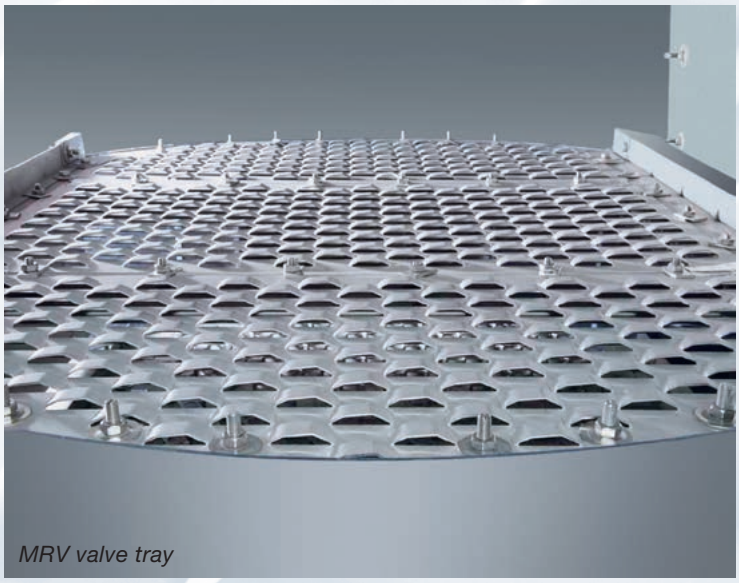
Two pass sieve tray

Valve tray
The multi-purpose type

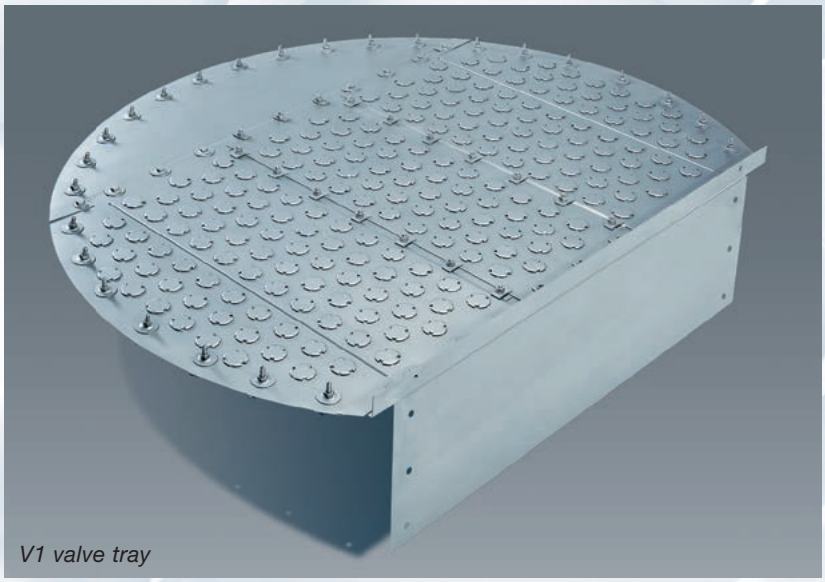
Valve tray

Valve trays are the most commonly used tray types because of their suitability for a large variety of mass transfer applications.

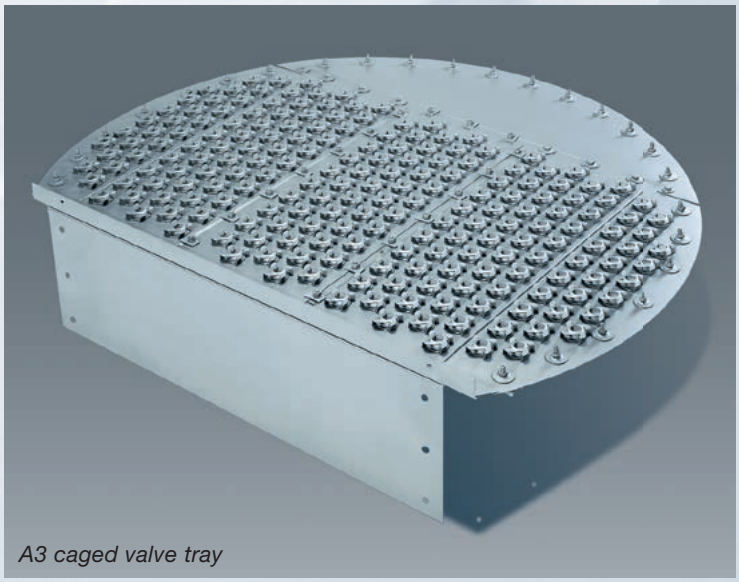
They are characterized by a high capacity and a large load range, which results in high mass transfer rates.



