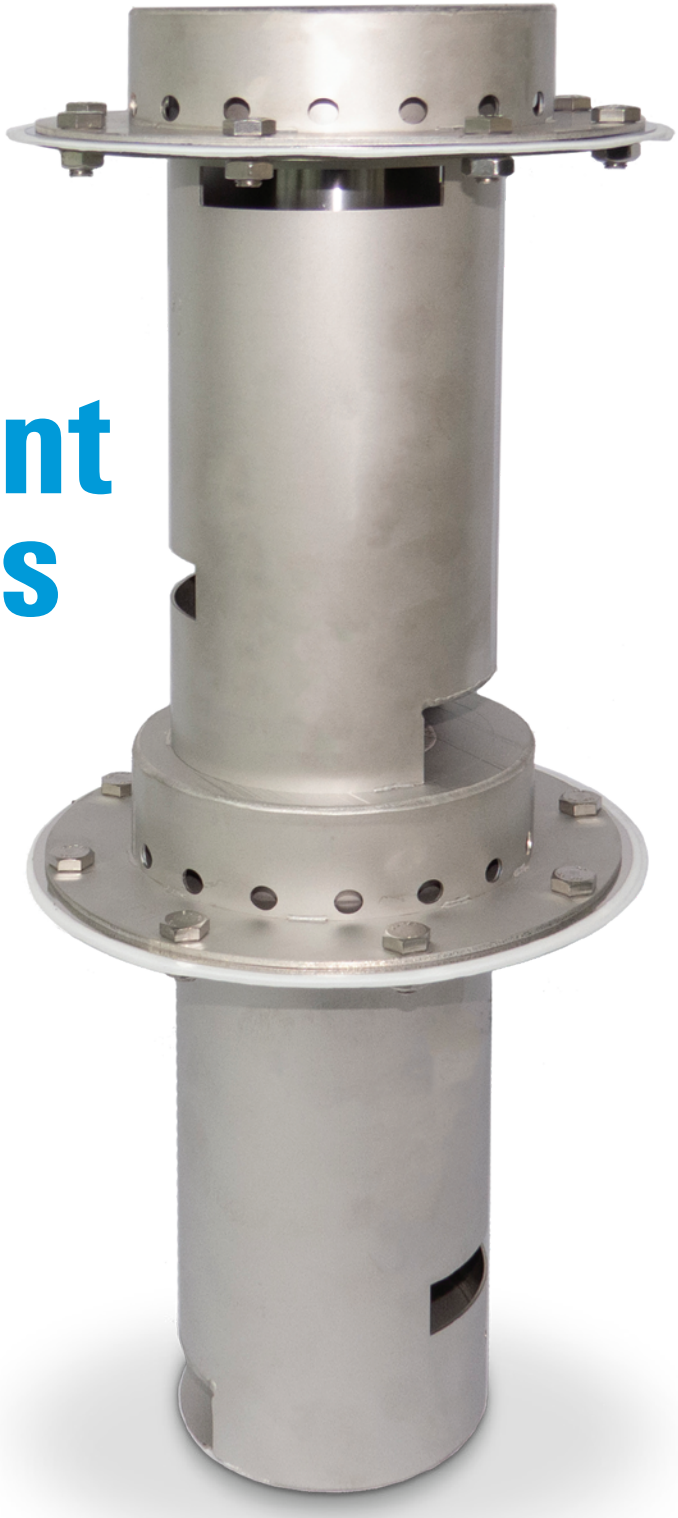
Montz
Miniplant Columns



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MONTZ

ENGINEERED COLUMN SYSTEMS

Reliable scale-up

Pilot tests are an important step in developing processes. Montz supplies not only internals but also complete small-scale columns and miniplant systems. Distillation systems from Montz guarantee a safe scale-up from pilot to industrial plants.

In the chemical and pharmaceutical industry, the setup of pilot and miniplant columns is a necessary step to ensure reliable column sizing by measuring or validating equilibrium data in process simulation.

