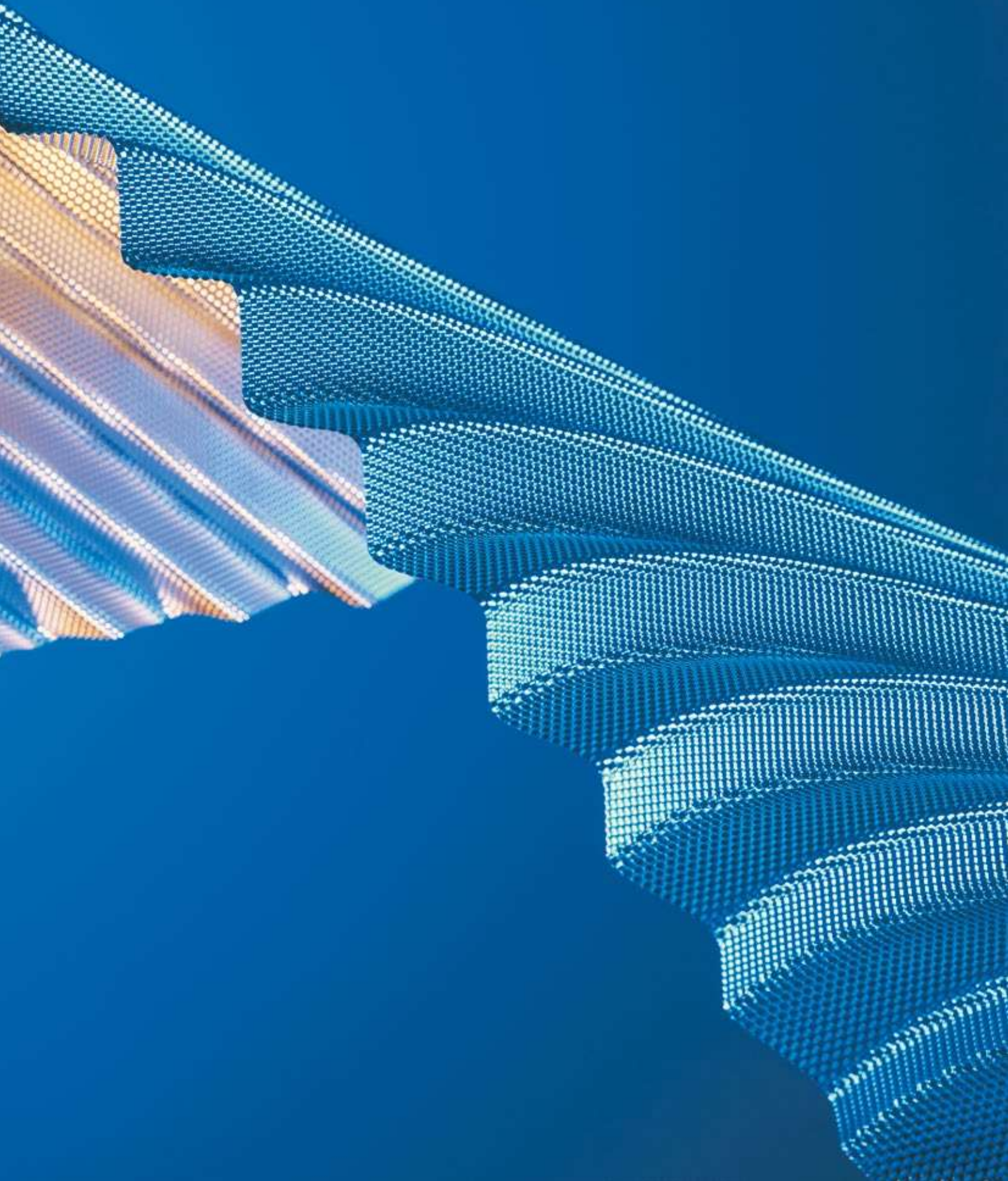


montz

Your partner in chemical engineering



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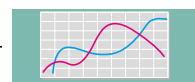
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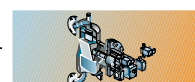
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The Julius Montz Company

An innovative enterprise with a long tradition

Today's very modern industrial enterprise with its head office in Hilden and engineering office in Landau and its agencies and licensees world-wide has grown from a small copper-smith's shop at the beginning of this century.

Dear Business Friends,

wherever distillation technology for thermal separation in the chemical and pharmaceutical industries, the up- and downstream oil industries and for renewable energies is needed. Montz is known for its long-term based experience and the high technical reputation.

Montz offers a complete portfolio of distillation columns and column internals, including state-of-the-art technology inventions like dividing wall columns and the sandwich-packing. In addition we offer the engineering for complete manufacturing units in the field of potable and

power alcohol technology, solvent recovery and air scrubbing plants. With our competence, experience and products engineered to the detail we support during basic and detail engineering up to the installation on site until the plant is in continuous operation.

Internals like mass transfer trays, structured packings and liquid distributors need a highly sophisticated design into the details. We develop designs and solutions solely adapted to your specific needs. Your pilot- and miniplant tests can be supported by our tried-and trusted column setups.

Kind regards,



G. Frey

C. Frenken

► Entrance to the Montz Building



► Aerial view of the company premises



The Julius Montz Company

An innovative enterprise with a long tradition



Trendsetting research and continuous improvements of the service and product portfolio is what has distinguished the Julius Montz Company over decades as a creative and innovative enterprise.

Today, the company is regarded as one of the leading specialists in the field of thermal fractionation technology offering a wide range of services and products.

In 1911, when Julius Montz Company was founded in Hilden as a copper forge, nobody could foresee what the future would bring. But the emphasis of our development was already clear: the chemical industry along the river Rhine and Wupper as well as the coking plants in the Ruhr area were already most important customers in that days. Apparatus and vessels were manufactured for them. Over the years, the cooperation with the chemical industry became closer and more intense.

In the 1950s Julius Montz GmbH more and more specialised in distillation technology and became an expert and innovative specialist in this field through its own developments and patents.

In order to boost the economic competitiveness Julius Montz GmbH affiliated with F.A. Neuman Company in 1971 as a wholly owned subsidiary. Further developments and improvements to the existing technologies and apparatus led to an increasingly better and wider range of products. This included the development of special equipment and technology for distillation, which form the basis of today's production program such as Tunnel Trays Type Streuber, Thormann® Trays, crossflow trays Type KSG, spring column internals – which are known to be one of the first structured packed internals available - and structured packings as well as columns and apparatus made of high-quality materials such as Hastelloy, titanium, and stainless steels. These efficient Montz products really caused a stir



on the world markets. The resulting growth in export business then led to corporations with international partners and the licensing of Montz products in Brazil, Japan and the USA.

In the 1980s the range of products was further extended by a new and important field: dividing wall column technology. Montz was the first to use this new technology inside production columns and has developed it to an important business field for the Julius Montz GmbH. Through patented own developments and detail solutions, this column technology was developed into a standard tool for distillation technology in close cooperation with BASF AG, leading into a cooperation agreement for its global marketing in the year 2000.

With the arrival of the latest computer systems and corresponding software Julius Montz GmbH expanded its capacity in the field of engineering services for process and plant engineering. One can thus expect not only outstanding products from Montz

but also professional and versatile engineering services. At the end of the Montz Process Engineering was further extended to include alcohol and solvent recovery technology through the establishment of a new branch in Landau. Turnkey plants are now being successfully delivered to international customers. Further developments to the Thormann® trays for minimum liquid loads allow column diameters of 9 meters and more.

Reorganisation measures in 2001 led to the foundation of the F. A. Neuman holding company, into which Julius Montz GmbH was incorporated.

Today Julius Montz GmbH has a leading position in its sector. It can offer a comprehensive and efficient range of products and services and is involved in research projects and intensive product developments with leading universities. Thanks to its creative and tailor-made products and services, Montz is a competent and innovative partner for its customers.

Engineering Services

Competent services in the field of plant engineering

Apart from excellent product developments, the Julius Montz company can also offer complete engineering services for distillation plants, thus ensuring an exact planning and a comprehensive and professional project execution.

Exemplary applications:

Oil and gas industry

- Liquid-liquid extraction to remove methanol from fuel additives
- Columns to dry natural gas
- Atmospheric and vacuum columns to fractionate crude oils

Absorption and solvent recycling

- Exhaust air treatment in aluminium rolling mills
- Absorption of organic components in offgas and air streams

Air separation

Structured packings and distributing systems for columns designed to fractionate oxygen, nitrogen and argon from air

Synthetic fibres

Glycol and methanol recovery from extraction water and nylon-6 chips

Coking plants

Ammonia strippers and de-acidification plants

Food industry

- Rectifying plants for mashes
- Fractionation columns for fruit juices
- De-alcoholising of beer and wine products



- ▶ Skid-mounted distillation plant for solvent recovery

Our engineering services:

Basic Engineering

- Balancing
- Process simulation using ASPEN and ChemCAD
- Dimensioning of columns, falling film evaporators, heat exchangers, piping, pumps, control technology
- Flow charts (CAD)

Detail Engineering

- Design, shop drawings, space assignment plans, piping layouts
- Stress calculations
- Structural calculations

Execution

- Procurement
- Quality assurance
- Manufacturing columns, column internals, and falling film evaporators

Assembly

- Planning
- Supervision
- Execution

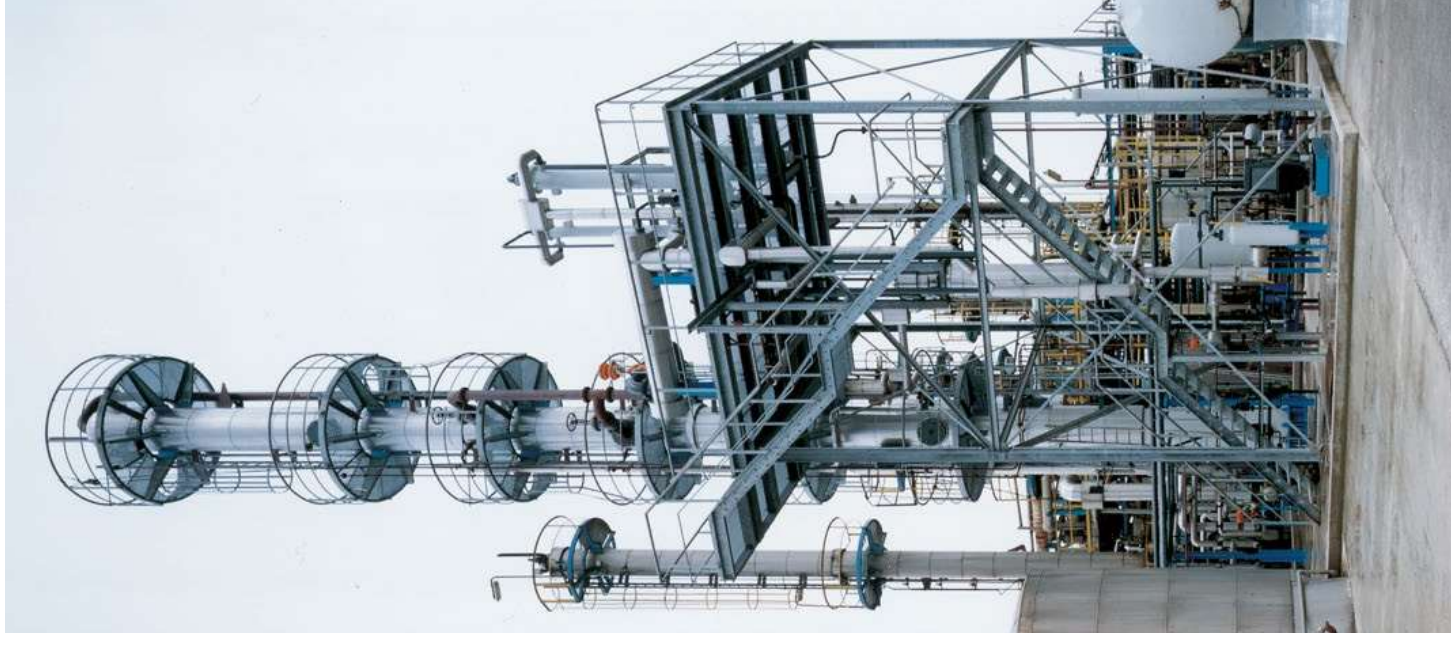
Revamping

- Replacing trays and random packings in existing columns with Montz packings
- Planning and execution of modification works

Montz plant engineering

- Plants and plant components for thermal fractionation technology
- Fractionation columns for isocyanates (TDI, MDI, MDA) in the chemical industry
- Fractionation columns and falling film evaporator plants for the purification of bisphenoles
- Columns to concentrate aliphatic alcohols.

- ▶ Rectifying plant for butanol amines



Montz Structured Packings

A standard of quality in thermal fractionation

Montz structured packings provide a very efficient separation technique and a very flexible application range. For a broad application field, the packings offer a high fractionation efficiency, a high throughput, and a low pressure drop. The main applications are distillation, desorption, absorption, direct heat exchange and liquid-liquid extraction.



Montz structured packings have a widely variable geometrical shape and different surface structures. This concept enables highest flexibility when adjustments for different fractionation tasks are needed.

The structured packings Montz-Pak Type A3, B1, BSH, C1 and the new high-performance packings Type M and MN possess a basically similar shape: the packing body always consists of corrugated lamellae.

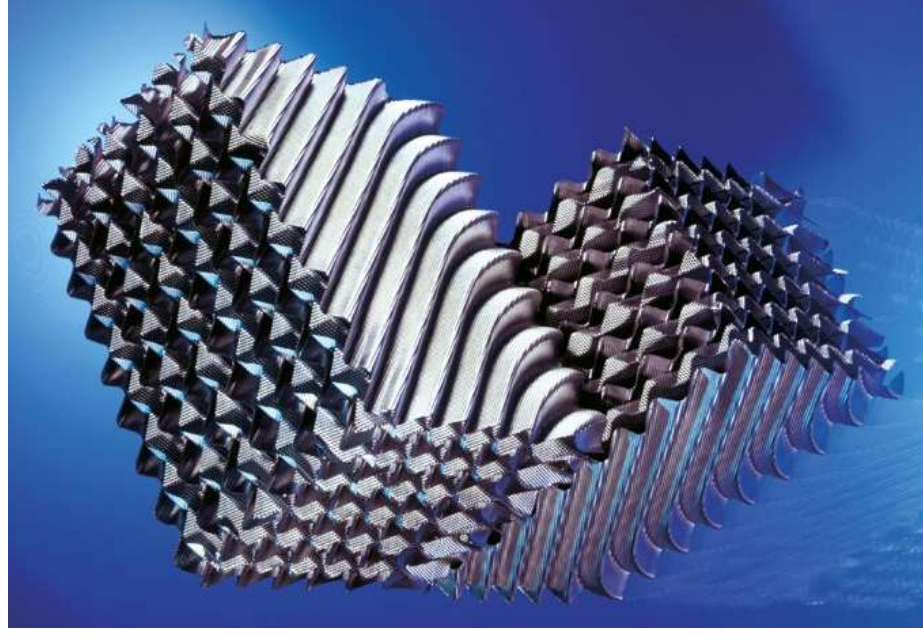
The corrugation of the lamellae run inclined to the vertical and build together with the neighbouring lamellae a cross-flow-channel system. With this structure, large specific surface areas and an intense inter-change between gas and liquid phase are achieved.

To obtain the required results, special column internals like liquid distributors, flash-equipment, liquid catchers, vapour distributors, and supporting systems are necessary. All of these internals are customized for each type of packing and requirement. Also, these internal underlie a strict and constant quality check.



► Packing element of Montz-Pak Type BSH-400 with wall wipers

► Highperformance packing



The internals are

- Liquid distributors with highest accuracy and a large operating range
- Collector trays with little pressure drop and low leaking ratio
- Vapour or gas distributors for an even distribution of the gas flow
- Flash boxes for feeding superheated liquids or gas-liquid mixtures
- Supporting systems with large open area ratios
- Wall wiper systems to avoid gas bypasses or liquid leaking streams and to adapt to diameter tolerances

A basic requirement for the high efficiency of Montz structured packings is their precise manufacturing.

The basic requirement for the high performance of Montz structured packings is a very precise production.

The packings are manufactured on computer controlled production lines to enable a maximum of precision and mechanical stability.

The high accuracy of fit and stability of Montz packings are the essential criteria for an economic and easy installation into existing and new columns.