MRV valve tray



V1 valve tray



A3 caged valve tray

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

V1 valve

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).

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

A3 valve

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

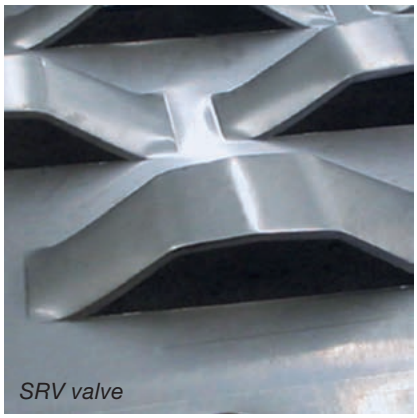
A variation of the A3 caged valve providing lower pressure drop by venturi-shaped orifice in the tray deck.

A4 valve (bottom view) with venturi-shaped orifice

SRV valve

Large fixed valve.

- suitable for contact with corrosive substances
- available in carbon steel up to 5 mm tray deck thickness

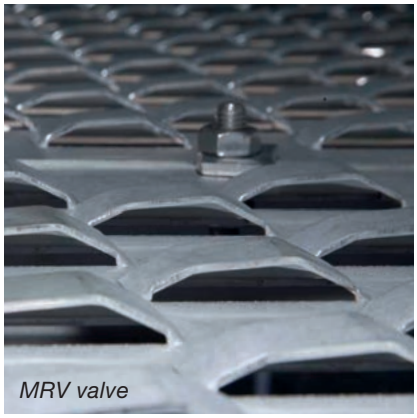


SRV valve

MRV valve

Newly developed, small fixed valve (patent issued).

- tapered lateral vapour outlets
- good turndown capability
- multi-purpose suitability



