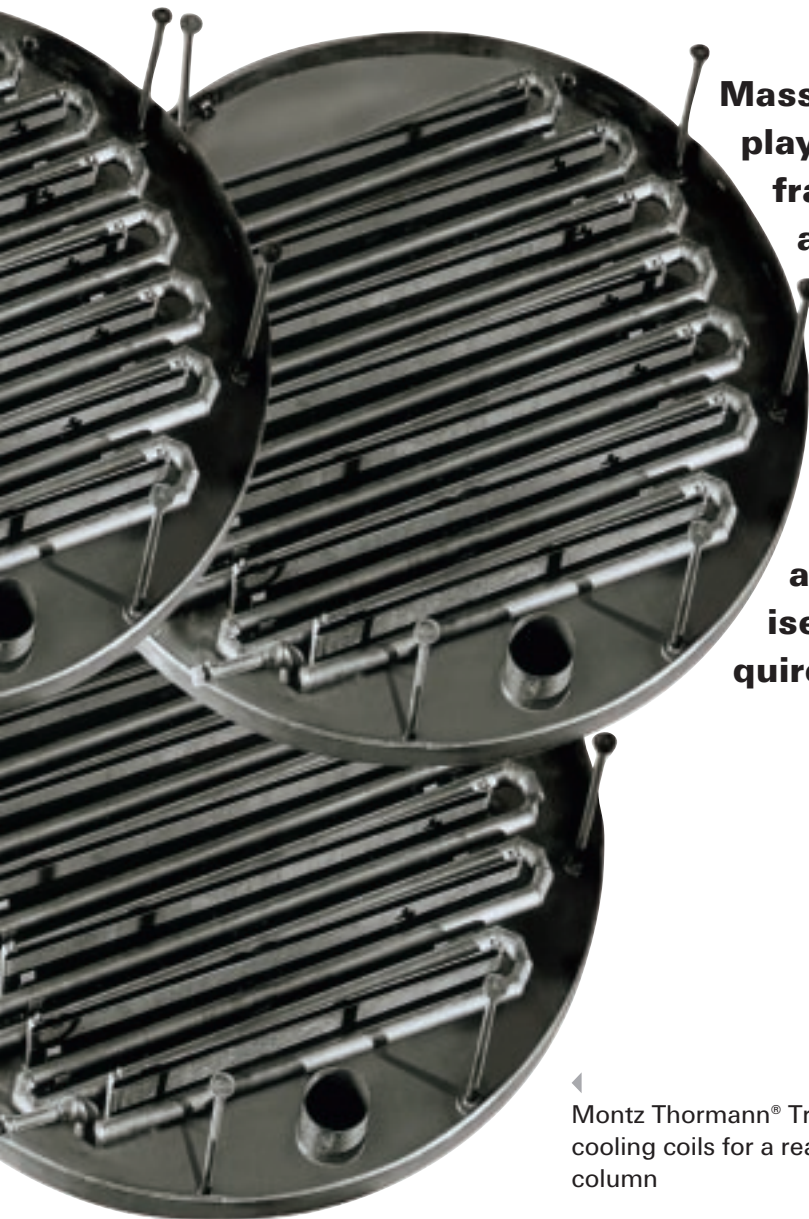


Mass transfer trays

Leading position by patented developments

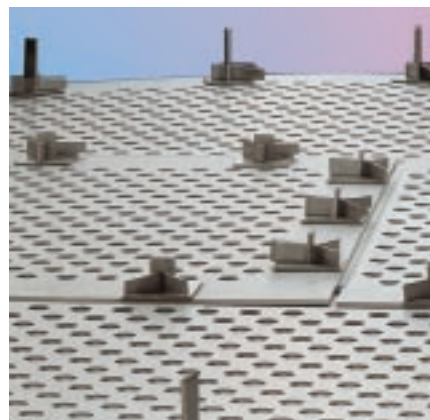
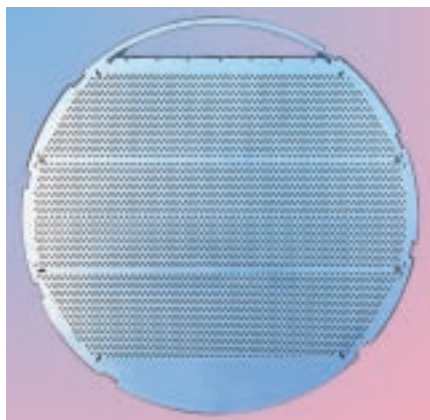


Mass transfer trays made by Montz play an essential part in thermal fractionating technology in chemistry and related industries. Experience gathered through many years and a steady development led to patented tray designs which have made Montz a leading manufacturer of trays. Apart from a comprehensive standard range of products, Montz also prove their efficiency by customised designs adapted to the special requirements of the customers.