All types of packings manufactured by Montz are produced in segments and can be easily installed either through manways or shell flanges.

Montz-Pak Type A3

Special wire mesh packing for the fractionation of thermally instable substances in deep vacuum

Montz-Pak Type A3 in particular fulfils the special requirements demanded by the fractionation of thermally instable substances under vacuum conditions. This is achieved by a special wire mesh with a capillary effect. The wire mesh has the form of corrugated lamellae and builds up the packing layers. With its low pressure drop and its high fractionation efficiency this type of packing is also very suitable for very low liquid loads.

Characteristics

- Excellent suitability for vacuum columns
- Very low liquid loads ($<100 \text{ l/(m}^2\text{h)}$) 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:

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

Materials

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

Column data

- Column diameter starting from 20 mm up to 7 m and more
- Liquid loading starting from $20 \text{ l/(m}^2\text{h)}$
- Operating pressures from approx. 0.5 mbara
- Minimal liquid hold-up

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.

Inclination angle of the corrugation

- Standard type with 60°
- 45° or other angles on request

Assembly

The packing layers are manufactured either in one piece or in segments. The installation in the column is carried out through shell flanges or through manholes.

▶ Montz-Pak Type A3-500



▶ Structure of a Montz-Pak Type A3-500 in copper, 2000 mm diameter

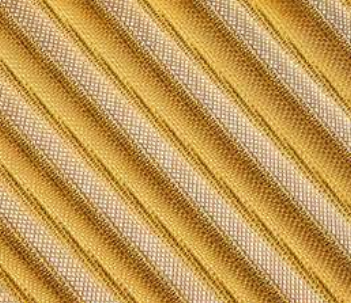
Pak-Type	Specific surface m^2/m^3
A3-500	500
A3-750	750
A3-1000	1000
A3-1200	1200
A3-1500	1500
A3-1900	1900

Other surface area sizes are available on request

Montz-Pak Type B1

The efficient metal sheet packing

Montz-Pak Type B1 is a result of many years of experience and development in the field of thermal fractionation technology with structured packings. Montz-Pak Type B1 has proven its reliability in many technical applications. The excellent characteristics result from the regular arrangement and the special Montz surface structure.



Montz-Pak Type B1: 45° and 60° angle of inclination of the corrugation (left to right)

Standard type (45°)	
Pak-Type	spec. surface m ² /m ³
B1- 65	65
B1-100	100
B1-125	125
B1-150	150
B1-200	200
B1-250	250
B1-300	300
B1-350	350
B1-500	500
B1-750	750

Type for high throughputs (60°)	
Pak-Type	spec. surface m ² /m ³
B1- 65.60	65
B1-100.60	100
B1-125.60	125
B1-150.60	150
B1-200.60	200
B1-250.60	250
B1-300.60	300
B1-350.60	350
B1-500.60	500

Materials

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

Column Data

- Column diameter starting from 20 mm up to 11 m and more
- Liquid load from 40 l/(m²h)
- Operating pressures from vacuum to more than 100 bara
- Minimal liquid hold-up

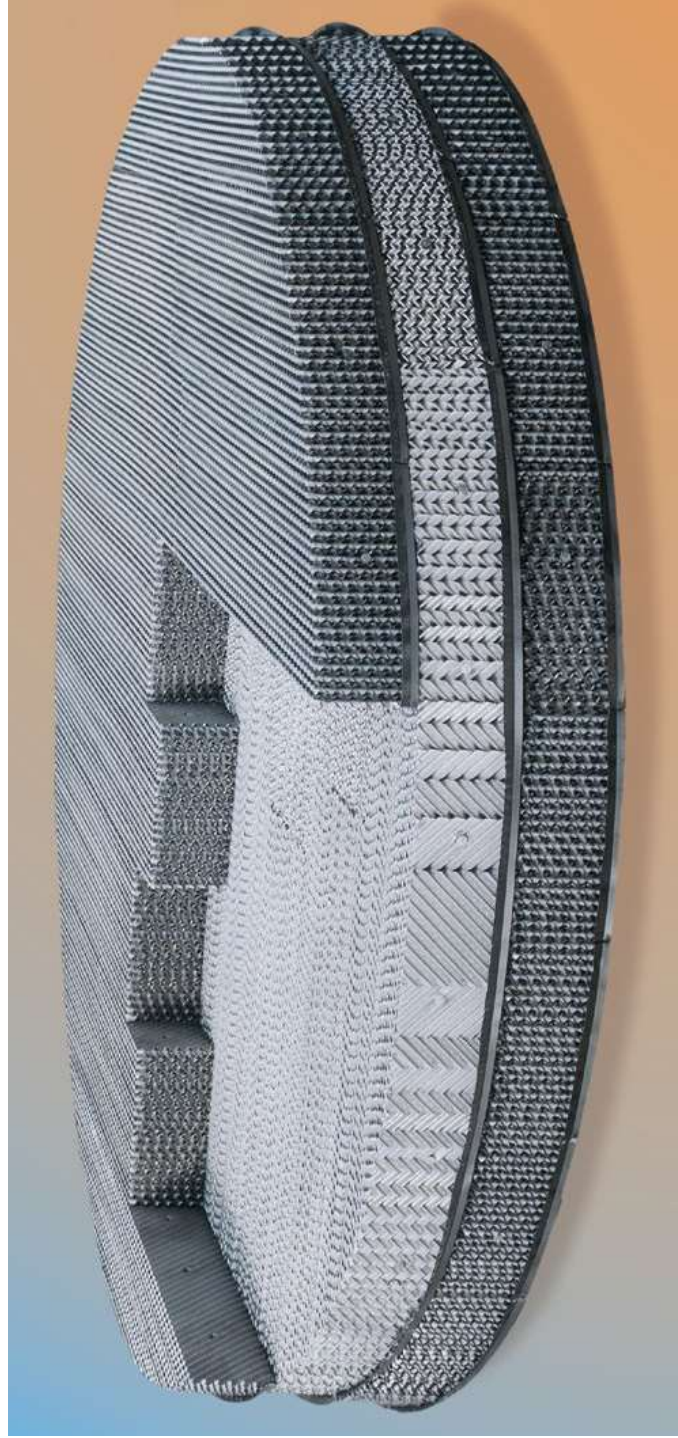
Other surface area sizes are available on request

Characteristics

- High throughput
- High flexibility
- High efficiency
- Low pressure drop
- Liquid loads from 0.1 to 250 m³/(m²h) and more
- Adaptable to any fractionation task by a variable specific surface

Applications

- Vacuum columns
- Normal pressure and high pressure columns
- Absorption of components and pollutants from gas or air flows
- Natural gas drying with glycols
- Refinery columns (atmospheric and under vacuum)
- Petrochemical columns
- Exhaust air washing in aluminium rolling mills
- Recovery of lubricating and rolling oil
- Waste water treatment with stripping columns
- Revamping of existing trayed or random packed columns to improve the performance and capacity



Revamping

The performance and capacity of existing columns like e.g. crude oil columns, natural gas dryers, vacuum distillations (for fatty alcohols, fatty acids, methyl esters etc.) can be increased by revamping.

Inclination angle of the corrugation

- Standard type with 45°
- 60° for high liquid throughput and direct heat transfer in condensation beds

Fractionation stages

Depending on the design, more than 5 theoretical stages per meter can be achieved.

Assembly

The packing layers are manufactured either in one piece or in segments. The installation into the column is carried out through shell flanges or manways.

Montz-Pak Type B1-250,
Diameter 4000 mm

Montz-Pak Type BSH

High-performance packing for thermal mass transfer



The BSH-packing combines the essential features and characteristics of metal sheet and wire mesh packings. A remarkable characteristic of the BSH- packing is the patented surface structure, which consists of rhombic perforations with alternating burred-up edges. This structure ensures an excellent and uniform wetting characteristic under lowest to high liquid loads. Turbulences caused by the burred-up rims of the orifice ensure a permanent mixing of the liquid film on the packing surface.

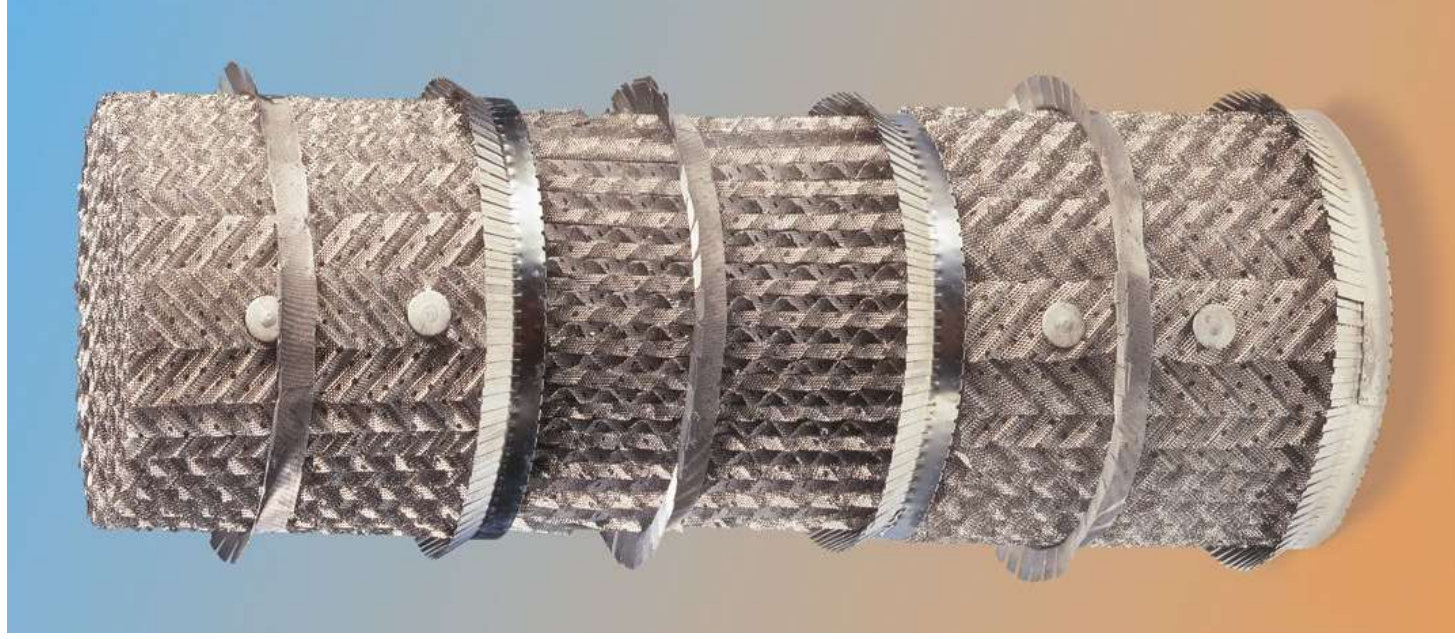
- Liquid loads from 0.04 up to more than 150 m³/(m²h)
- Low pressure drop
- Tailor-made solutions for any fractionation problem thanks to the variable specific surface

Applications

- Vacuum columns
- Normal pressure and high pressure columns
- Absorption
- Natural gas drying
- Refinery columns
- Petrochemical columns
- Dealcoholisation columns for beer or wine products
- Waste water stripping columns
- Fractionation columns for the chemical industry
- Revamping of existing trayed or random packed columns to improve the performance and capacity

Characteristics

- High capacity and flexibility
- Good wettability, thus ensuring excellent contact surfaces between vapour and liquid
- High fractionation efficiency almost up to the capacity limit of the packing



Montz-Pak Type BSH-400

Materials

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

Column data

- Column diameter starting from 40 mm to 11 m and more
- Liquid load from 40 l/(m²h)
- Operating pressures from vacuum up to 100 bara
- Minimum liquid hold-up

Angles of inclination of the corrugations

Standard design (45°)	
Pak-Type	Spec. surface m ² /m ³
BSH-350	350
BSH-400	400
BSH-500	500

Design for high throughputs (60°)

Pak-Type	Spec. surface m ² /m ³
BSH-350.60	350
BSH-400.60	400
BSH-500.60	500

Other surface area sizes are available on request

Fractionation stages

Depending on the design more than 8 theoretical stages per meter can be achieved.

Assembly

The packing layers are manufactured either in one piece or in segments. The installation into the column is carried out through shell flanges or manways.

Montz-Pak Type C1

Plastic packings made of PTFE for fractionation of corrosive substances

Montz-Pak Type C1 is made of pure PTFE and is a structured mass transfer packing with a specific surface of 300 m²/m³. The C1 packings are manufactured in the form of cylindrical packing elements for small diameters and in segments for larger diameters. The individual packing layers are stiffened by a metallic basket.

Characteristics

The packing's structure of Montz-Pak Type C1 is very similar to that of the B1 packing so that the pressure drop and fractionation characteristics are comparable.

Applications

The C1 packings can be used in columns for: distillation, absorption, desorption and liquid-liquid extraction.

Material

The distributor and support system for C1 packings are made of e.g. Hastelloy C4 or B2, titanium or tantalum.



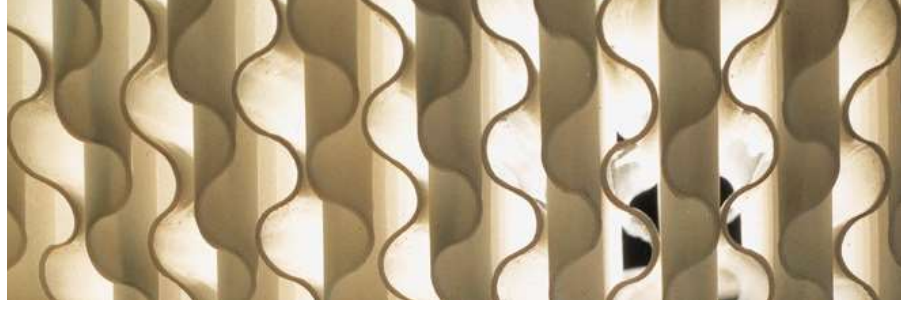
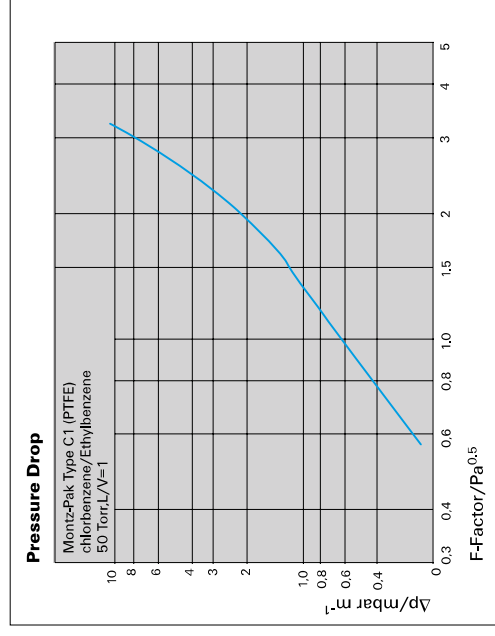
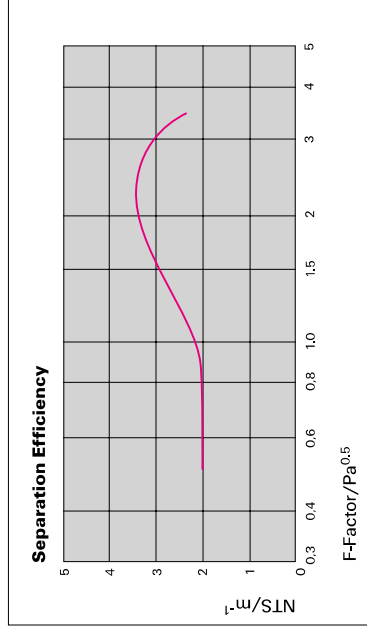
Montz-Pak Type C1

Column data

- Operating temperature up to 130°C
 - Liquid loads approx. 2 to 150 m³/(m²h)
 - Specific surface 300 m²/m³
 - The smallest diameter is approx. 60 mm. Up to a diameter of 1.5 m the packing elements can be produced in one piece. Production in segments is possible from diameters of approx. 800 mm.
- Please contact Montz to determine the separation stages and diameters for a specific separation problem.

Separation stages and dimensioning

More than two theoretical stages per meter can be obtained when used in technical columns. The separation efficiency of C1 packings depends largely on the wettability and liquid load.