MRV valve

Bubble cap tray
The conventional type

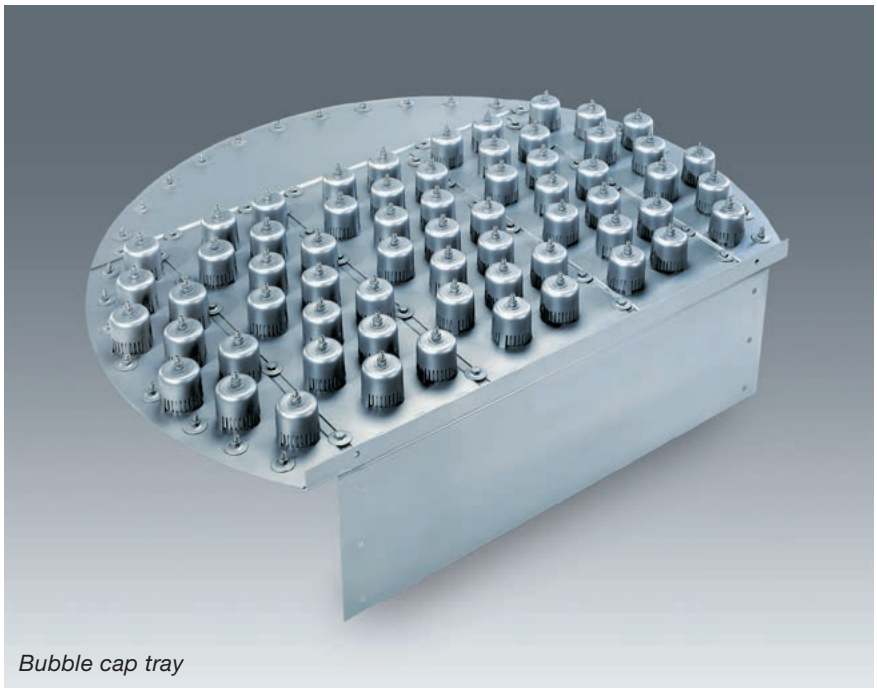
Bubble cap tray

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

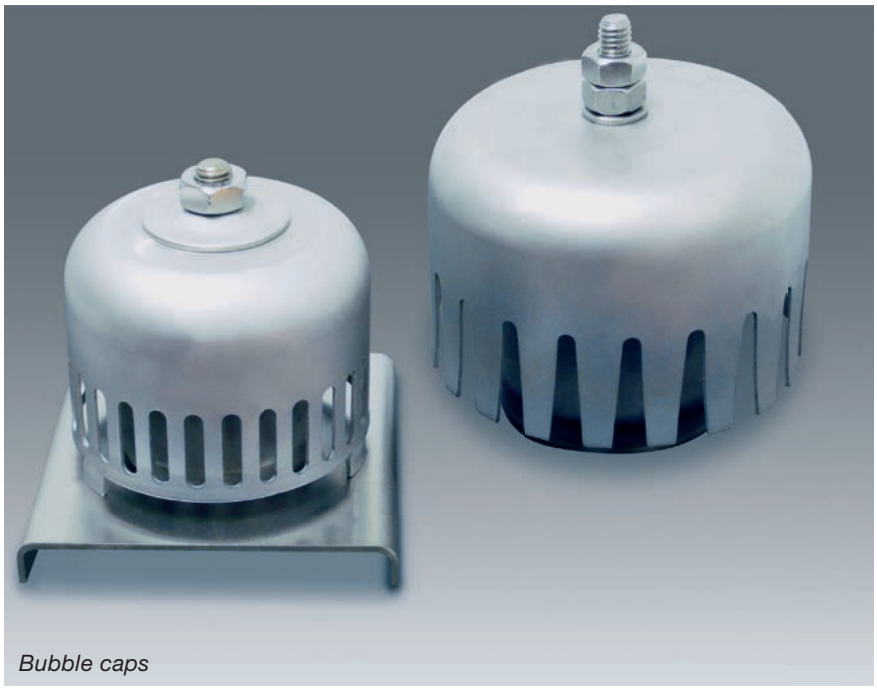
- very large loading ranges
- very low liquid loads
- very low gas loads
- continuous liquid hold up
- low leakage rates

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

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



Bubble cap tray

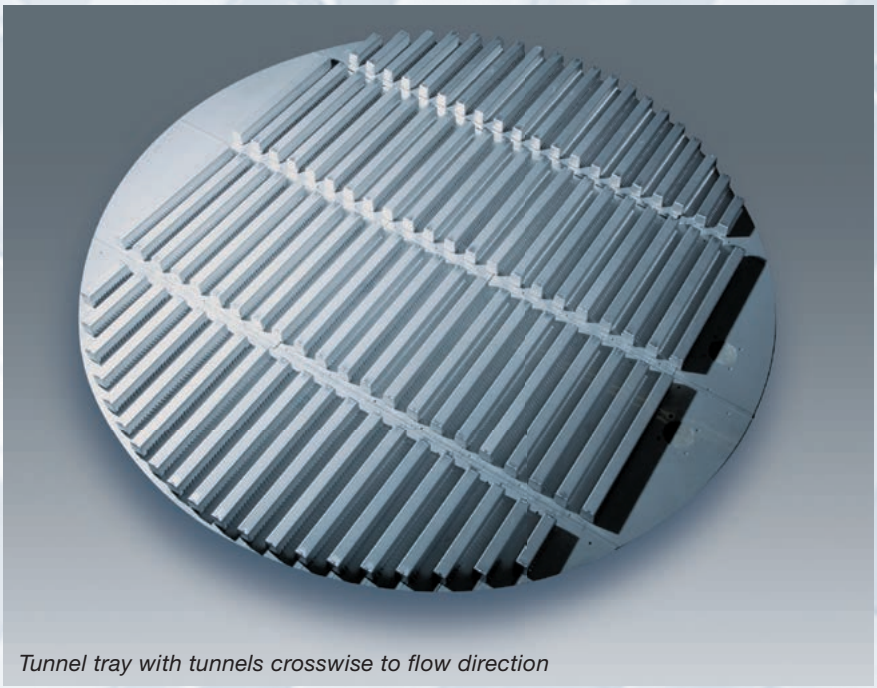


Bubble caps

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 tray with tunnels crosswise to flow direction

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.