◀ Montz Thormann® Trays with cooling coils for a reaction column

▼ Montz split-wedge connectors to fasten the tray parts at the support rings and beams. Montz split-wedge connectors have proven their worth under operating conditions with heavy fouling and polymerisations.

▶ Dual-Flow-Trays produced by CNC-controlled nibbling and punching machines.



The well-known range of Montz trays which plays an essential part in thermal fractionating technology consists of the following patented types of trays:

- Thormann® Trays
- Tunnel Trays
- KSG-Trays.

All trays will be presented in detail on the following pages. The program is completed by:

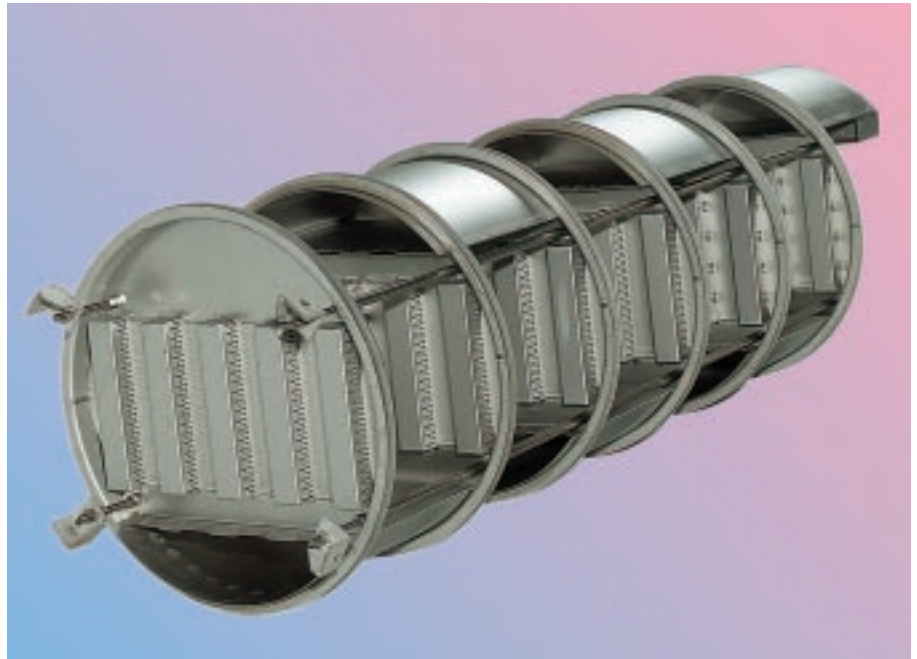
- bubble cap trays
- sieve plate trays
- dual-flow trays
- cascade trays

A speciality offered by Montz are special designs exactly adapted to the prevailing problems in fractionating.

These primarily include:

- hold-up time trays with high liquid capacity
- trays featuring an extremely low entrainment
- trays with cooling or heating coils

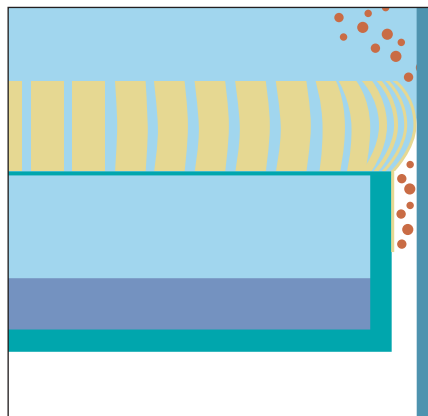
All of the Montz trays are subject to a quality control performed on our own air-water test equipment. It is of decisive importance to check and optimise the function, particularly in case of special designs. This is why Montz can guarantee top quality and efficiency for the conventional range of trays as well as for special developments.



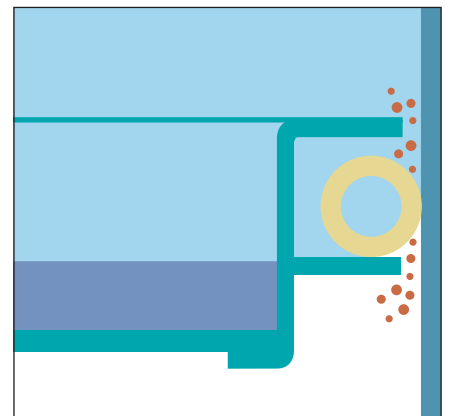
▲ Tunnel trays designed as a plate stack for insertion into the column. Sealing between tray and column wall is effected by means of a coil spring which has been inserted into a circumferential groove.

Montz sealing for one-piece trays which are installed through shell flanges. These sealings prevent liquid from dripping through the gap between tray and column wall.