Structure of Montz-Pak Type C1

Charts

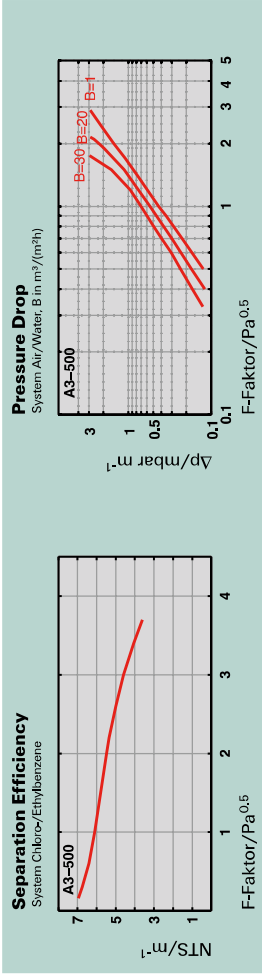
Separation efficiency and pressure drop overview

The following charts will give you the opportunity to convince yourself of the performance of our most important types of structured packings. These charts give you a wide overview of the separation efficiency and the pressure drop of our premium products. Further types of packings as well as further information about individual solutions are always available on request.

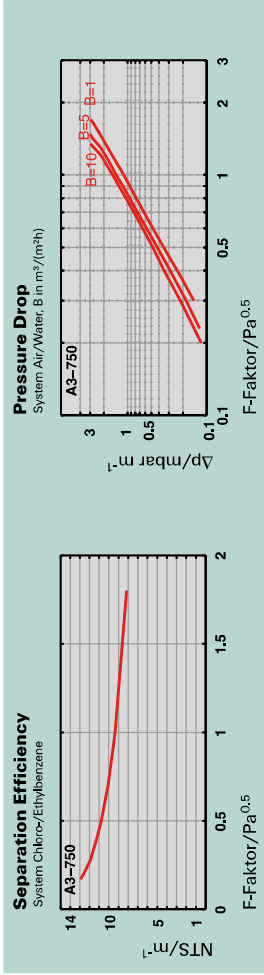
Separation efficiencies are shown for the test system chloro-/ethylbenzene at ambient pressure. The pressure drops are specified for test system air/water at different specific liquid loads.

Liquid load B in m³/(m²h)

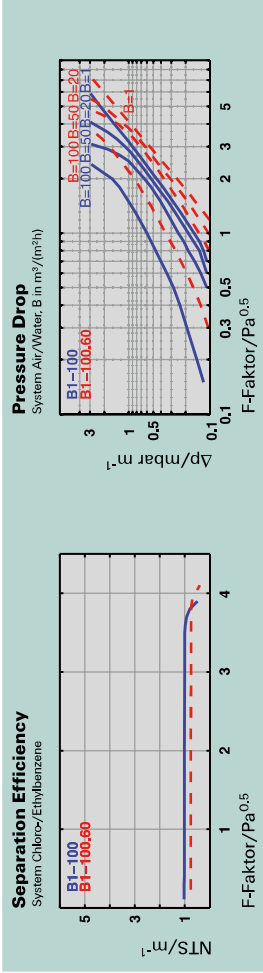
Montz-Pak Typ A3-500



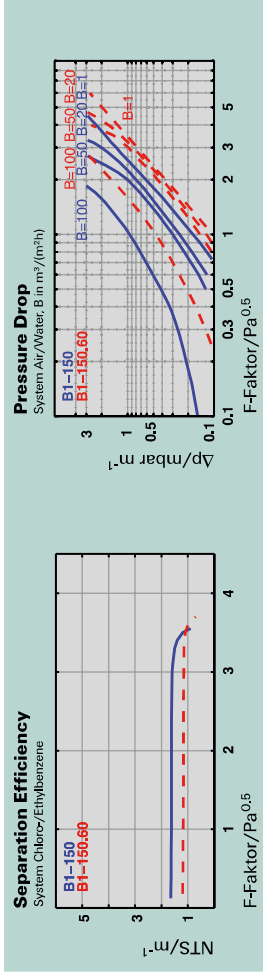
Montz-Pak Typ A3-750



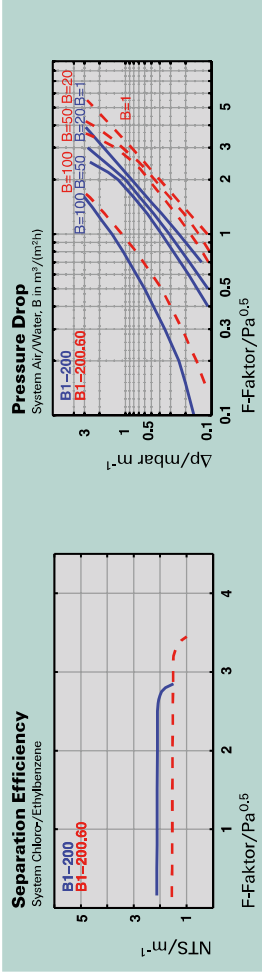
Montz-Pak Typ B1-100



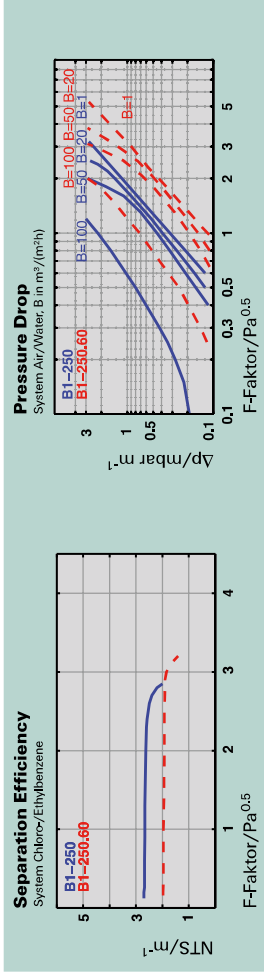
Montz-Pak Typ B1-150



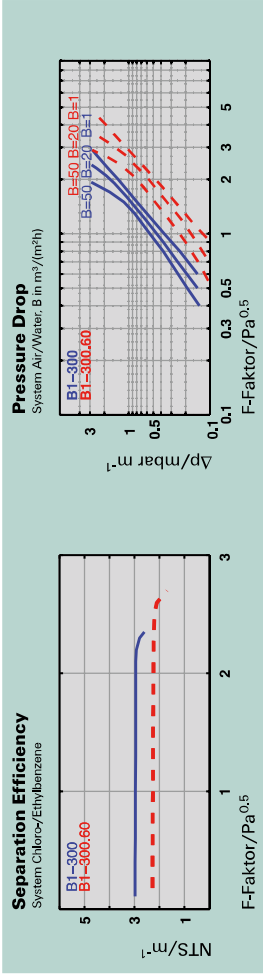
Montz-Pak Typ B1-200



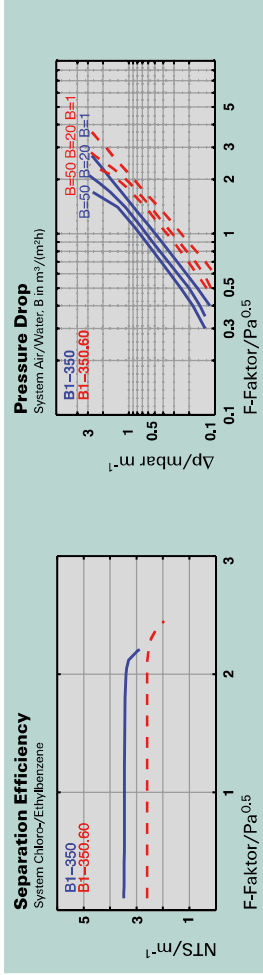
Montz-Pak Typ B1-250



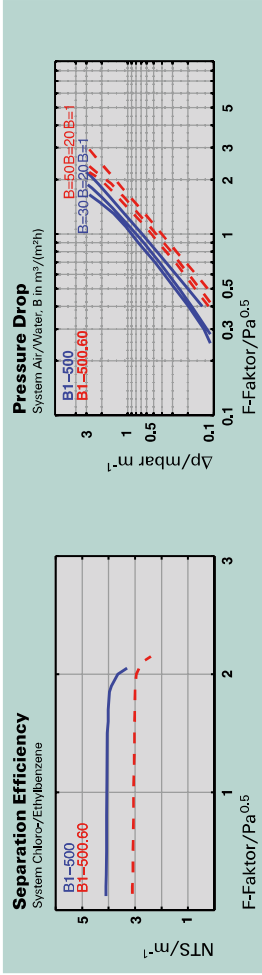
Montz-Pak Typ B1-300



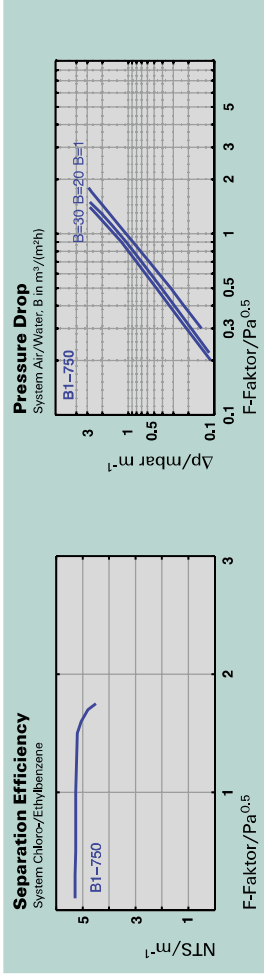
Montz-Pak Typ B1-350



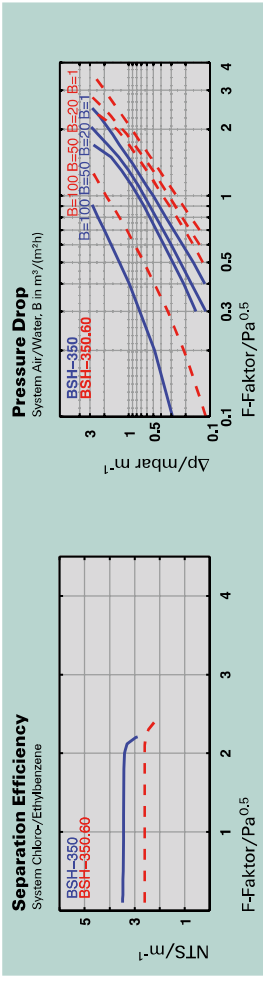
Montz-Pak Typ B1-500



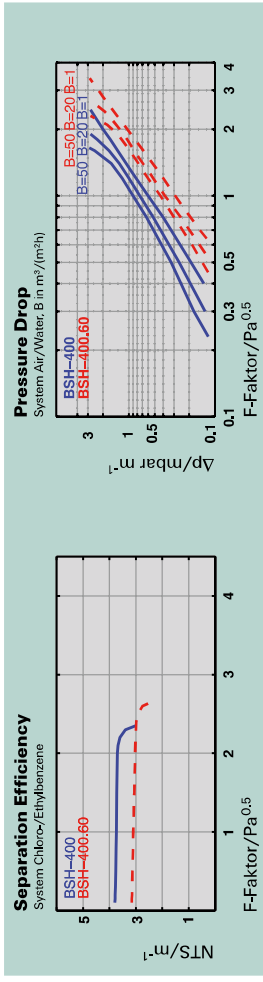
Montz-Pak Typ B1-750



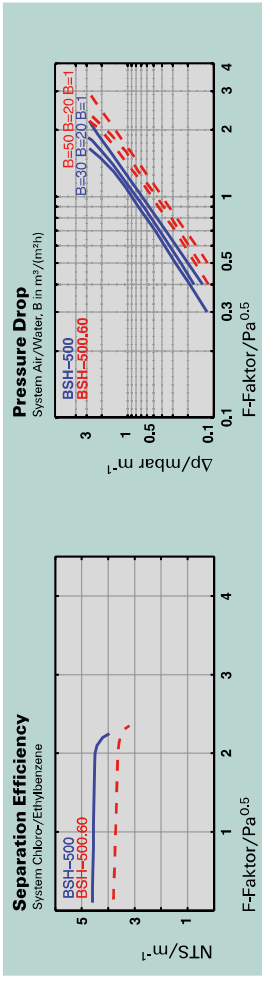
Montz-Pak Typ BSH-350



Montz-Pak Typ BSH-400



Montz-Pak Typ BSH-500



Montz-Pak Type MN/M

The new generation of high performance packings

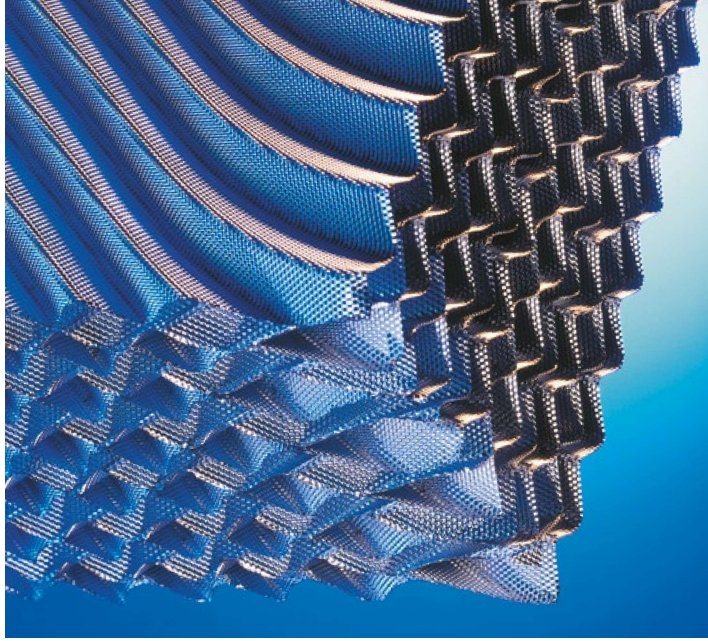
The Montz-Pak Type M and MN are further developments of the tried and trusted Montz structured packing Type B1, A3 and BSH with its own patent coverage.

MN-Packings show in comparison to standard packings an increased xparation efficiency of up to 30% at a higher throughput or reduced pressure drop. Hence higher quality in products and smaller height requirements of columns are achievable.

M-Packings are especially suitable for increasing the throughput of up to 30% in existing columns. They enable a reduced pressure drop at almost equal

The optimized curved geometry creates two types of packings that improve either throughput the separation efficiency by some 30%. Both models of packings have patented height variable shapes of waves, which prevents a liquid-hold up at high gas loads at the bottom packing end.

The packings can be characterised as follows:



separation efficiency. The field of application are new columns, grass root plants or revamping existing units.

Montz-Paks Type M and Type MN are protected by international and national patents.

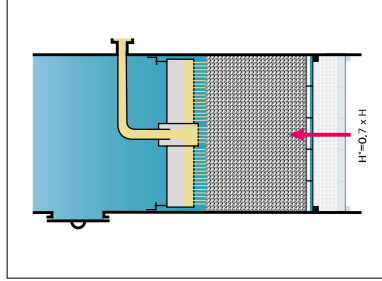
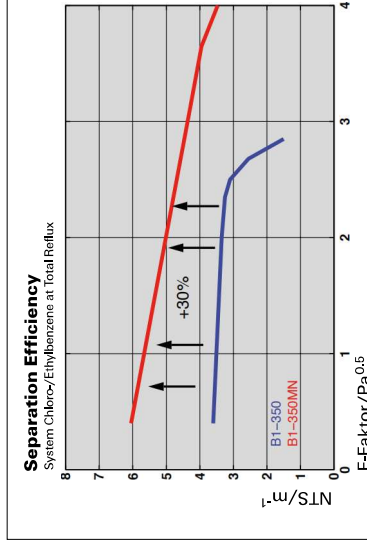
The following high performance packings are available:

Pak-Type	Surface area m ² /m ³
B1-250MN	250
B1-350MN	350
B1-500MN	500
B1-175M	175
B1-250M	250
B1-350M	350
A3-500M	500
A3-750M	750

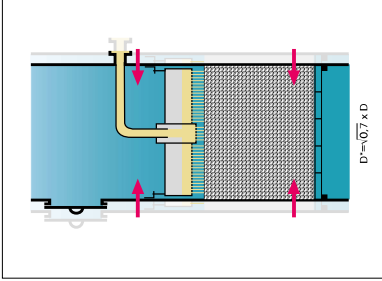
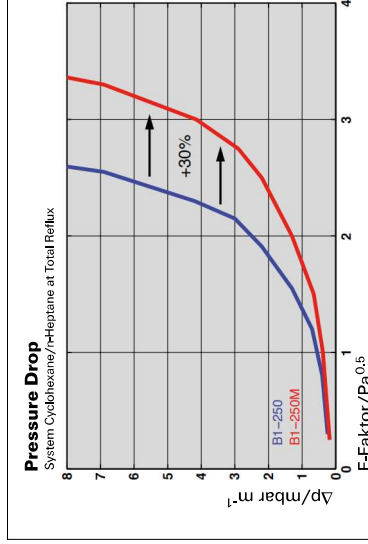
Montz-Pak type M and MN offer an advantage in investment costs for new columns regarding diameters and heights. Through the increase of separation efficiency as well as the throughput columns with a smaller diameters and/or height are possible.

