



A traditionally
strong and
innovative Team

RASCHIG GmbH

*Your Partner
in
Process Technology*



About Raschig

In **1891** Fritz Raschig, a lifelong, enthusiastic chemist, founded his own chemical factory in Ludwigshafen, Germany. Initially focused on tar distillation, he also developed methods of producing highly purified tar components such as anthracene, carbolic acid and benzene. Fritz Raschig is best-known to every student of chemistry and engineering for his breakthrough in distillation technology, the revolutionary

"Raschig Ring"

Then, as today, RASCHIG remains the obvious choice: for innovative chemicals, high performance thermoset resins, fast-acting road repair materials or cutting-edge process technology equipment.

Fritz Raschig started selling Raschig's Rings and established a process businessline in his company.

1996 Raschig GmbH joined the PMC Incorporated Group.

The newest invention within the entire distillation technology was gained:

"Raschig Super-Ring"

2006 the Raschig Group gained a new US member, the Raschig-Jaeger Group, which was renamed in **2013** to Raschig USA Inc.

2015 the product range of Raschig GmbH was expanded with a new production place in Weissenburg for wire mesh products, Raschig GmbH Werk Weissenburg, Anselm Separation Technology.

2016 VTS GmbH joined the group, which supports our customer with engineering services.

Raschig GmbH - a world wide operating specialist -

Raschig is a medium sized business, located in South-West Germany, on the river Rhine. Its perfectly chosen location connects Raschig with all customers as well as their distribution partner worldwide.

During the last 125 years, RASCHIG Process Technology Division enhanced itself constantly, to be able to serve our customers needs to their fullest extent.

To fulfil our customers' demand for best separation efficiency, highest throughput capacities and lowest pressure drop for our products, RASCHIG does great efforts in research and development of modern random and structured packings, wire mesh products as well as Processtrays and column internals.

Every request from our customer is different and asks for diverse handling of the project, which characterizes RASCHIG's staff and their work.

The „Raschig Process Technology“ division is worldwide known as a specialist in process column design, using high performance products for grassroots and revamping cases.

At the moment RASCHIG's Process Technology Division occupies about 140 employees, has representatives in 15 different countries and fabricates in several production facilities all over the world, to fulfill our customers requests to their fullest satisfaction.

The background of the image shows a large industrial machine, possibly a Raschig tower, with a white cylindrical body and a flanged top. In the foreground, a technical drawing is spread out, showing various cross-sections and detailed views of the equipment. The drawing includes labels like 'PLATE METAL FLANGE', 'COVER', and 'RATCHIG TOWER'.

**We are
Raschig**

Productline of RASCHIG Column Packing - Packing Equipment for every application -

The first generation of metal random packings was developed by Fritz RASCHIG, the founder of the company RASCHIG GmbH. This packing was called RASCHIG Ring®, which currently is a synonym for random packings.

Home of RASCHIG Super-Ring and RASCHIG Super-Pak

To fulfil our customers' demand for best separation efficiency, highest throughput capacities and lowest pressure drop for our products, RASCHIG does great efforts in research and development of modern random and structured packings.

The RASCHIG GmbH's most recent development is the RASCHIG Super-Ring®, the fourth generation of random packings.

The development of the new RASCHIG Super-Ring packing sets new standards in the field of separation technology, as the designers of the RASCHIG Super-Ring have succeeded in finding an optimum link to those demands which a modern, high-performance packing element must fulfil under industrial conditions.

Based on the revolutionary performance ability of the RASCHIG Super-Ring® further research results in a new geometric packing design which combines

the advantages of the RASCHIG Super-Ring® in a structured packing: The RASCHIG Super-Pak®.

Since the development of random and structured packing has tended to minimize pressure drops and maximize capacities and separation efficiency, a wide range of packing types were developed to the market in the past.

Taking process specific conditions into account, each type of packing on the market shows its certain operating benefit.

In order to support our clients with an optimum packing layout, RASCHIG completes its product line with commonly applied random packing and structured packing types besides the RASCHIG Super-Ring® and the RASCHIG Super-Pak®.

Our packings can be offered in several different materials, e.g. plastics, metal, ceramics and carbon material.

Detailed information can be found in "RASCHIG Bulletin 101 Productline".

Random Packing

- Raschig Super-Ring
- Raschig Ring
- Pall Ring
- Ralu Ring
- Super Torus Saddle
- Ralu Flow
- Hacketten / Tri-Pack
- Balls
- Low Profile Rings
- Nor-Pac

Structured Packing

- Raschig Super-Pak
- Raschig-Pak

Available Materials:

Plastic:

PP, PE, PPH, PFA, PVC, PVDF, HDPE, E-CTFE, FEP, etc.