▼ Lip-folded tape as tray sealing



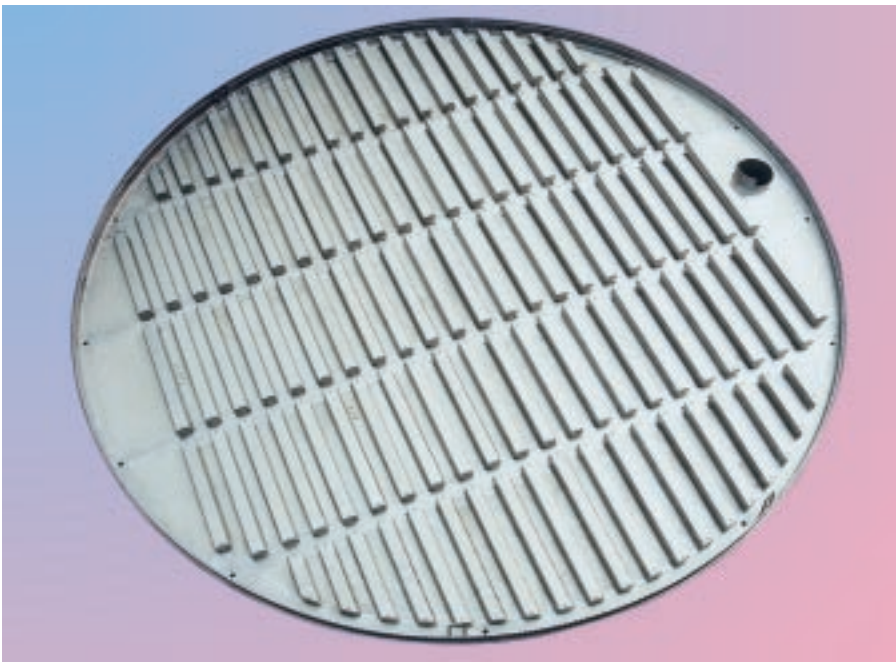
▼ Coil spring as tray sealing



Montz-Thormann® Tray

Washing processes and vacuum distillation
for low flows of liquids

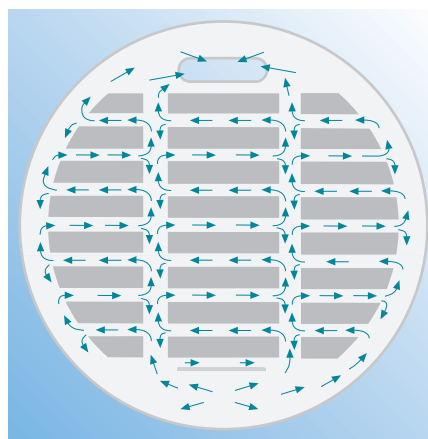
The Thormann® tray has been designed as a tray for washing processes and vacuum distillation. It handles even the lowest liquid flows, e.g. 40 l/m²/h with a simultaneous small pressure drop of approximately 1 mbar per tray.



▲ Thormann® tray DN 3400 mm, one piece, made of titanium. This tray is of a leakproof design and is intended for use in an HCl-absorption column made of GRP.



▲ Thormann® caps with the characteristic vapour slots for a controlled vapour flow into the liquid.



◀ The arrangement of the caps combined with the special vapour slots ensures a controlled flow of the liquid on the tray and consequently a favourable hold-up time and a high separation efficiency.

Features:

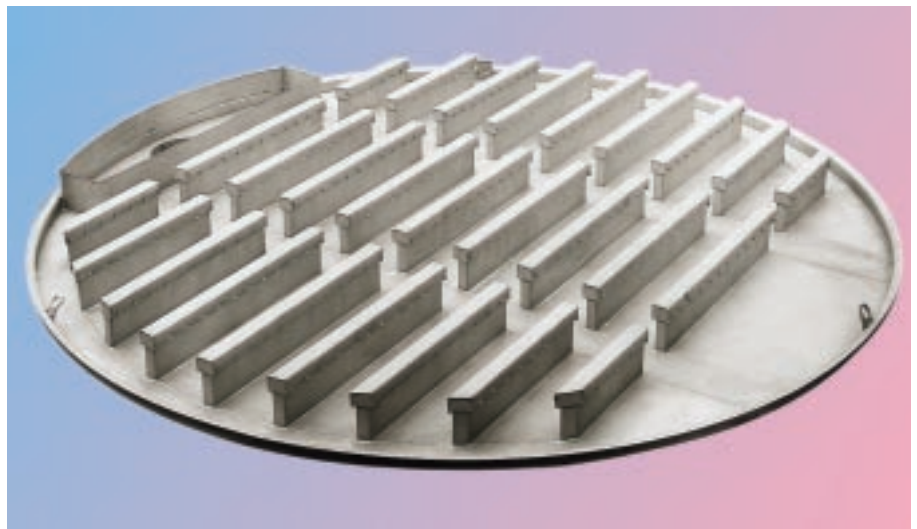
- suitable for low liquid loads (approx. 40 l/m²/h)
- no trickling down of the liquid
- extremely low pressure drop approx. 1 mbar per tray (are possible)
- extremely high tray efficiency
- high flexibility
- leakproof tray design (e.g. for washing processes)
- customised designs for special applications