After revamping of existing columns the advantages of high performance packings have a direct effect on the process. Existing plants can run on higher throughputs, can have better product qualities or can have reduced energy-costs due to the reduced pressure drop.

Example of the increase in separation efficiency comparing B1-350MN and B1-350 packings. Test system is chloro-/ethylbenzene at total reflux.



Example of the capacity advantage comparing B1-250M and B1-250 packings. Test system is Cyclohexane/n-Heptane.



Structure of the Montz Pak Type M

An increase in separation efficiency of 30%

The application fields of high-performance packings type M and MN are basically not different from those of the comparable standard packings. Current working experience and areas of application remain valid.

Characteristics

- Higher throughput
- High flexibility
- Large separation efficiency up to capacity limits
- Liquid loads of 0.1 up to 250 m³/(m²h)

Application fields

- Vacuum columns
- Normal pressure and high pressure columns
- Absorption of components and pollutants out of gas- and air-streams
- Natural gas drying with glycols
- Refinery columns (atmospheric and vacuum)
- Petrochemical columns
- Exhaust air treatment in aluminium rolling mills
- Lubricating and rolling oil treatment
- Sewage stripper

Materials

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

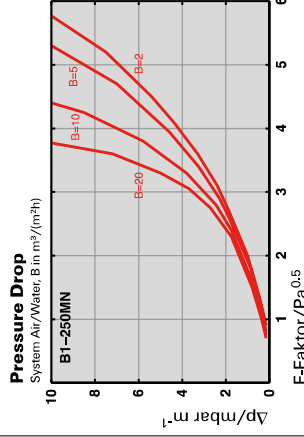
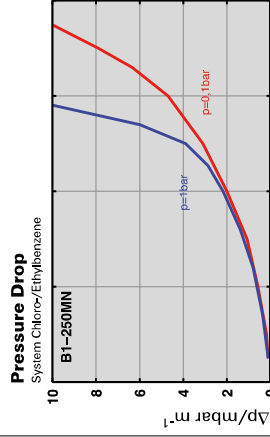
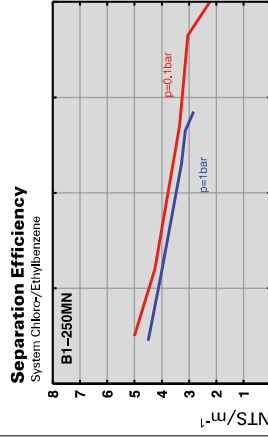
Column data

- Diameters from 40 mm up to 10 m and more
- Liquid loads from 100 l/(m²h)
- Working pressures from vacuum to more than 100 bara
- Minimal liquid hold-up

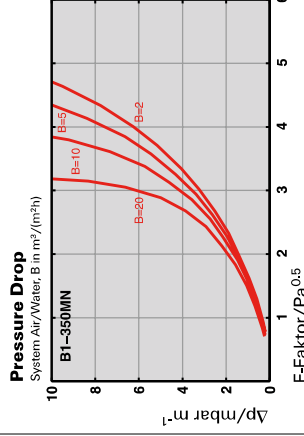
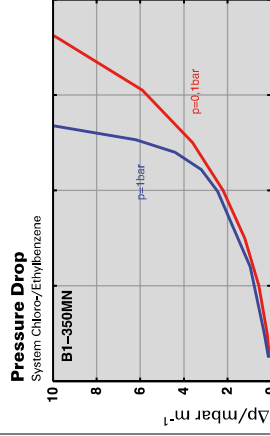
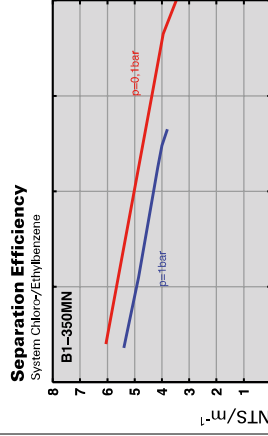
Assembly

The packing layers are manufactured either in one piece or in segments. The installation into the column is carried out through shell flanges or manways.

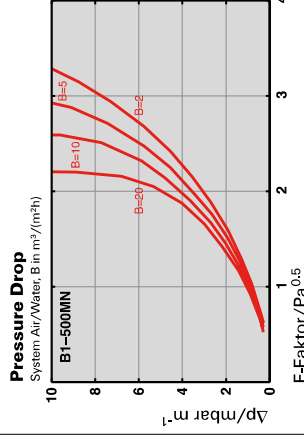
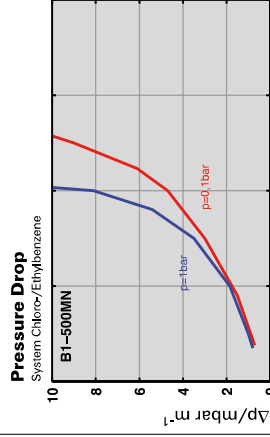
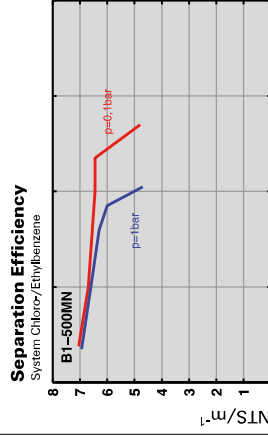
Montz-Pak Typ B1-250MN



Montz-Pak Typ B1-350MN



Montz-Pak Typ B1-500MN



Type M

Throughput increase of 30%

Performance data of a test distillation unit DN 450

Montz-Pak Type A3-500M

Lowest pressure drop at high separation efficiency

The A3-500M packing offers a reduced pressure drop of 20% compared to the standard Montz-Pak type A3-500.

Because of the flow-optimised corrugation, higher throughputs, smaller pressure drops or reduced column diameters are possible. The A3-500M is especially suitable for application in deep vacuum and for smallest liquid loads.

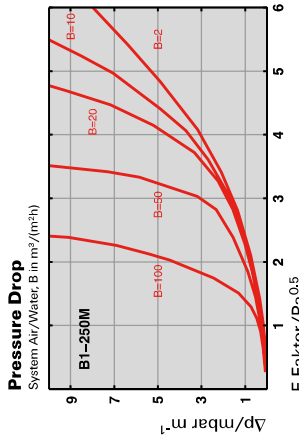
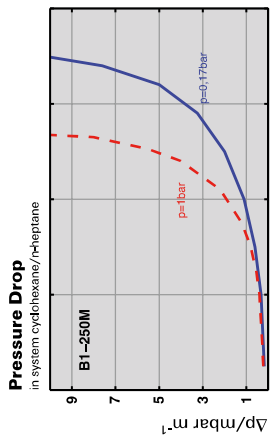
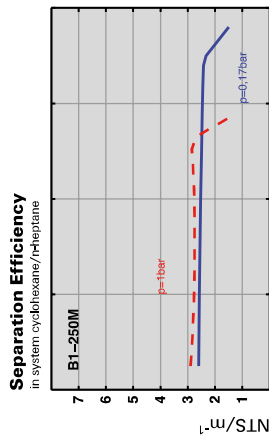
Characteristics

- Very low pressure drop per fractionation stage
- High capacity
- Same separation efficiency as standard A3-500

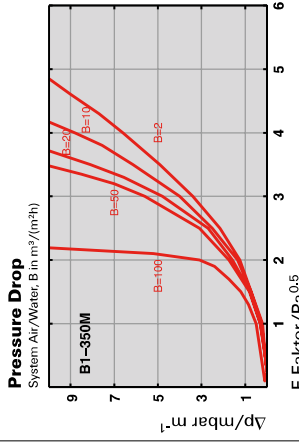
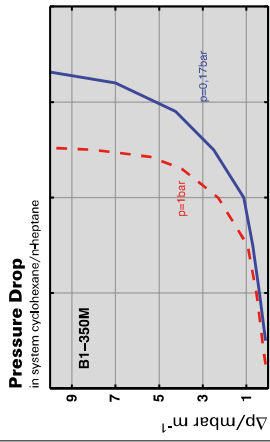
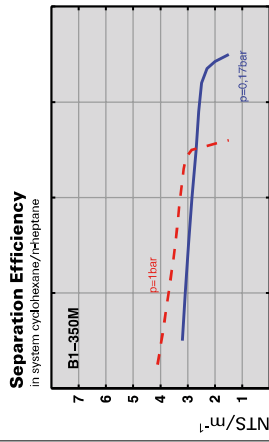
Application

The area of application is mainly in the field of fractionation of thermally instable substances which are rectified under vacuum from about 0.5 mbara.

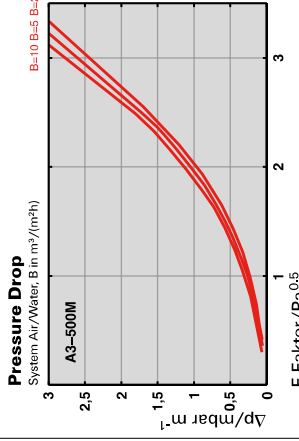
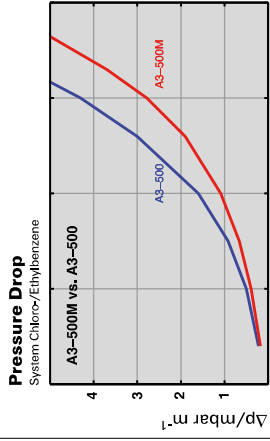
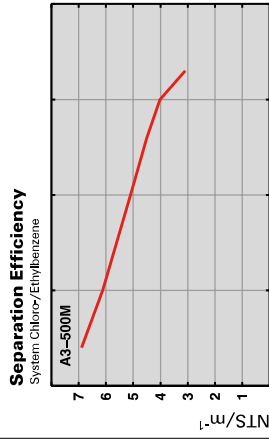
Montz-Pak Typ B1-250M



Montz-Pak Typ B1-350M



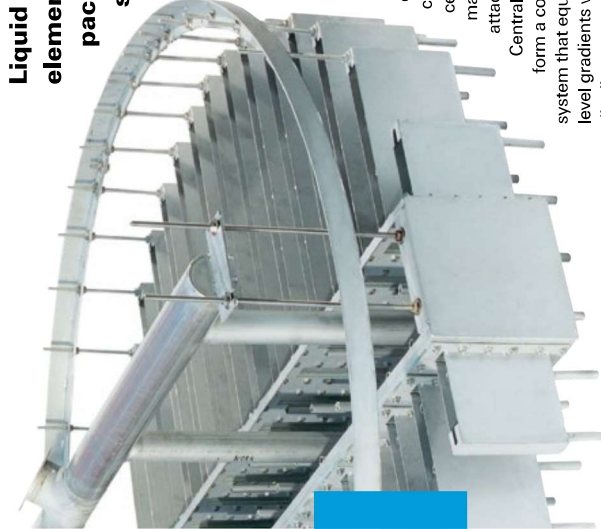
Montz-Pak Typ A3-500M



Liquid Distributors

Know-how from Montz for maximum separation performance

Liquid distributors are the most important elements in rectifying columns with structured packings. The high separation efficiency of structured packings can only be achieved with high-precision liquid distributors. Over the years, Julius Montz has gained the know-how necessary to design most efficient liquid distributors.



Each of the distributors consists of a centrally arranged main trough with attached side troughs. Central and side troughs form a communicating system that equalizes liquid level gradients within the distributor most efficiently.

Each individual trough is fixed to a support ring, which is itself fixed to the column wall (i.e. the distributor is not resting on the packing bed). All troughs are individually and exactly adjustable to be in level over the column diameter. The liquid is then fed via a pre-distributing system into the main trough of the distributor. The assembly can easily be carried out through manways or shell flanges.

▶ Montz-liquid distributor type R for assembly through manholes DN 600

▶ Montz-liquid distributor type R DN 10600 on the distributor test rig

Montz Liquid distributors are characterized by:

- Distribution uniformity: standard deviations between the individual drip points are only between 3 and 5%
- Number of drip points: From 60 to >250 per m² (depending on application and liquid load)
- Liquid loads: depending on the design of the distributor <0.1 to > 250 m³/(m²h) (Distributors for 20l/(m²h) have been successfully applied, e.g. distillation of glycerine.
- Flexibility: standard turn down ratio 1 : 2.5 (higher ratios like e.g. 1 : 10 and more are possible using multi-stage distributors).
- Design know-how for high viscous liquids

- Diameter: distributors for diameters from 70 mm up to 12 meters and more
- The same design principle for diameters from 200 mm to 12 meters and more
- Liquid feed pre-distribution system adapted to the respective application
- Contamination: designs, which are insensitive to solids and in particular to sedimentable impurities
- Simple adjustability by standard fitter's tools
- Rigid fixing to the column wall
- Assembly and inspection of the liquid distributors through manways for columns from DN 800. In smaller columns assembly is carried out through shell flanges.

- Quality assurance**
Each of the liquid distributors made by Julius Montz is subject to a quality test with water on our own test facility. The following points are being tested and documented:
- Quality of manufacture
 - Leak test
 - Distribution accuracy: the distribution accuracy is determined on the basis of the flow from each drip point
 - Throughput and operating range of the customers
 - For each distributor a test report is compiled and added to the final documentation

Julius Montz has its own test facilities with a size of two to nine meters in diameter in a separate test hall. Distributors with more than nine meters in diameter are tested on an outside test rig.

The test rig pumps have a capacity of 2500m³/h liquid.

The test setup is carried out with the fixing and levelling instruments and elements that are used in the final columns.

▶ Liquid distributor type R for assembly through shell flanges



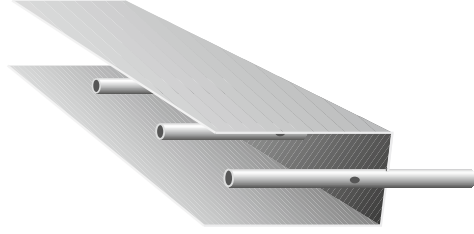
Liquid Distributors Type R and Type N

Solutions for all kinds of application

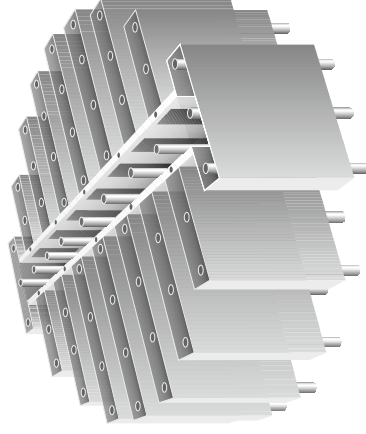
Montz can offer a comprehensive range of liquid distributors adapted to various fields of application. As a result of many years of research and development, the distributors fulfil the highest quality requirements and ensure an excellent performance.

Channel-type distributor Type R

- Liquid outlet through drain tubes welded into the channels. Each drain tube has holes through which the liquid flows a few centimetres above the bottom of the channel.
- Multi-stage designs are possible by the arrangement of several holes one above the other



Detail view type R

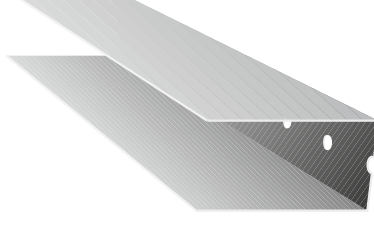


Channel-type distributor Type R

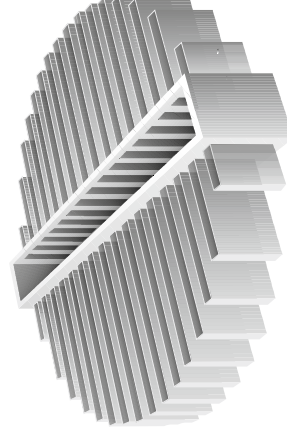
- Operating ranges:
1-stage: approx. 1:2.5
2-stage: approx. 1:10
(higher ranges on request.)
- Number of drip points:
60 to 200 per m²
- Throughputs approx. 0.3 to >250 m³ >/(m²h)
- Insensitive to sedimentable dirt particles.