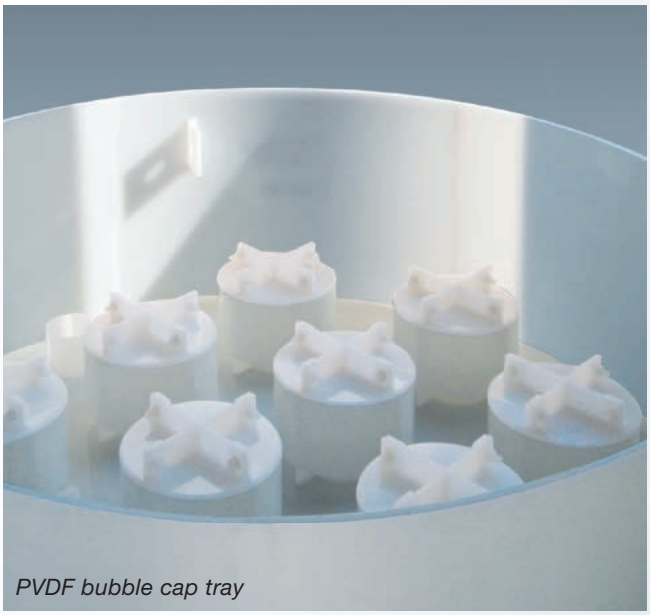
Tunnel caps with various slot shapes

Plastic trays
The acid resistant types

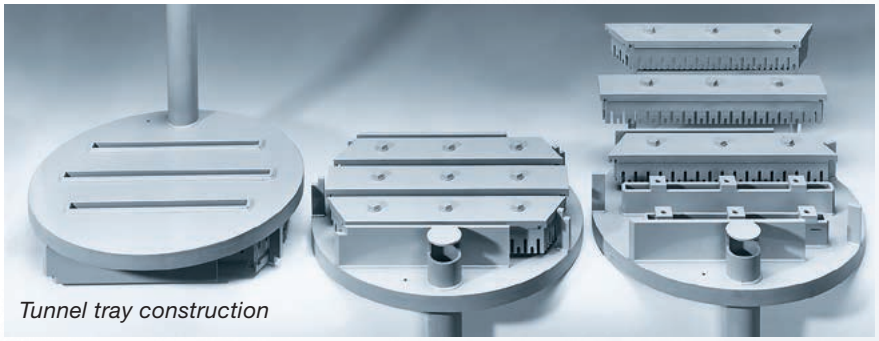
The following tray types are available in acid resistant thermoplastics:

- 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.