Applications:

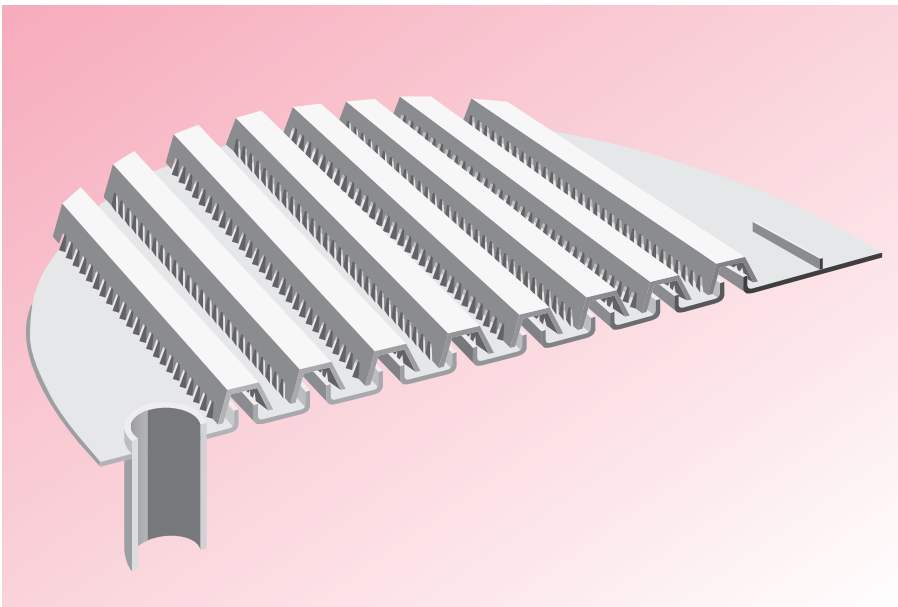
- washing processes, for example caprolactam, HCl, H₂S
- hold-up time trays for reactions
- natural gas drying
- fractionating of fatty acids
- Rectisol washing process

Materials:

- high-grade steels, e.g. 304, 410 S, 316, 316 Ti, 316 L, 904 L, etc
- Hastelloy C4, aluminium, copper, titanium, monel and others .
- plastic materials: KERA, Diabon, PVC and others



▲ Thormann® hold-up tray DN 2500 mm for long dwell time in a reaction column with a liquid level of 200 mm and for small gas flows volumes.



◀ Cross section of Thormann® caps and vapour risers. A very good separation efficiency is achieved with even minimum amounts of vapour because the bent edges of the vaporisers prevent the liquid from trickling down.

Montz Tunnel Trays

Adaptable and sturdy

The tunnel tray is a very sturdy modular design developed by Montz.

The modular design ensures a high stability at low weight and consequently economic advantages compared to conventional designs. The variable elements enable a multitude of constructive designs and adaptation to all operating conditions.