Channel-type distributor Type N

- Liquid outlet through holes in the bottom of the channels
- Operating range 1:2.5
- Number of drip points depending on the liquid flow:
60 to 200 per m²
- Throughputs approx. 0.3 up to >250 m³ >/(m²h)
- Limited use for liquids containing solids



Detail view Type N



Channel-type distributor Type N



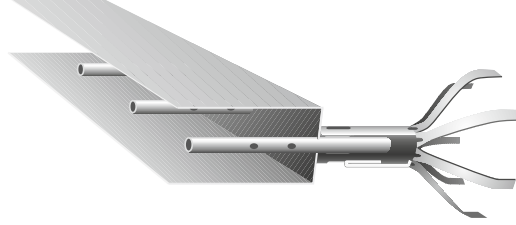
Detail view channel-type distributor Type R

Liquid Distributor Type S

Solutions for extremely small sprinkling densities

The patented liquid distributor Type S is suitable for extremely small sprinkling densities. The special design enables a high density of drip points, so that the packing surface is completely wetted even at small amounts of liquid.

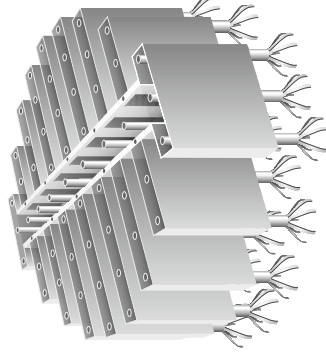
The basic design of the Montz channel-type liquid distributor Type S is the tried and trusted Montz modular system. The standard drain tubes have additional drainage sleeves so that the liquid flows from each tube is split into a number of small individual flows. The design enables drip point densities of at least 100 per m² for even small amounts of liquid.



Detail view Type S

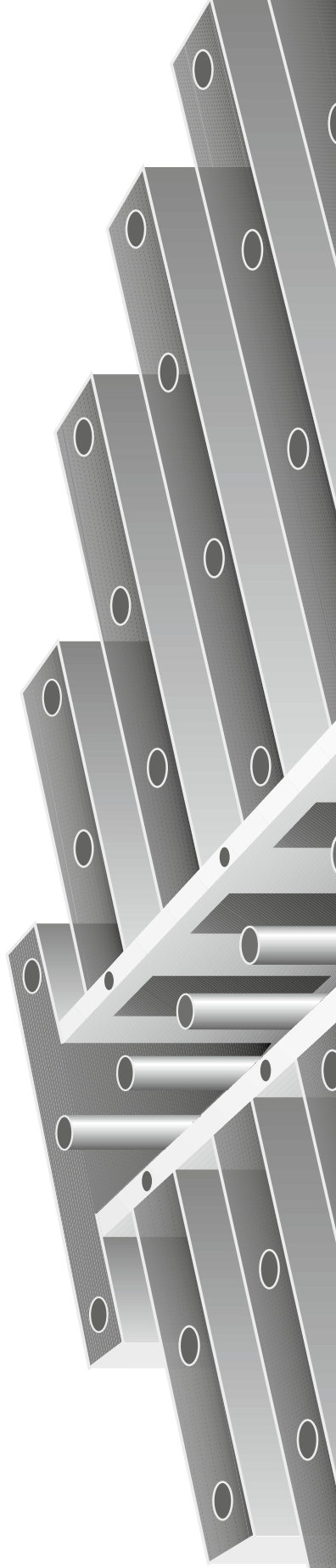
Montz liquid distributor Type S with short drip fingers

Channel-type distributor Type S



Channel-type distributor Type S

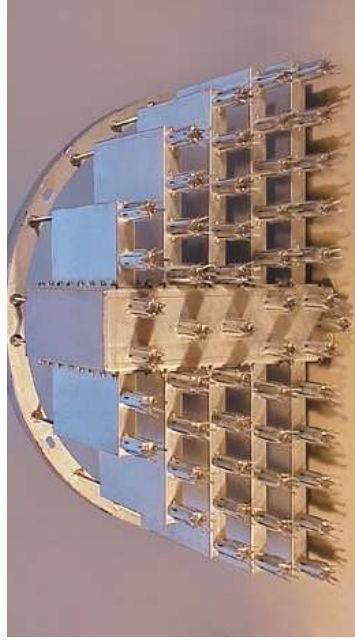
- Liquid distributor for lowest volumetric flows (smallest flows to date around 20 l/(m²h))
- Liquid outlet through drain tubes similar to Type R
- Each drain tube has drainage sleeves with lateral slots and seven or more drip fingers at its lower end to split the liquid flow into corresponding partial flows
- Operating ranges:
1-stage: approx. 1:2.5
2-stage: approx. 1:10 (higher ranges on request).
- Number of drip points 100 to 1000 per m²
- Throughputs 0.02 to approx. 70 m³/(m²h)
- Insensitive to sedimentable dirt particles



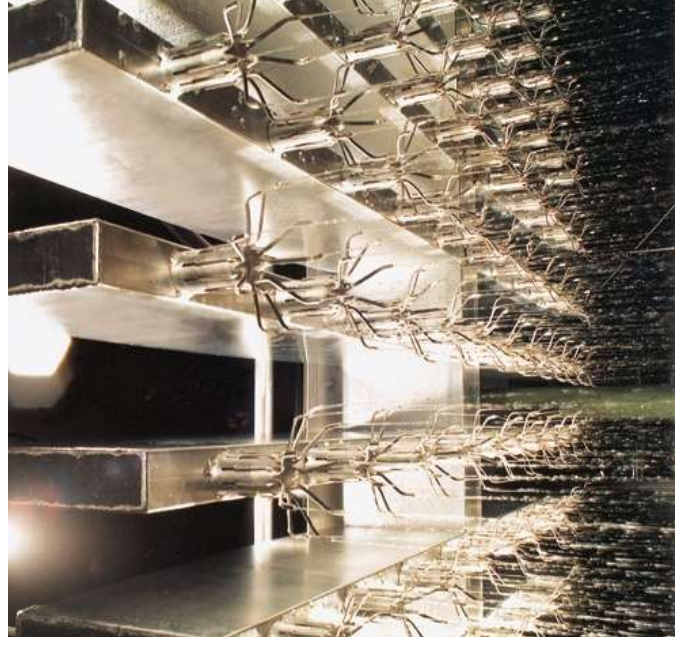
Liquid Distributor Type S

Solutions for the toughest applications

Because of the great demands made by liquid distribution on structured packings, Montz has gained a reputation as a specialist in this field. Special designs tailored to even extreme requirements are standard for us.



▶ Montz liquid distributor Type S for use in a partition column



- Special applications**
- Non-corrosive materials such as tantalum, zirconium and titanium are almost standard
 - Liquid distributor Type S for sprinkling tube bundle reactors filled with catalyst
 - Distribution of high-viscosity liquids, for example 1300 mPas

▶ Montz liquid distributor Type S of aluminium, DN 2400 designed for 100 l/(m²h) up to 750 l/(m²h)

The liquid distributor Type S shown here is one example of a solution to a customer's problem for distributing small volumes of liquid



▶ Special design of the Montz liquid distributor Type S for the lowest liquid sprinkling densities



▶ Drip pattern of a Montz liquid distributor Type S (special design)

Liquid Distributors

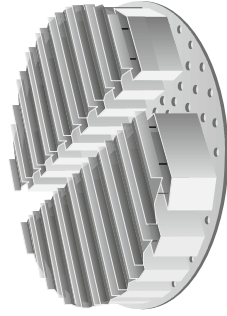
Montz combination distributors and pipe distributors

Combination distributors serve as liquid collectors and distributors. Chimneys with covers enable the passage of rising vapour and the collection of the liquid at the same time. The packings are then fed with the liquid through holes or drip tubes.

Montz-Combination Distributor

Combination Distributor Type KN

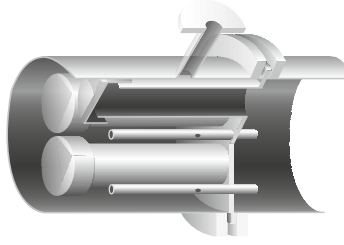
- Holes in the bottom plate beside and between the risers uniformly distribute the liquid across the packings arranged underneath
- Assembly through manways
- Operating range approx. 1 : 2.5
- Number of drip points: approx. 60 to 100 per m²
- Throughput approx. 1.0 to > 250 m³/(m²h)
- Relatively insensitive to solids



Combination Distributor Type KN

Combination Distributor Type KR

- Instead of holes drain tubes are used in this case
- Operating range 1-stage: approx. 1 : 2.5, 2-stage: approx. 1 : 5
- All other characteristics similar to Type KN



Combination Distributor Type KFR

Combination Distributor 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 m³/(m²h)

Montz-Pipe Distributors

The tubular distributors consist of a centrally arranged main tube with secondary tubes laterally arranged at right angles. The liquid is fed into the main tube. The distributor is fixed at a support inside the column. Each of the lateral tubes is exactly adjustable. Assembly is carried out through manholes or via shell flanges.

Pipe Distributor Type RO

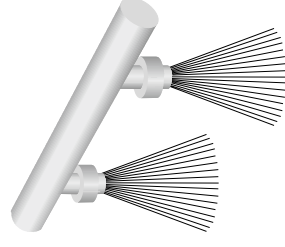
- Outlet through holes on the underside
- Operating range approx. 1:2.5 (higher ranges on request)
- Number of drip points: approx. 60 to 100 per m²
- Throughputs approx. 1 to 250 m³/(m²h)



Pipe Distributor Type RO

Pipe Distributor Type ROD

Same design as Type RO but full cone spray nozzles instead of holes for the distribution of the liquid



Pipe Distributor Type ROD

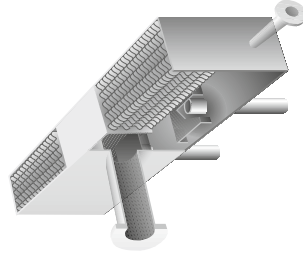
Column Internals

System accessories for Montz packings

The range of products offered by Montz is completed by special internals. A perfect performance can thus be achieved with a fully integrated program.

Flash-Boxes

Flash-Boxes are always installed at the column feeding point when the feed is overheated. Flash vapour may thus occur after entrance into the column, which can affect the performance of the liquid distributor.

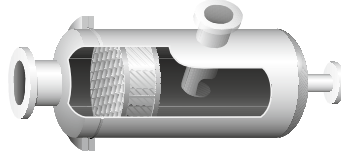


Flash-Box TYPE IN

Flash-box type IN has been designed for smaller amounts of flash vapour occurring at overheated inlets. This type of flash-box can be installed inside the column near the inlet.
Flash-box type IN is suitable for columns with a diameter from approx. 900 mm.

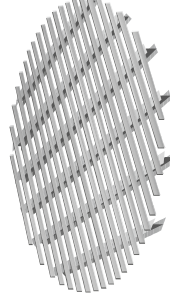
Flash-Box Type A

Flash-box type A has been designed for higher evaporation rates. It is installed outside the column near the column feeding point: the overheated feed enters the box via a nozzle and is reduced to column pressure inside the box. The flash vapour generated escapes through a mist eliminator on top of the flash-box and is fed to the column through a piping system. The residual liquid is drained from the bottom of the box and flows to the feed nozzle of the column.



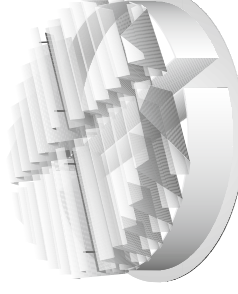
Support System Type G

Support systems serve as support for the structured packings. The support system Type G is suitable for columns with a diameter of >1000 mm. Two or more beams bridge the cross-section of the column. These main beams hold the grate rods onto which the packing is placed. It is designed so that all parts can be installed through manholes.



Support System Type K

The support system Type K for columns of a diameter of <1000 mm is of a one-piece design and is installed into the column through a shell-flange connection.
For diameters up to approx. 2500 mm the support system is of multisectional design and is installed through manholes. Cams on the column wall serve as a support and for fixation.



Liquid Collector

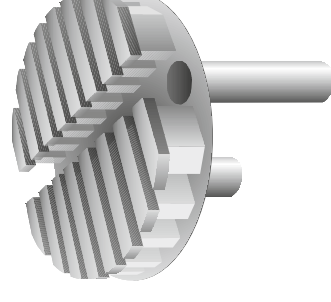
Liquid collector trays are arranged between two packing sections. Thus, the liquid trickling down is collected by the liquid collector tray and from here it can be returned to a liquid distributor.

In the area of the liquid collector tray it is possible to install liquid/vapour feeds or liquid/vapour draw offs.



Vapour Distributors

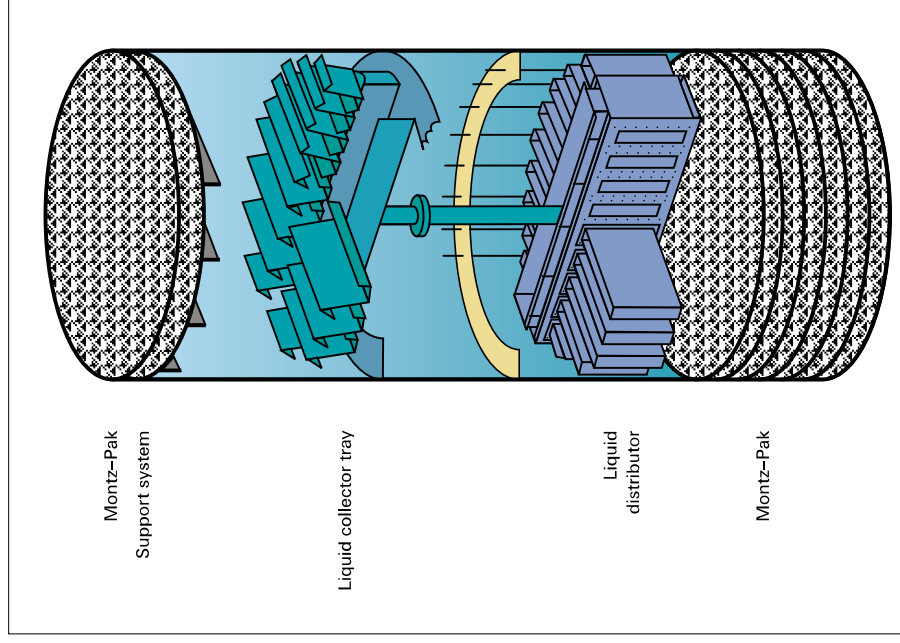
Gas or steam distributors are used to achieve a uniform gasflow pattern across the whole cross-section of the column. The use of vapour distributors is recommended in the case of low vapour velocities and if the vapour nozzle beneath the packing is too narrow.