PVDF bubble cap tray



Tunnel tray construction

Characteristics of thermoplastic materials in tray applications

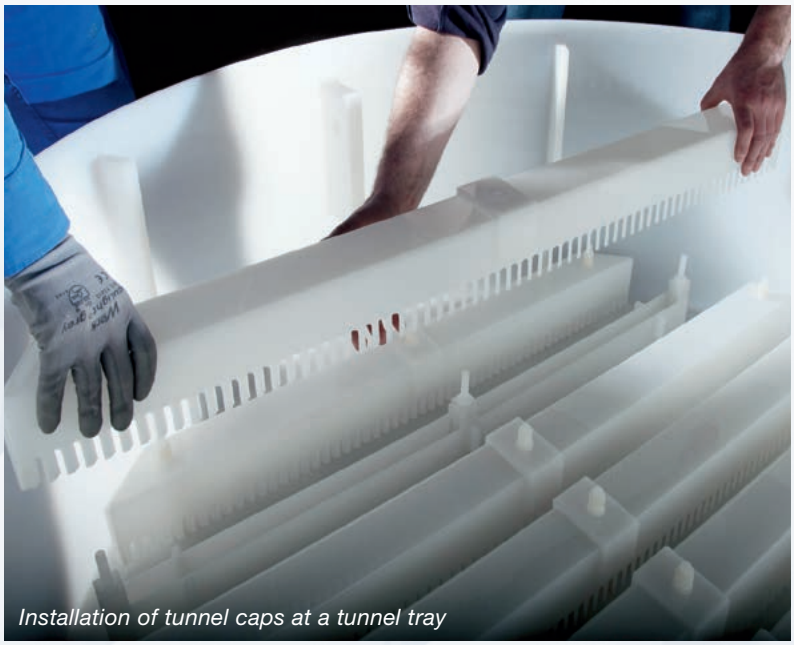
Material	Characteristics	Resistant against	Max. operating temperature
PVC (Polyvinylchloride)	hard and stiff thermoplastic, suitable for moderate temperatures	alkalis, acids, salts, oils, fats, benzine, aliphatic hydrocarbons	approx. +60 °C/90 °C
PE (Polyethylene)	highly stiff material suitable for low temperatures, low water absorption	alkalis, acid, salts, many organic solvents (alcohols, ketones, esters)	approx. +60 °C
PP (Polypropylene)	hardness and stiffness greater than PE, poor strength at low temperatures, higher temperature resistance than PE	alkalis, acids, salts, many organic solvents (alcohols, ketones, esters)	approx. +80 °C
PVDF (Polyvinylidenefluoride)	fluorine containing themoplastic, good heat and cold resistance	alkalis, acids, salts, many organic solvents (alcohols, ketones, esters) nitric acid, H_2O_2	approx. +120 °C
PTFE (Polytetrafluorethylene)	excellent temperature resistance, reduced stiffness value high creeping tendancy	almost all chemicals	approx. +180 °C

Plastic tunnel trays

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 m^3/m^2h) can be handled at medium gas loads. The trays can be equipped as well with deentrainment devices.