Peculiarities

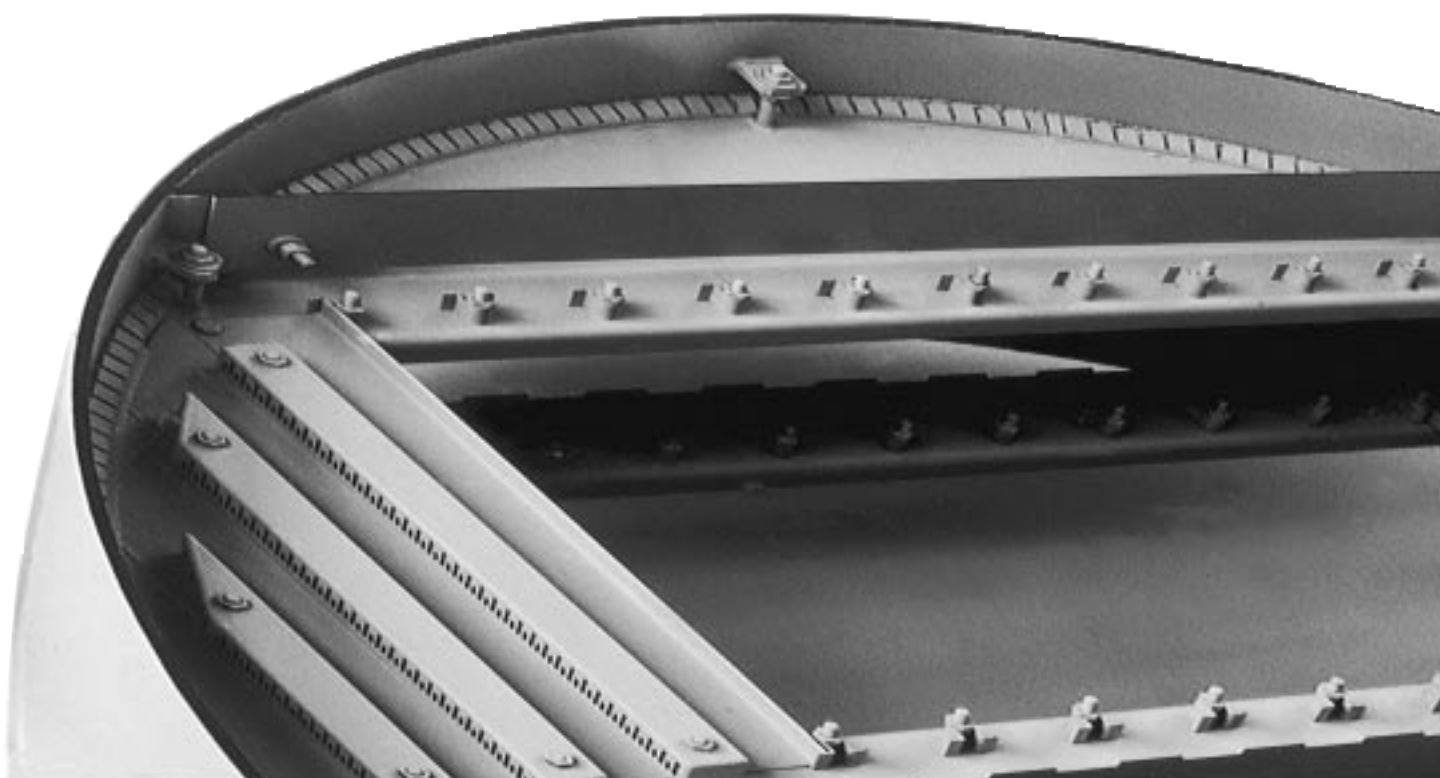
The tunnel tray manages standard separating processes as well as those with heavy contamination. Low susceptibility to fouling and contamination and a long service life are the main characteristics of the tunnel tray. Montz has extensive know-how in the use of tunnel trays under the severest operating conditions.

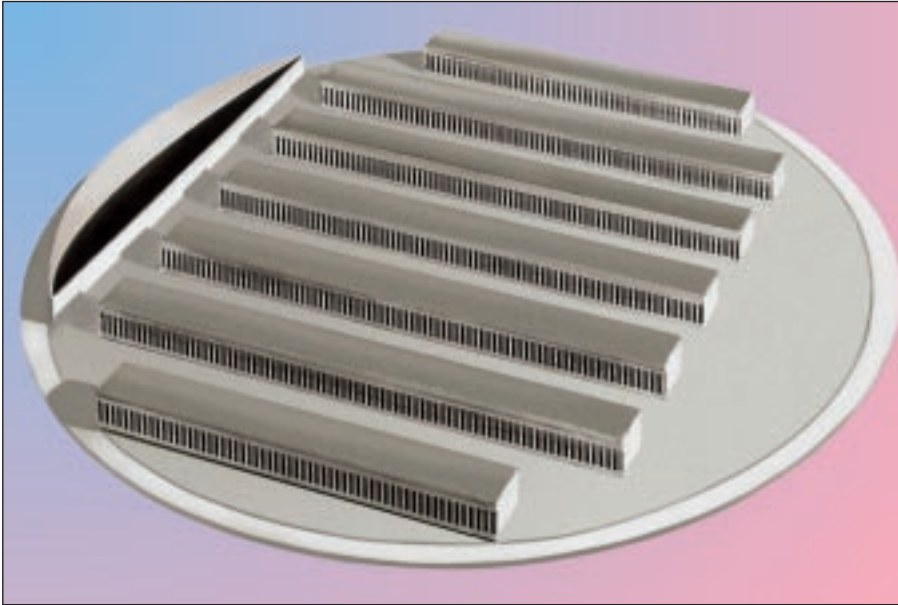
Characteristics

- suitable for mass transfer under vacuum, standard and excess pressure
- high separation efficiency
- low pressure drop
- wide range of operation
- simple installation through manhole
- easy and problem-free cleaning by means of steam or liquid jets
- customised designs for special applications

Applications

- absorption
- glycol recovery
- treatment of liquid manure
- natural gas drying
- coking plants, de-acidification plants, NH₃-stripper
- fractionating columns for absorption refrigerating plants
- mash columns