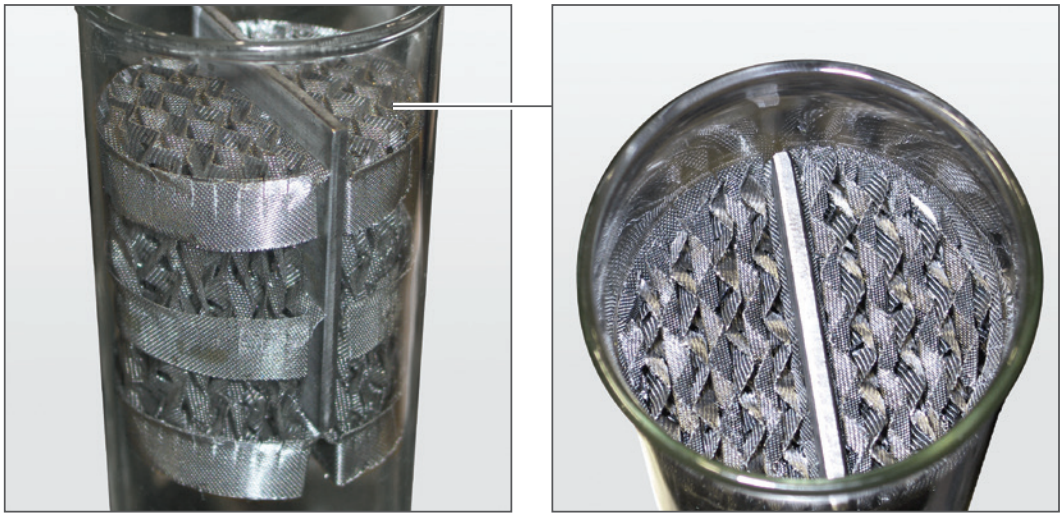
Depending on the type of project, complete small-scale miniplant column systems with a diameter of 20 to 300 mm [0.8 to 12 in] and an approximate height of 3 to 10 m [10 to 33 ft] are built. The test columns consist of components such as columns, reboilers, condensers and final condensers, and can also include gas coolers, vessels, decanters and reflux splitters. Materials can vary from stainless steel to enameled steel. Furthermore, if desired, the pilot columns can be delivered skid-mounted.

Montz and Koch-Glitsch structured packings are used in the pilot plants to provide optimum performance. Montz and Koch-Glitsch pilot plant packings achieve a uniform, high separation efficiency at a low pressure drop and allow a safe scale up into the planning of the production plant.

Instead of packings, pilot distillation tray designs can also be supplied. Special designs may include fractionation trays with long residence time or for settling in systems with two liquid phases. Trays also need to be applied if feed and side-draw-off positions must be flexible.

Montz can offer solutions for mass transfer trays from a column diameter starting at 40 mm [1.6 in].

The internals can be subjected to a functional test with air-water before delivery. Also, if preferred, these tests can be conducted in your presence.



Miniplant dividing wall column with Montz-Pak A3-1000

Montz miniplant column DN 100 made of stainless steel with bubble cap trays

Montz-Pak A3 Wire Gauze Structured Packing

Wire gauze packing is the mass transfer device of choice in distillation service for deep vacuum and low liquid rate applications. For processing specialty chemicals, pharmaceuticals and temperature-sensitive materials, the very high efficiency and low pressure drop characteristics of this packing are unsurpassed. Used in thousands of diverse applications around the world, Montz-Pak A3-500 and BX wire gauze structured packing are the most widely used. For even greater efficiency requirements normally needed for laboratory and pilot testing applications, wire gauze structured packing with higher surface area is also available.

These packings achieve the maximum number of theoretical stages in the minimum column height. Because of the capillary effect, the wire gauze material provides an extremely wettable surface, resulting in excellent mass transfer efficiency, particularly at very low liquid rates.

Materials

- Stainless steel including 304, 316, 316Ti, 316L, 904L
- Hastelloy C4, C22, C276, etc
- Aluminum, copper, titanium, monel
- Further materials are available on request

Column data

- Column diameter starting from 20 mm [0.8 in]
- Liquid loading starting from 20 l/(m²•h) [0.008 gpm/ft²]
- Operating pressures from approx. 0.5 mbar
- Minimal liquid hold-up

Characteristics

- Excellent suitability for vacuum columns
- Very low liquid loads (<100 l/(m²•h)) [<0.04 gpm/ft²] are possible
- Low pressure drop per theoretical stage
- High fractionation efficiency because of good wettability of the packing surface
- Capillary effect of the special wire mesh

Applications

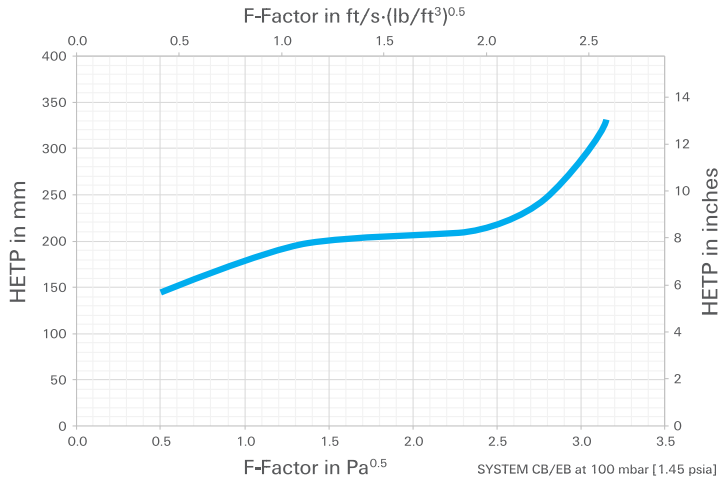
The main area of application is in the fractionation of thermally instable substances, which are rectified under deep vacuum from approx. 0.5 mbar.
Applications are:

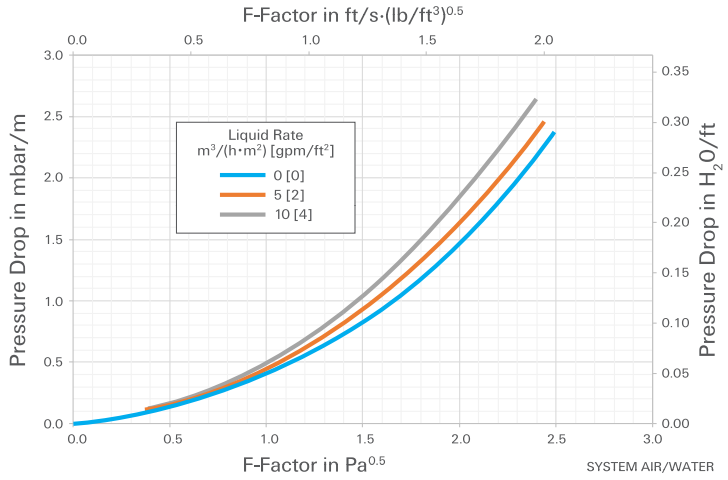
- Essential oils
- Fatty acids
- Deodorizing of edible oils
- Pilot columns
- Isomer mixtures
- Fatty alcohols
- Degassing of transformer oils

Fractionation Stages

In case of the usage of mixtures of well wetting liquids, one can obtain approx. 5 to 20 theoretical stages per meter in technical columns, depending on the packing surface.

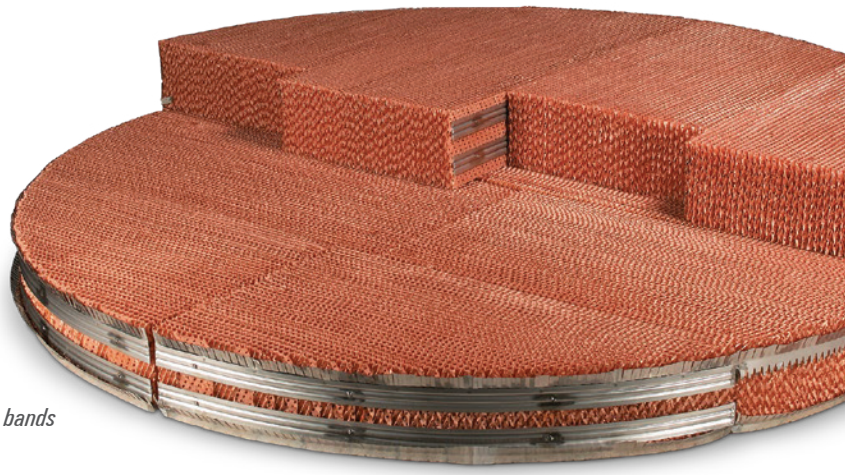
Montz-Pak A3-500 Wire Gauze Packing Performance





Montz-Pak Type	Spec. surface m^2/m^3	Spec. surface ft^2/ft^3
A3-500	500	152
A3-750	750	229
A3-1000	1000	305
A3-1200	1200	366
A3-1500	1500	457
A3-1900	1900	579

Other surface area sizes are available on request



Montz-Pak A3-500 Wire Gauze Packing made of copper with attached wall wiper bands

High Performance Liquid Distributor

Good liquid distribution is critical for optimum packing performance even in small diameter pilot columns.

Combination Distributor/Collector Type KFR

- For small column diameters for the installation between flanges
- Liquid flow through drain tubes
- Operating range:
  - 1-stage 1 : 2.5
  - 2-stage: approx. 1 : 5
- Throughput approx. 1.0 to >250 $m^3/(m^2h)$ [0.4 to >100 gpm/ft^2]

Combination Distributor Type KFS

- For small column diameters for the installation between flanges
- Liquid flow through drain tubes
- Operating range:
  - 1-stage 1 : 2.5
  - 2-stage: approx. 1 : 5
- Throughput approx. 0.1 to >5 $m^3/(m^2h)$ [0.04 to >2 gpm/ft^2]

Bubble Cap Trays

Bubble cap trays are ideal for product sampling on every tray and provide a longer residence time than structured packing.

Materials

- Stainless steel including 410S, 304, 316, 316Ti, 316L, 904L
- Hastelloy C4, C22, C276, etc
- Aluminum, copper, titanium, monel
- Further materials are available on request

Column data

- Column diameter starting from 40 mm [1.6 in]
- Operating pressures from vacuum to pressurized
- Maximized liquid hold-up

Characteristics

- Long residence time
- Defined hold-up

Applications

- Multiple feed, draw or sampling points
- Two liquid phases
- Long residence time e.g. for reaction

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