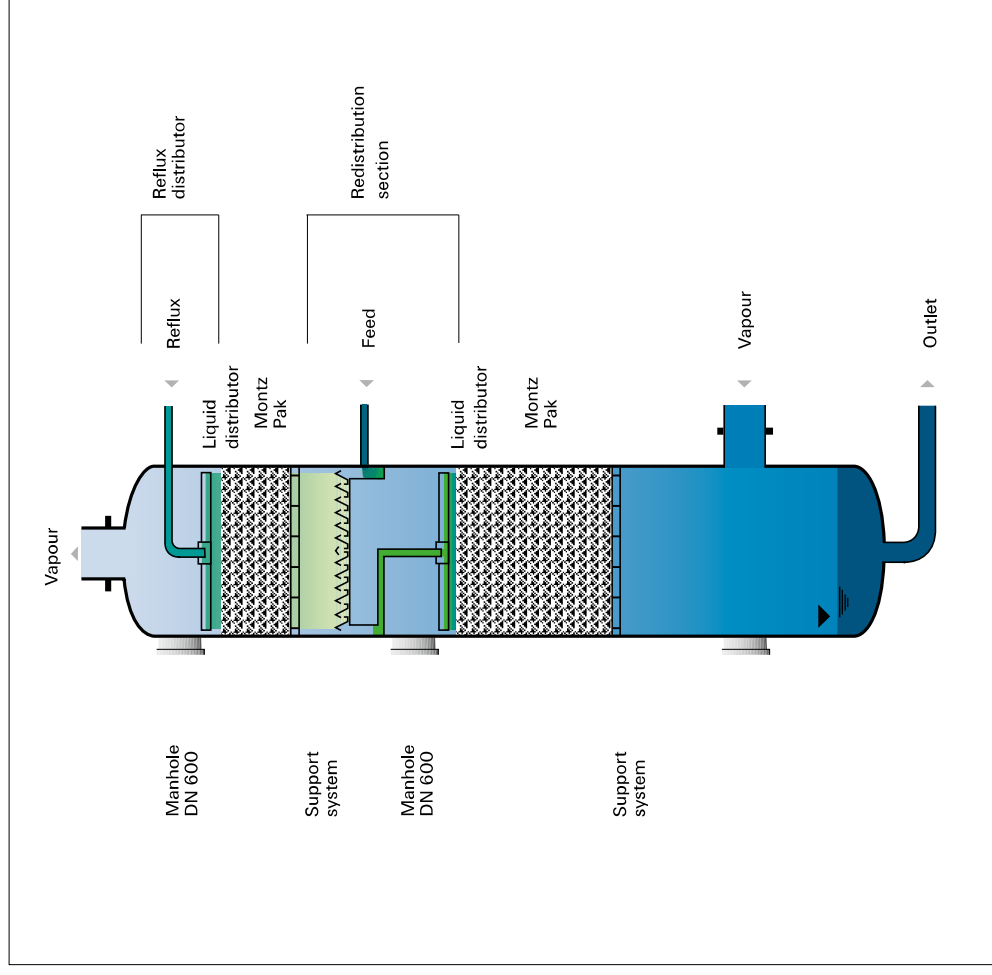
Column Arrangement

A cross section through the design system

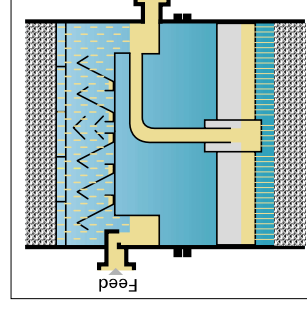
The structural design of a column is illustrated by the following cross-section drawings. They will give you an idea of a useful configuration of Montz products in a column.



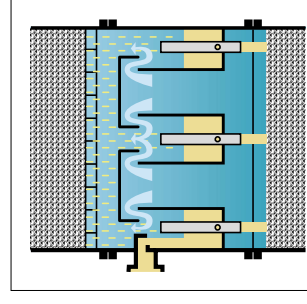
Redistributing section for column diameters of 800 mm and larger



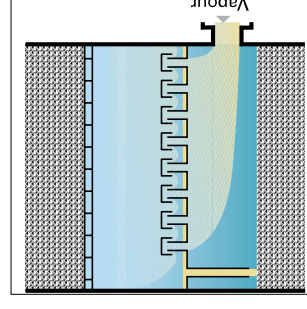
Redistributing section for column diameters < 800 mm



Combination distributor Type KF welded into a column section for intermediate flanging for diameters < 800 mm



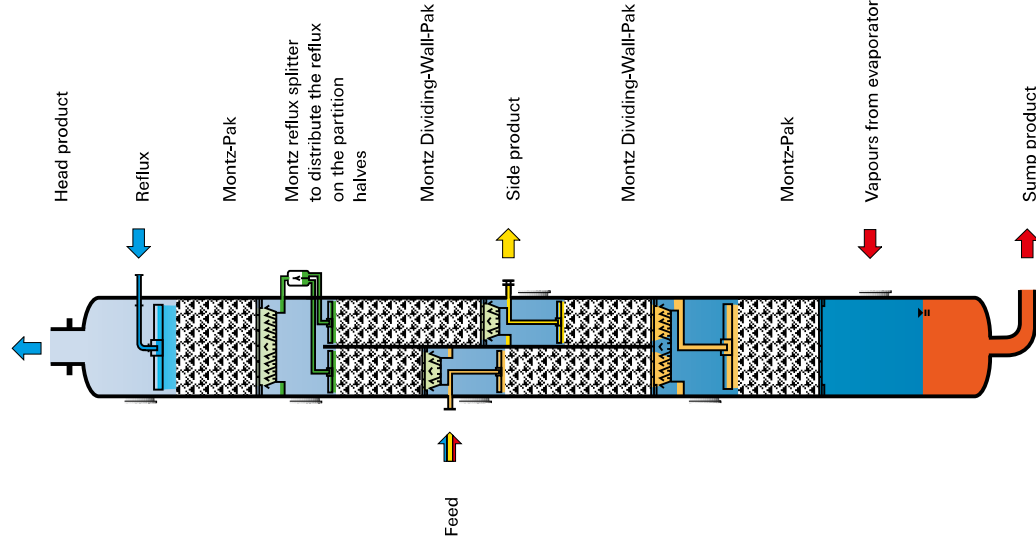
Vapour distribution



Montz Dividing Wall Columns

Separation technology takes off

Dividing wall columns are in use for chemical production processes since 30 years. Montz were the first to supply columns of this type and since then has constantly developing this technology further. With over 130 dividing wall columns, Montz is the world's leading equipment supplier for this column system.



Dividing wall columns

Dividing wall columns can be used wherever multicomponent mixtures have to be separated into pure fractions. They are particularly suited to obtain pure medium boiling fractions. The separation of a three-component mixture into its pure fractions in conventional systems requires a sequential system with at least two columns or main columns with side columns. With a dividing wall column this task can be solved in only one apparatus.

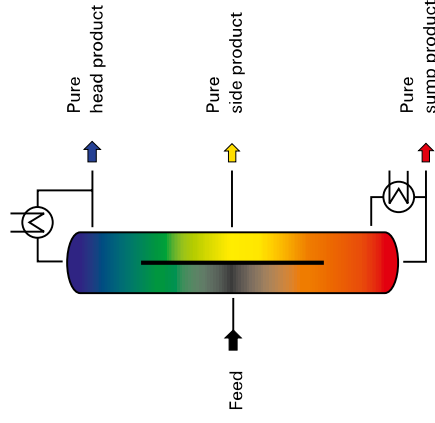
A vertical wall is installed in the middle part of the column creating a feed and draw-off section in this part of the column. The dividing wall, which is designed to be gas and liquid-sealed, permits the low-energy separation of the low and high boiling fractions in the feed section. The medium boiling fraction is concentrated in the draw-off part of the dividing wall column.

This arrangement saves a second column. The column shell, internals, evaporator and condenser for a second column are not required. Control and maintenance work is significantly reduced.

Dividing wall columns are an alternative to multi-column systems that can help to save investment and operating costs. Investment costs are cut by 20 - 30%, operating costs by around 25%.

Comparison of two column systems for three pure products

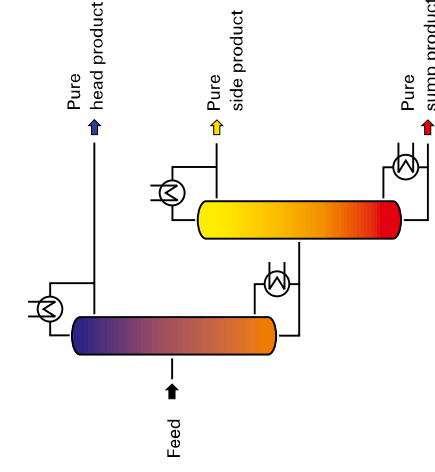
Dividing wall column



Equipment needed

- One column
- One condenser
- One evaporator
- One reflux splitter

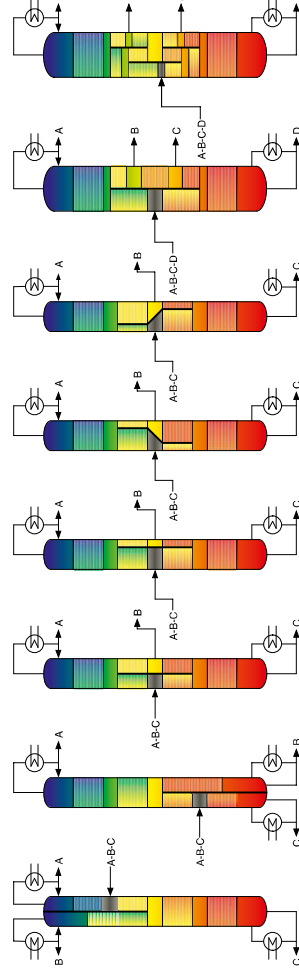
Conventional column system



Equipment needed

- Two columns
- Two condensers
- Two evaporators

Montz dividing wall column reference configurations



Dividing Wall Columns

Separation technology takes off

The unfixed dividing wall has proven to be very advantageous and versatile when used in dividing wall columns. The patented design (cooperation agreement with BASF AG) offers significant advantages over fixed, welded-in walls.

Advantages of the unfixed dividing wall

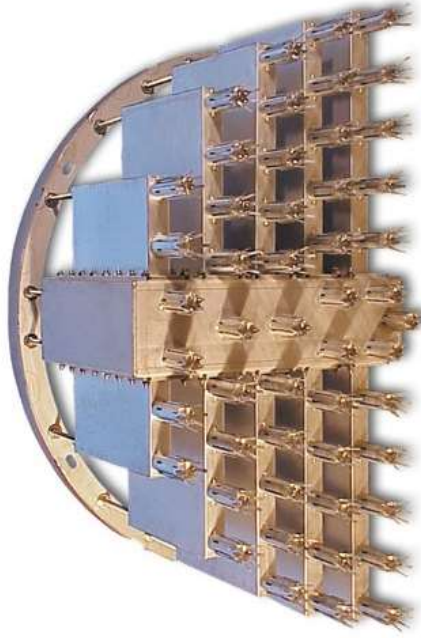
- Insensitive to poor manufacturing tolerances of the column shell
- Fewer manholes and lower weight
- Faster and more precise assembly and installation of internals
- Minimised welding
- Simple and low-cost revamping of conventional columns to dividing wall technology
- The dividing wall can be removed during revamping and inspections

Possible problems such as eccentric arrangement of the dividing wall during welding, irregularities in the wall after welding, liquid wall bypass and installation difficulties, are avoided.

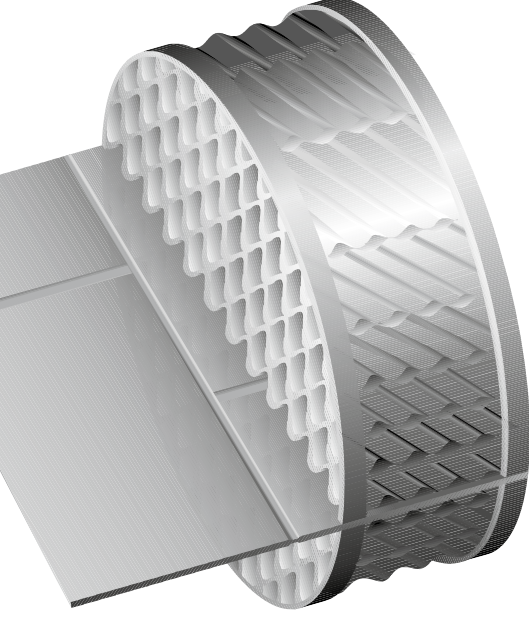
Internals for the dividing wall column

Montz has significantly improved the planning and operational reliability of the columns, particularly in the field of the internals for the dividing wall sections by adapting the proven

packing layers, minimised liquid wall bypass and thus an improved separation efficiency in conjunction with the unfixed dividing wall. Wire mesh packings of the type, A3-500M and metal sheet packings in a standard design as well as Type IM high-performance packings are in successful operation. Adapted liquid collection and distribution systems complete the range of internals.



▶ Type S liquid distributor for dividing wall columns



▶ Montz wall wiper system and Montz connector system for unfixed dividing walls

Competence

The dividing wall column concept is used as a standard tool in today's thermal separation technology. Dividing wall columns are successfully in use in the field of fine vacuum through to pressured distillation. Working head pressures of 2 mbara to 10 bara have been successfully realised. Pilot column diameters are around 40 mm with overall heights of 6 meters and more, whereas



production columns are built with diameters of 4 m and heights of 70 meters. Dividing wall columns are used to fractionate various product classes, from recycle stream purity requirements through to electronic-grade chemicals.

Montz process engineering provides all the necessary expertise in this innovative technology and is therefore able to support you when designing your dividing wall column or just components, and is also able to do the planning of the complete distillation systems.

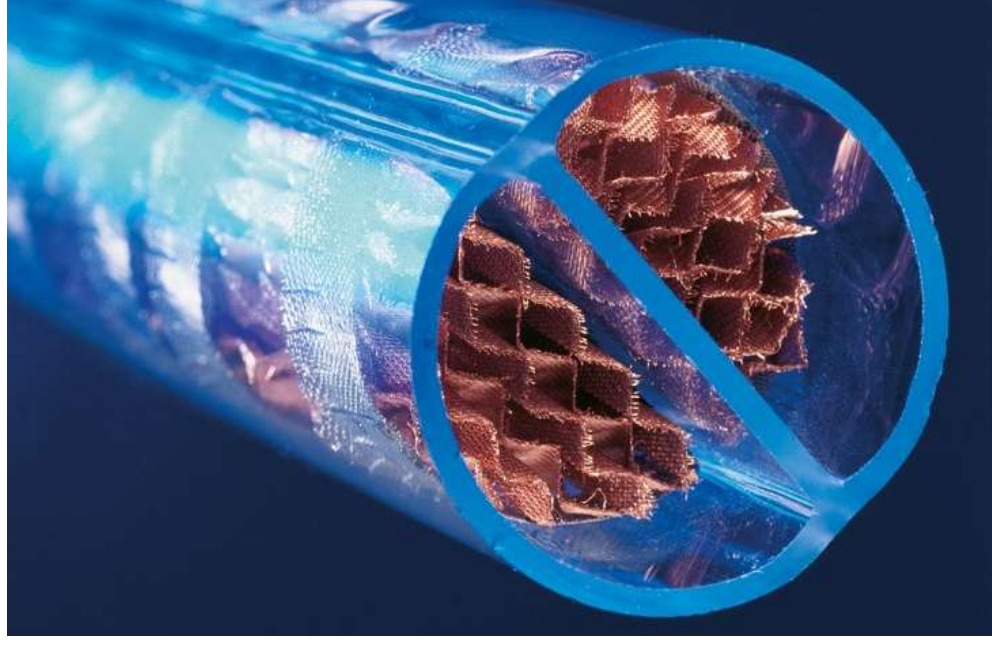
▶ Dividing wall column DN 3600



Montz Miniplant Columns

Safe 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 refining industry the setup of pilot and miniplant columns is a necessary step to ensure safe column sizing by measuring or approving equilibrium data in process simulation.

Depending on the kind of project either complete small-scale miniplant column systems with a diameter of 20 to 300 mm and an approximate height of 3 to 10 m are built. The test columns consist of components like column bodies, reboilers, condensers and final-condensers. Possible are also gas coolers, vessels, decanters and reflux splitters. Materials can be from stainless steel to enamelled steel. Furthermore, if desired, the pilot columns can be delivered skid-mounted.

Of course Montz uses their structured packings in the pilot plants. Montz 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.

▶ Miniplant column partition DN 40 with Montz-Pak A3-1000



▶ Montz packing element for Miniplant column DN 40

Instead of packings, pilot distillation tray designs can also be supplied. Special designs may include fractionation trays with long residence time or for settling of 2-phase systems. Trays also need to be applied if feeding and side-draw-off positions must be flexible.

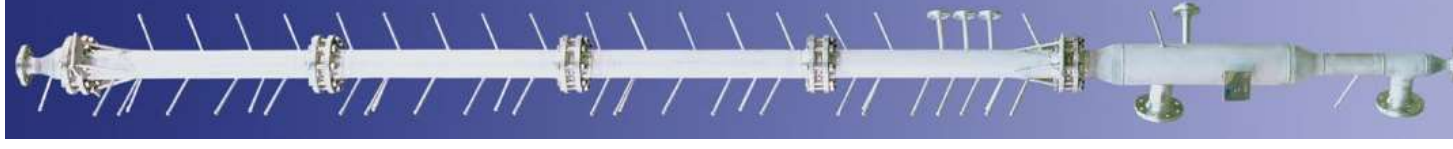


▶ Bubble cap tray DN 100 with Teflon seal

Here, Montz can offer constructive solutions for mass transfer trays from a column diameter starting at 40 mm.