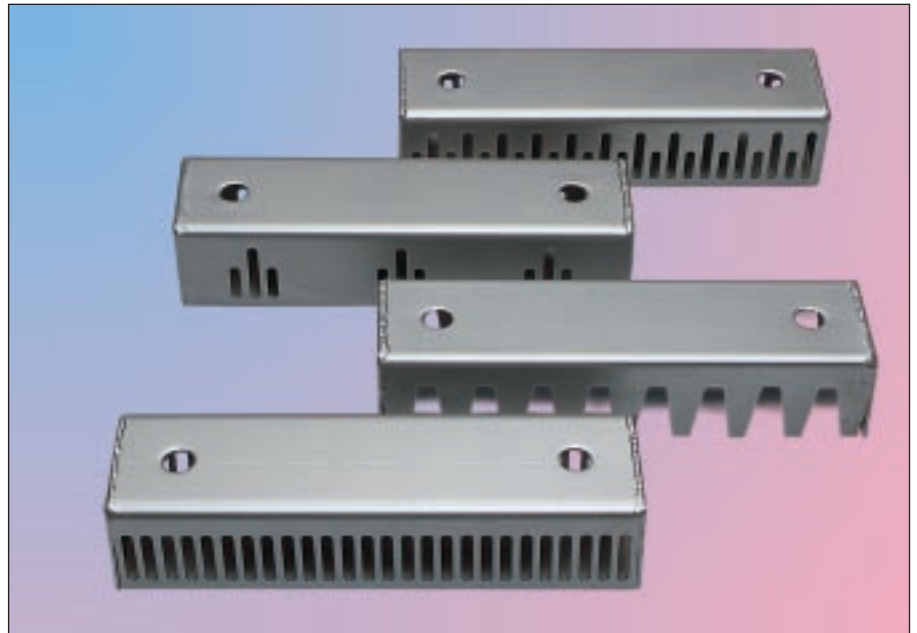




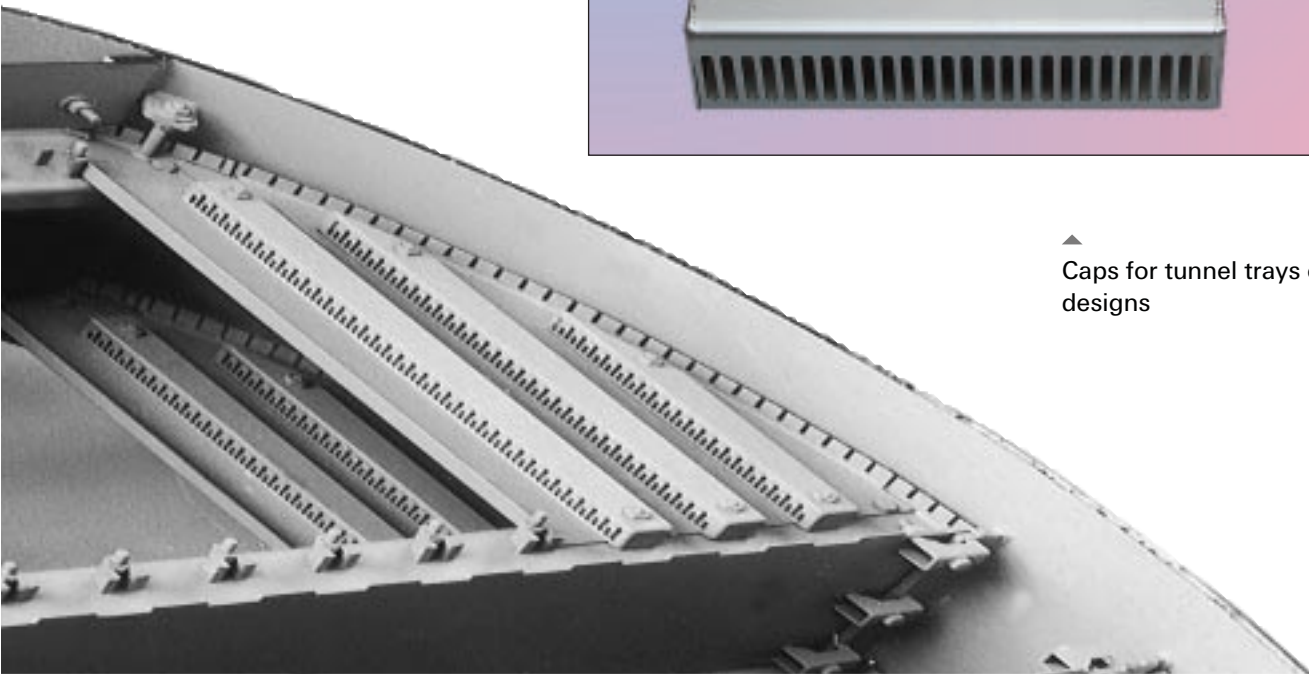
◀ Montz tunnel trays of special design, made of aluminium

Materials

- high-grade steels e.g. 304, 410 S, 316, 316 Ti, 316 L, 904 L, etc
- Hastelloy C4, aluminium, copper, titanium, monel and others
- plastics: KERA, Diabon, PVC and others