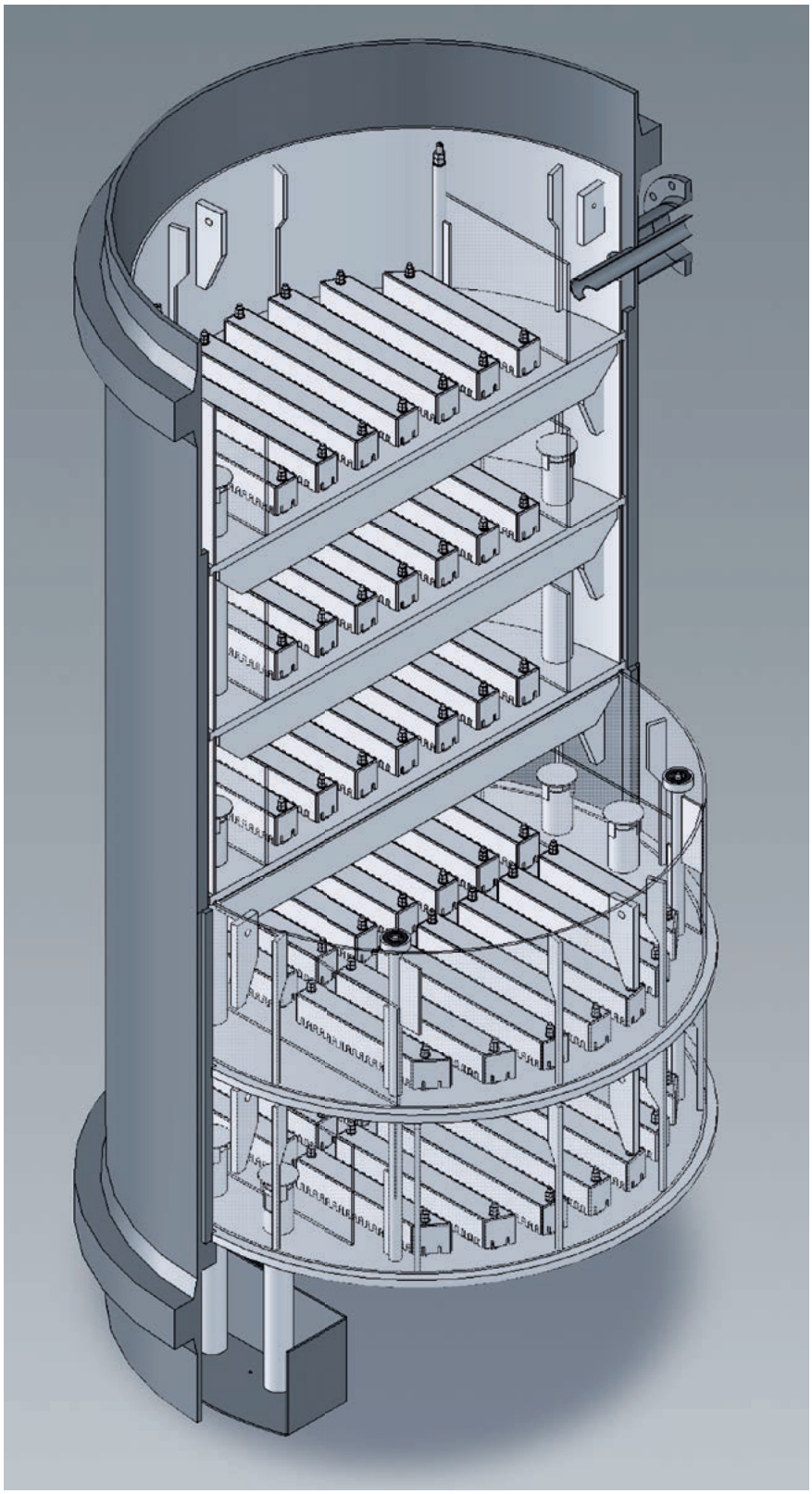


Installation of tunnel caps at a tunnel tray

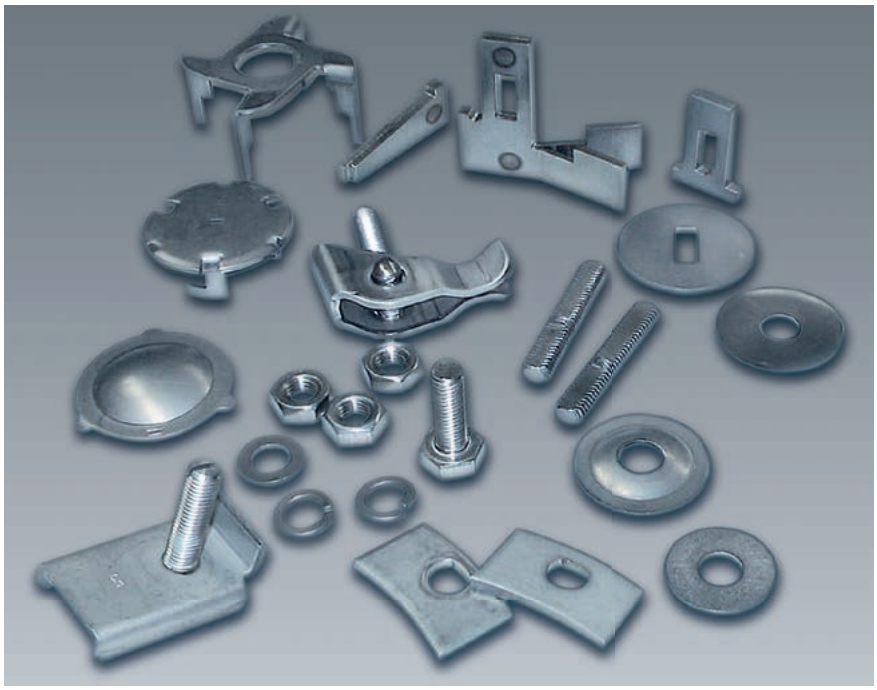
PPH tunnel tray

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



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

Tray installation

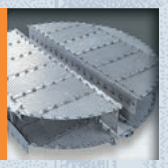
RVT Process Equipment GmbH
Range of products

The way to RVT Process Equipment

Tower packings for mass and heat transfer

Structured packings for mass and heat transfer

Column internals



Mass transfer trays

Biological carrier media

Turn-key units for waste gas scrubbing

Ammonia recovery processes

Combustion plants for the disposal of exhaust air, waste gases and liquid media

Contact us

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