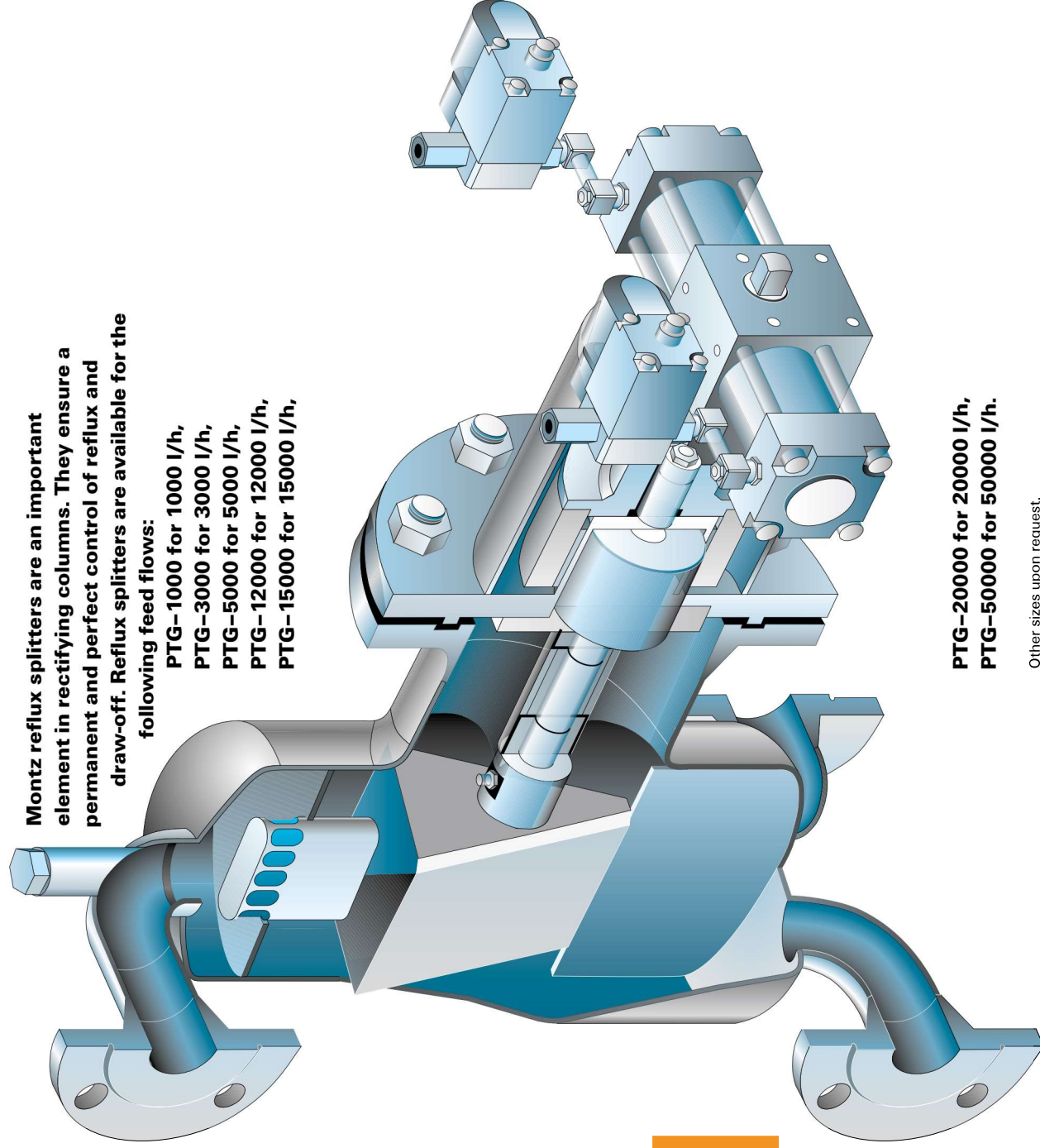
The internals can be subject of a functional test with air-water before delivery. Also, if preferred, these tests can be conducted in your presence.

▶ Miniplant column DN 100 of stainless steel with bubble cap trays



Reflux Splitter

Constant reflux ratio under any and all operating conditions



Montz reflux splitters are an important element in rectifying columns. They ensure a permanent and perfect control of reflux and draw-off. Reflux splitters are available for the following feed flows:

- PTG-1000 for 1000 l/h,**
- PTG-3000 for 3000 l/h,**
- PTG-5000 for 5000 l/h,**
- PTG-12000 for 12000 l/h,**
- PTG-15000 for 15000 l/h,**

- PTG-20000 for 20000 l/h,**
- PTG-50000 for 50000 l/h.**

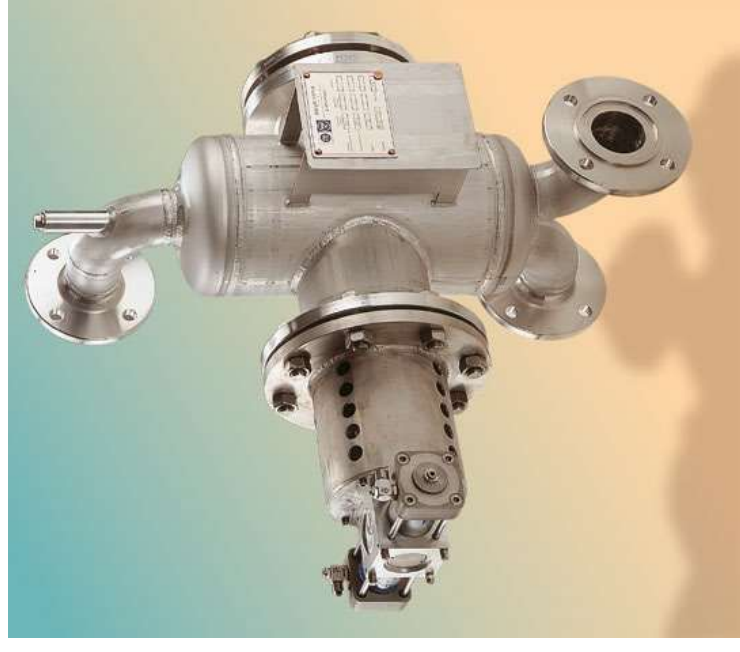
Other sizes upon request.

Reflux splitters operate according to the following principle: they consist of a casing, which is subdivided into three chambers. The feed chamber is located at the top, from where the liquid is directed into the reflux or pass-out chamber depending on the position of the dividing body. The dividing body is actuated by means of a magnetic coupling, which allows a pressure and vacuum-tight design. The exterior drive is effected by a

pneumatic rotary motor. All parts in contact with the product are made of or lined with corrosion-proof materials to ensure a consistent high quality even for long operation periods.

Special designs

- Parts with product contact in tantalum, zirconium, etc..
- Casing of steel/enamel
- Heated casing



Mass Transfer Trays

Leading position by patented developments



Montz mass transfer trays play an essential part in thermal fractionating technology of the chemical and related industries. Experience gathered through many years and a steady development led to patented tray designs, which made Montz becoming a leading manufacturer of trays. Apart from a comprehensive standard range of products, Montz also proves his flexibility and competence by customised designs adapted to the special requirements of the customers.



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:

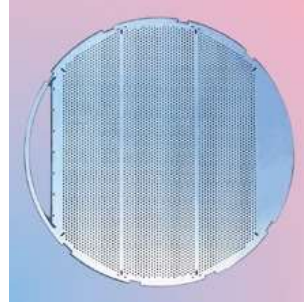
- Bubble cap trays
- Sieve plate trays
- Dual-flow trays
- Cascade trays

A speciality offered by Montz are special designs exactly adapted to the prevailing fractionation problem. 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.

- ▶ Montz Thormann® Trays with cooling coils for a reaction column



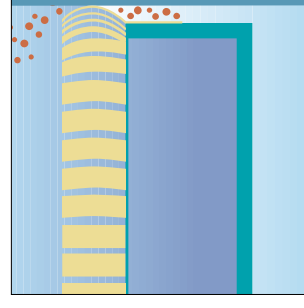
- ▶ Dual-Flow-Trays produced by CNC-controlled nibbling and punching machines.



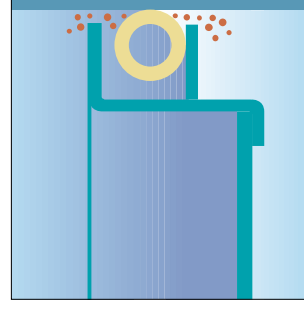
- ▶ Montz split-wedge connectors to fasten the tray parts at the support rings and beams.
Montz split-wedge connectors have even proven their functionality under operating conditions with heavy fouling and polymerisations.

Montz sealing for one-piece trays to be installed through shell flanges. These sealings prevent liquid to drip through the gap between tray and column wall.

- ▶ Lip-folded tape as tray sealing



- ▶ Coil spring as tray sealing



- ▶ Tunnel trays designed as a plate stack for insertion into the column. Sealing between tray and column wall is realised by a coil spring, which has been inserted into a circumferential groove.

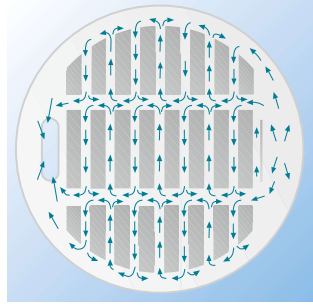
Montz-Thormann® Tray

Washing processes and vacuum distillation for low liquids flows

The Thormann® tray has been designed as a tray for washing processes and vacuum distillation applications. It handles even the lowest liquid flows, e.g. 40 l/(m²h), at 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 GHP.



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 pattern of the liquid on the tray and corner of the liquid on the tray and corner, leading to a favourable hold-up time and a high separation efficiency.



Features

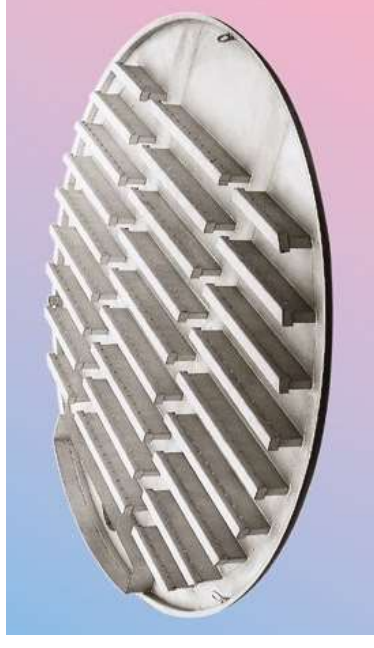
- Suitable for low liquid loads (approx. 40 l/(m²h))
- No trickling down of liquid
- Extremely low pressure drop of approx. 1 mbar per tray possible
- Extremely high tray efficiency
- High flexibility
- Leakproof tray design (e.g. for washing processes)
- Customised designs for special applications

Applications

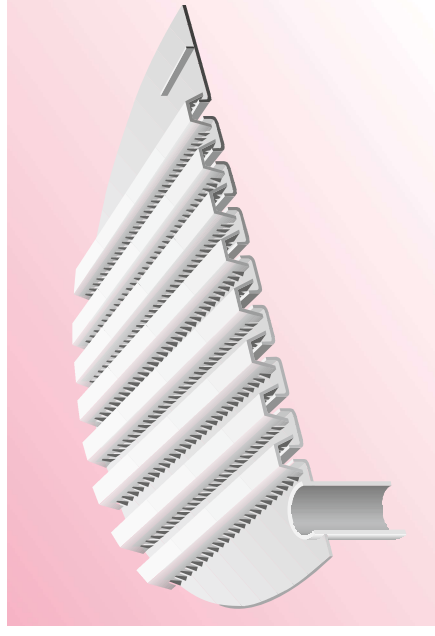
- Washing processes, for example caprolactam, HCl, H₂S
- Hold-up time trays for reactions
- Natural gas drying
- Fractionation of fatty acids
- Rectisol washing process

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 retention times 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 enables a high stability at low weight and consequently economic advantages compared to conventional designs like bubble caps. The variable elements allow a multitude of constructive designs and adaptation to all operating conditions.

Highlights

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

Characteristics

- Suitable for mass transfer under vacuum, standard and pressurised conditions
- High separation efficiency up to 90%
- Low pressure drop
- Wide operating range like 25 to 110%
- Simple installation through manways
- Easy cleaning by the use of steamers or liquid
- Customised designs for special applications

Applications

- Absorption
- Glycol recovery
- Treatment of liquid manure
- Natural gas drying
- Coking plants, de-acidification plants, NH₃-stripper
- Fractionation columns for absorption refrigerator plants
- Mash columns
- Hot regenerators
- Reactive distillations

Materials

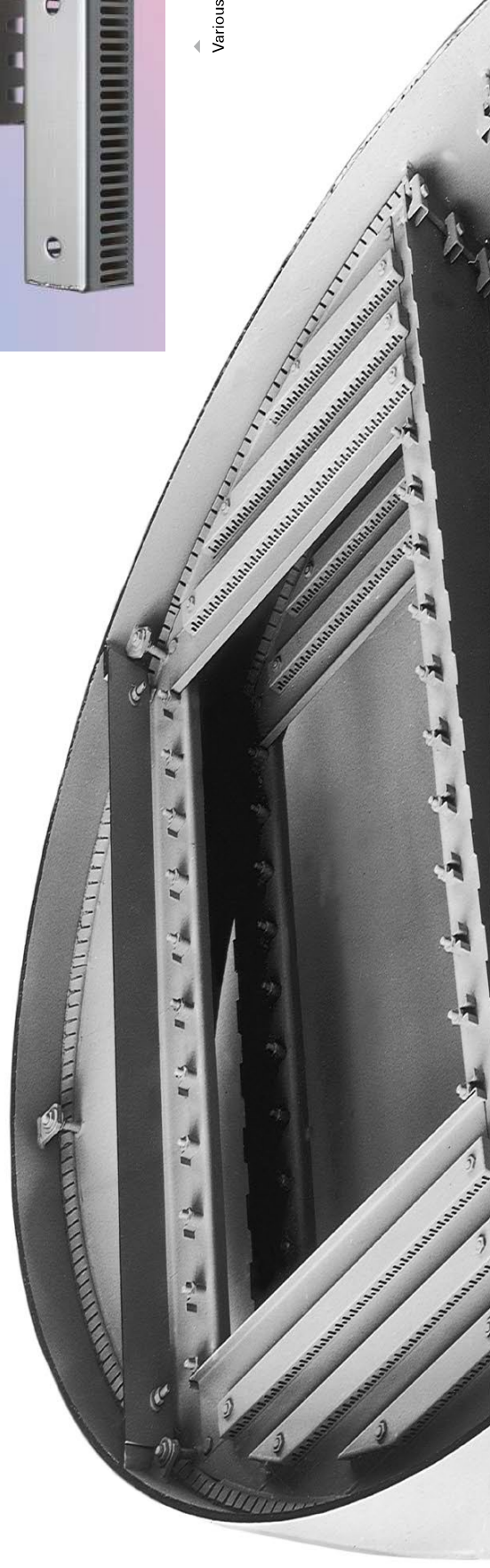
- High-grade steels e.g. 304, 410 S, 316, 316 Ti, 316 L, 904 L etc
- Hastelloy C4, aluminium, copper, titanium, monel and others
- Plastics: KERA, Diabon, PVC and others



3D model of Montz tunnel trays



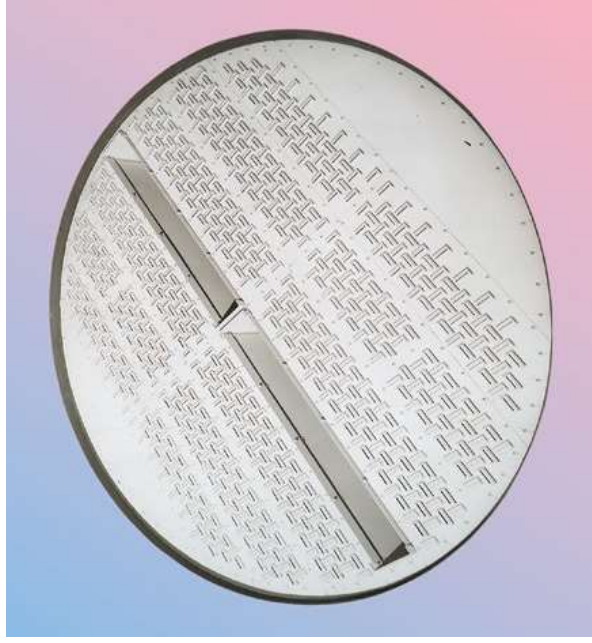
Various designs of tunnel tray caps



Cross-Flow Tray Type KSG

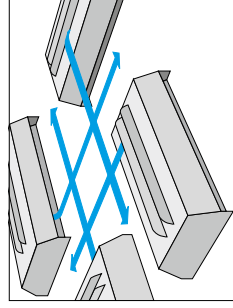
A high performance tray without moving parts

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 multipurpose distillation.