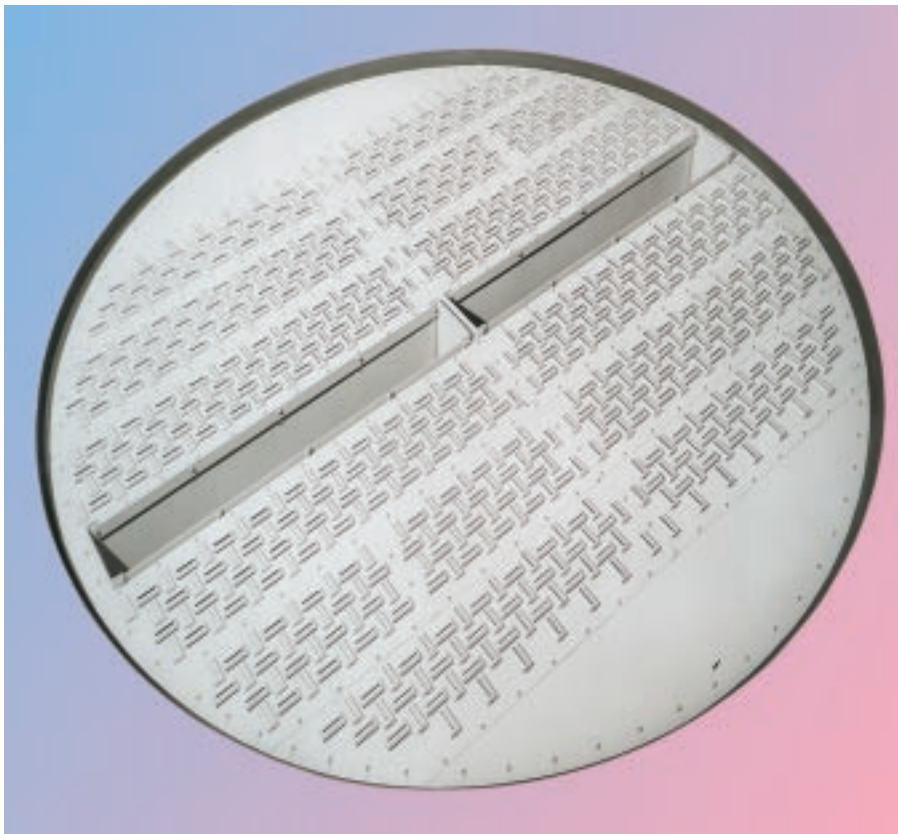
▲ Caps for tunnel trays of various designs



Cross-Flow Tray Type KSG

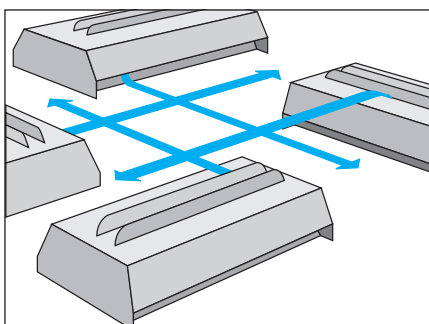
A high performance tray without any moving parts

The Montz cross-flow tray type KSG has been designed as a mass-transfer tray with the same efficiency as a valve tray but without any moving parts. It is thus ideal for the conversion of existing columns and for multi-purpose distillation.

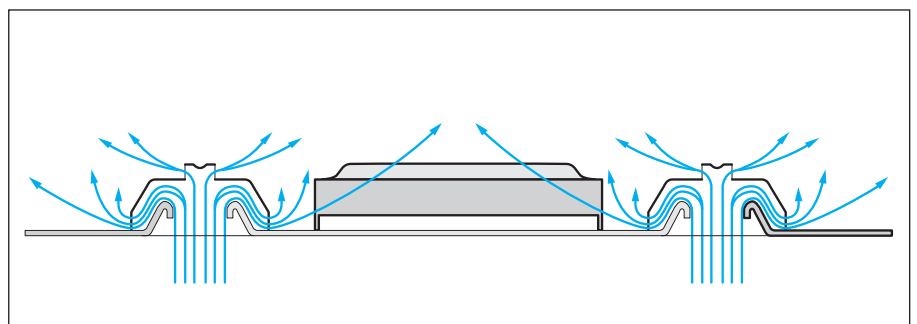


◀ Cross-flow tray DN 4400 with two passes. The tray elements are installed through raised manholes and are fixed by clamps at supporting rings inside the column.

▼ Principle of crossing steam flows and arrangement of the KSG-caps above the vapour slots



▼ Aerodynamic design of the vapour slots to ensure a low pressure drop.

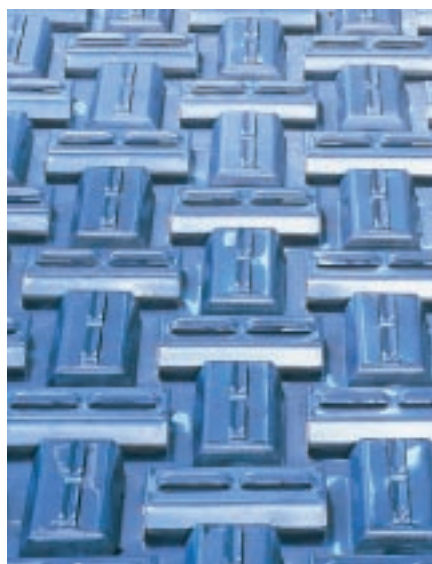
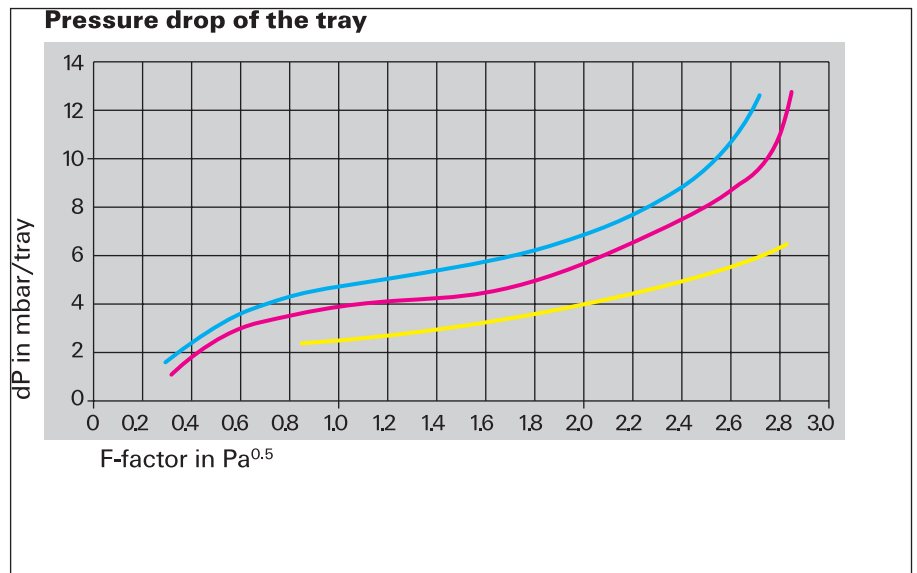
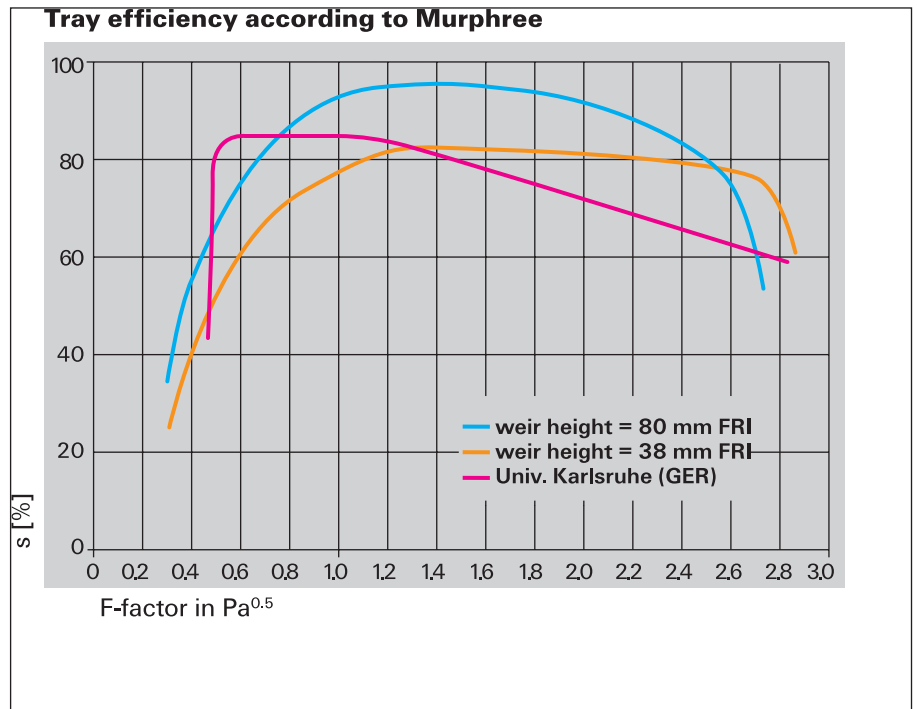


► Separation efficiency and pressure drop of the cross-flow tray

The familiar collision of opposed vapour flow currents is avoided by the special design of the Montz high-efficiency tray: adjacent outflow cross-sections intersect at an angle of 90°. This has a positive effect on the rate of entrainment of the tray. Moreover, the design of the vapour channels with rounded edges ensures a low pressure drop of the tray.

This type of tray is used for distillation and absorption. On account of its wide range of loading it is also particularly suited for the revamping of existing columns to increase throughput. It has also stood the test for multi-purpose distillation columns.

Materials: (as for tunnel trays)



► Special designs also allow the KSG-tray to be optimally adapted to various applications.



◀ Detail shot of a cross-flow tray