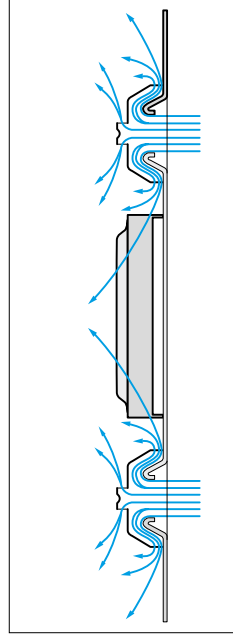


- ▶ Cross-flow tray DN 4400 with two passes. The tray elements are installed through raised manholes and are fixed by clamps at supporting rings inside the column.

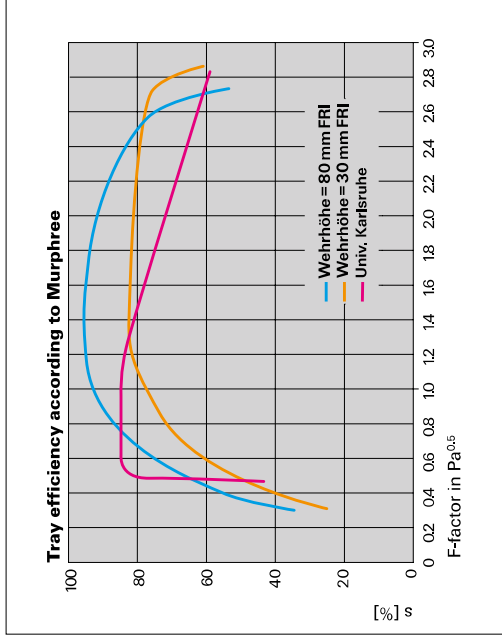
- ▶ Principle of crossing steam flows and arrangement of the KSG-caps above the vapour slots



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



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



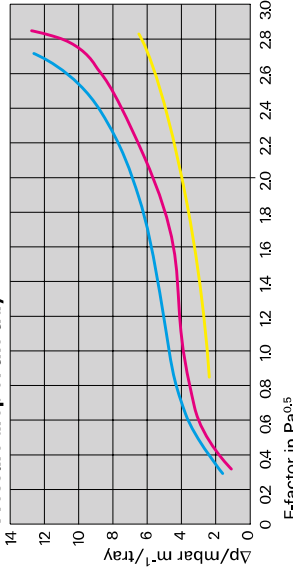
The usual collision of opposed vapour flow currents is avoided by the special design of the Montz high-efficiency tray: adjacent outflow cross-sections intersect at an angle of 90°. This has a positive effect on the rate of entrainment of the tray. Moreover, the design of the vapour channels with rounded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

This type of tray is used for distillation and absorption. Due to its wide range loading it is also particularly suited for revamping of existing columns to increase throughput. It is also proved effective for multipurpose distillation columns.

Materials

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

Pressure drop of the tray



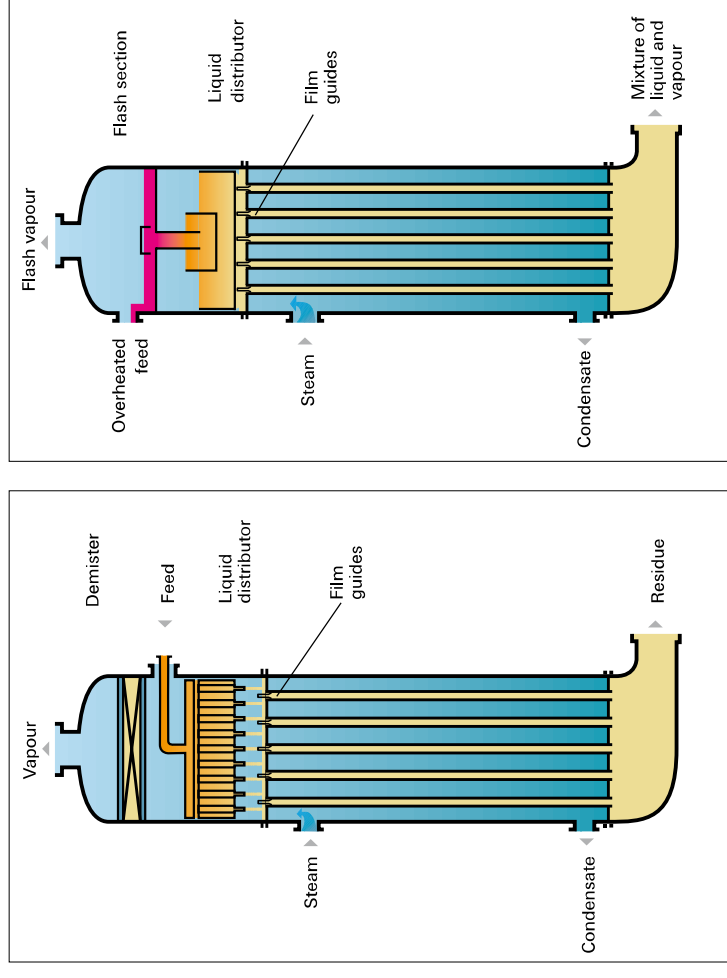
- ▶ Special designs allow the KSG-tray to be optimally adapted to various applications.

- ▶ Detail shot of a cross-flow tray

Falling Film Evaporators

Gentle and economical product treatment

Montz offers all components for falling film evaporators, e.g. high efficiency liquid distributor systems, film guides for a uniform wetting of the tube wall, design know-how and comprehensive experience in the fields of application and use of falling film evaporators. Montz equips not only new reboilers but also upgrades existing falling film evaporators with high efficiency liquid distributor systems and film guides for a uniform wetting. The result in the achievable product quality is extraordinary. Falling film evaporators made by Montz are used wherever a gentle product treatment and economic application is required.



Counter-current falling film evaporator

Co-Current falling film evaporator, special design for overheated feed

Montz Falling Film Evaporator

Characteristics

- Low liquid hold-up
- Short dwell time
- Minimum thermal decomposition of the product
- Utilisation of waste heat for heating because very low average temperature differences are sufficient
- Heating with steam, product vapours, thermal oils etc.

Applications

- Heat exchanger for vacuum fractionating columns
- Concentration of solutions
- Evaporation of fatty alcohols and fatty acids
- Heat recovery etc.

Tube plate of a falling film evaporator equipped with film guides.

Montz Process Technology



Chemicals industry

Plants and plant components for thermal separation technology



Food technology

- Pectin • Yeast
- Starch • Glutamate
- Aroma recovery



Pharmaceutical industry

- Crystallisation
- Solvent recovery
- Active ingredient concentration



Alcohol technology

- Potable alcohol
- Water-free alcohol
- Power alcohol
- Aromatic distillates
- Complete process lines



Ethanol derivatives

- Acetaldehyde
- Glacial acetic acid
- Ethyl acetate

- ▶ Process line to produce alcohol, stillage concentrate, and CO₂ from grain



Test equipment

Precise measuring for quality assurance

An essential corporate principle at Montz is to ensure the optimum quality and efficiency of the entire range of products. For this purpose Montz is operating two state-of-the-art and flexible test plants, the liquid distributor test plant and the air-water-test plant. All products are carefully tested and checked here in the presence of our customers.



Air-water test equipment
The Montz air-water test equipment is used for fluid-dynamic tests of column internals in accordance to the specific requirements of our customers. The following is offered:

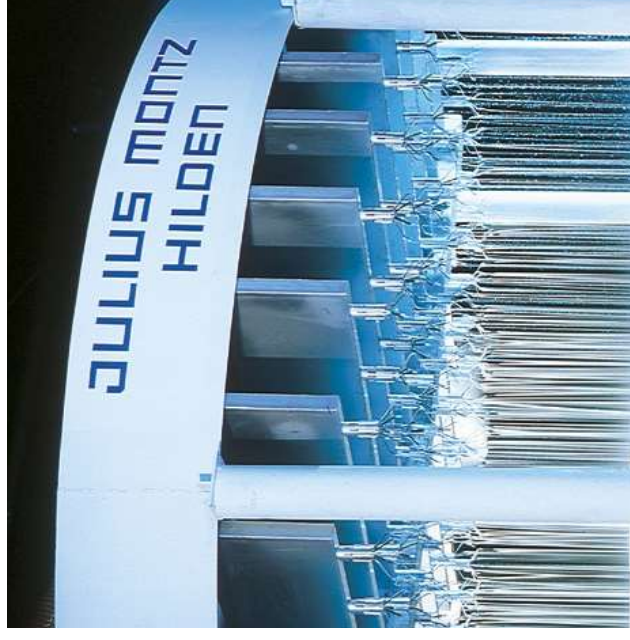
- Test columns of a diameter of 100 to 3000 mm are available
- Tests of the minimum and maximum load limit of mass-transfer trays, structured packings or separator internals
- Determination of all essential data by means of precise measuring instruments: mass flow, pressure drop, entrainment, etc.



▶ Montz distributor test

Liquid distributor test equipment

Each of the liquid distributors made by Montz undergo a quality test with water on our own test equipment. A separate test report documents the performance for each distributor. These tests are performed in the presence of the customer.



This guarantees the typical top quality of Montz products. Almost any requirement can be fulfilled:

- Test rigs with diameters of 9000 mm and 2000 mm
- Test set-up with the suspension and levelling elements used in the column
- Flow rates up to 2500 m³/h
- Measuring the quality of distribution and of the operating ranges
- Quality control with regard to workmanship and dimensional accuracy

▶ Montz channel-type distributor Type S DN 3000 on the test rig

Services

Complete service to improve the capacity of existing columns

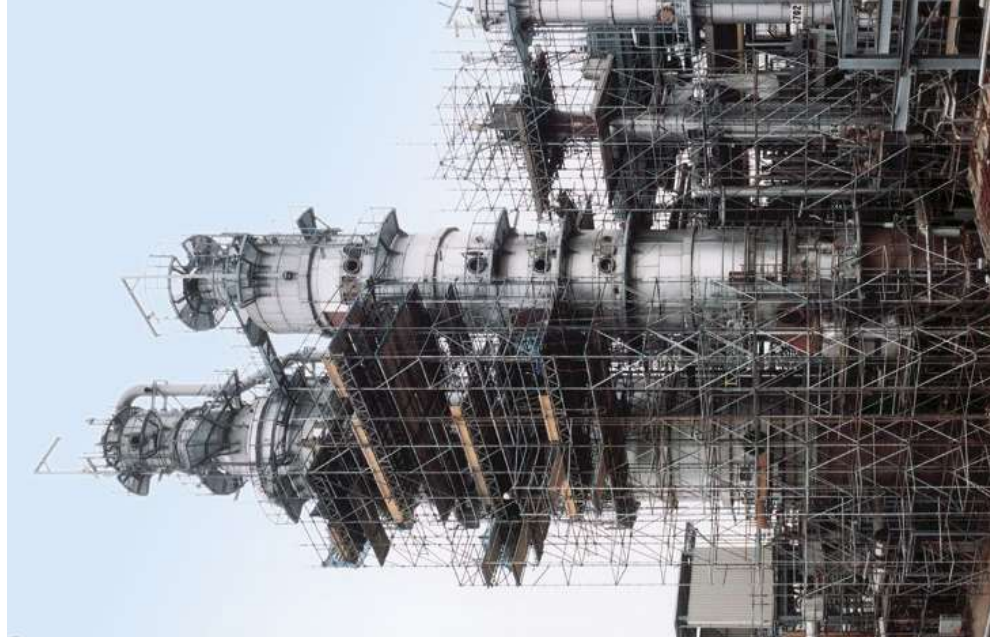
The capacities of existing tray and random packing columns can be considerably improved by revamping with Montz structured packings. For this purpose, Montz offers complete services.

Improvement of the column efficiency

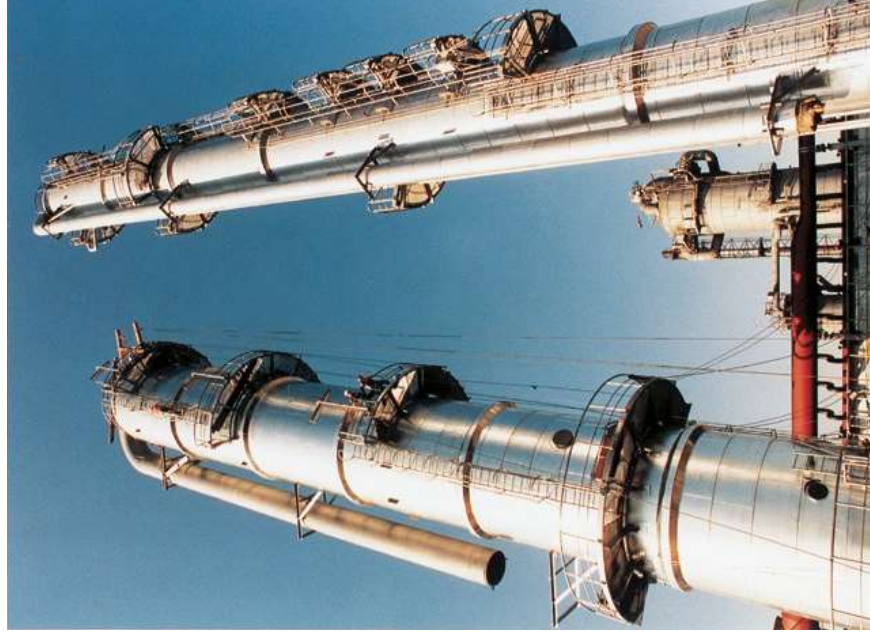
- Higher throughput
- Improved product qualities
- Lower pressure drop
- Energy saving

Service for revamping

- Planning
- Supervision and teams
- Dismantling of existing internals
- Delivery and installation of packing internals
- Engineering and warranties for installed packing systems



Two columns DN 5600 and DN 3800 during revamping with Montz-Paks



Packed column DN 4000 during installation of Montz-Pak Type B1-250



Installation of Montz-Pak Type B1-300 into a column DN 5600 from which the existing valve trays have previously been removed. All supporting rings have been removed by torch-cutting.

Apparatus Engineering

Customised solutions for the chemical industry

A special service offered by Montz is the development of apparatus exactly adapted to the specific requirements of our customers. In particular in the field of special designs for the chemical industry, Montz has established itself as a specialist on the basis of know-how and experience gathered through the years.

- ▶ Rectifying column with a diameter of 2200 mm and a falling film evaporator of 250 m²



Inspections and technical codes

- TÜV
- Lloyd's
- Stoomwezen
- ANCC
- Service des Mines
- AIB-Vincotte
- ASME

- ▶ Montz rectifying plant consisting of a column with mounted condenser, falling film evaporator, wire mesh packing A3-500 and Montz liquid separator system



Montz Products

Range of products offered by Montz:

Apparatus, turn-key plants, engineering: Rectification (pressure and vacuum), distillation, absorption, extraction, falling film evaporators, heat exchangers

COLUMN INTERNALS

Structured packings:

- B1 packing
- BSH expanded metal packing
- A3 wire gauze packing
- C1 PTFE packing
- M / MN high performance packing
- Liquid distributor systems

Mass transfer trays:

- Montz Thormann® trays
- Montz tunnel trays
- Cross-flow trays type KSG
- Sieve and bubble cap trays
- Reflux splitter

Materials:

Stainless steel, aluminum, copper, nickel, hastelloy, titanium, tantalum, zirconium, etc.

Assembly and installations:

- Industrial installations
- Revamps
- Repairs
- Glühbenhandlungen von Apparaten

Inspections and technical codes:

TÜV, Lloyd's, Stoomwezen, ANCC, Service des Mines, AIB-Vinçotte, ASME, etc.

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