Metal:

Carbon Steel, Stainless Steel, Hastelloy, Titan, Copper, Aluminium, Nickel, special alloys

Others:

Ceramics, Carbon



Wire Mesh Products

On basis of the Anselm Separation Technology, RASCHIG expanded its product line in the field of wire mesh products.

Certain process runs require a separation of liquid portions from the gas, vapor or liquid stream. In modern plants different systems are used depending on liquid amounts, droplet size and required purity. Besides cyclones and impact plates, mainly **droplet separators** made of knitted wire mesh are used for such separation tasks. RASCHIG therefore applies state-of-the-art designs.

Our scope of wire mesh products furthermore includes:

- **Droplet Separator**
- **Wire Mesh Packing**
- **Filter elements for particle and droplet separation**

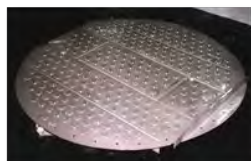


If you have any questions on this topic, please do not hesitate to contact us.

Our RASCHIG Process Technology Division team is looking forward to supporting you in every status of your project.

Productline of RASCHIG ProcessBusiness

- Superior Performance by Design -



Column Internals

In recent years, great efforts have been made to design structured and random packings for process columns more and more effectively, in order to achieve greater throughputs, lower pressure drops and better process efficiencies. These advantages are only effective, if at the same time modern internals are used which are optimally designed for the applied packing and process conditions. Properly designed tower internals improve the performance further and achieve the maximum performance.

RASCHIG has decades of experience in designing and manufacturing column internals such as

- **liquid distributors**
- **gas and liquid inlet devices**
- **liquid collector trays**
- **packing supports**

Tray Technology

As every application can have its unique conditions, there are often special requirements for the design and construction of column trays. RASCHIG offers a large variety of different tray types and technologies that are applied, depending on their specific advantages, for different processes and operating conditions.

Our scope of engineering includes together with regards to the unique requirements, the selection of the adequate tray technology for our client's application.

RASCHIG Process Technology Division supplies common tray types e.g.

- **bubble cap**
- **sieve trays**
- **valve trays**
- **special trays**

High capacity tray allow you to further increase the capacity of your columns as well as special tray designs like cartridge designs complete the product line of RASCHIG's tray technology

Environmental Products

In 2006 the Jaeger Team joined the Raschig Group.

The packings for trickling filters, submerged beds and anaerobic reactions, as well as wastewater applications and bio-reactors are the main area of operation for these products.

Their excellent performance, wide applicability and quick and easy installation, make our products very interesting for various environmental applications in communal and industrial wastewater treatment.

RASCHIG supplies the following environmental products e.g.:

- **Dura-Pac**
- **Bio-Pac**
- **Kontakt 500**
- **Sessil**

The philosophy of RASCHIG Ring Process Division aims for a continuous design improvement, high standard quality and superior, tailor-made products.

Based on decades of intensive operating feed back from our clients, RASCHIG makes great effort in research and development of Process trays and column internals.

Engineering and Installation Services

RASCHIG offers modern column designs based on experience from numerous industrial applications.

Today, over 3000 columns with RASCHIG Super-Rings® operate at highest efficiency and profitability.

Therefore we use different commercially available Process-Simulation Software packages to simulate and design industrial processes. Furthermore RASCHIG has developed proprietary Processalgorithms which are used in RASCHIG in-house software tools.

Engineering at RASCHIG includes the following tasks:

- Hydraulic design of towers packed with random- and structured packing, on basis of superior process design correlations
- Hydraulic design of tray columns
- Hydraulic design of droplet separators
- Calculation of separation efficiency
- Calculation of liquid-liquid extraction
- Process simulation
- Mechanical calculation
- Customized construction and design of column internals or trays
- Revamp process concept proposals
- Consulting and evaluation of feasibility studies
- Support, consulting and troubleshooting analysis
- Troubleshooting



Engineering Services by RASCHIG VTS Schwedt:

Often the management of chemical, refinery, petrochemical and environmental plants rises the question about increasing plant capacity, product yield or enhancing production efficiency.

To answer these questions in time, a high degree of experience, know-how and superior design software is needed.

RASCHIG has a group of experienced engineers and chemists to prepare feasibility studies.

Based on the available project references RASCHIG / VTS has an excellent reputation on the global market in regards to revamps and grass root designs.

For grass root projects and processes for modernization of existing units, VTS offers comprehensive services in all stages of development:

- Feasibility studies, project planning and technological base plans
- Basic engineering, authority engineering and detailed design
- Construction supervision
- Support and control of commissioning
- Process warranty
- Plant safety, hazard assessment, fire and explosion protection documents
- Process laboratory and Process Development

Special Engineering Services

Column Revamps

Due to its importance of industrial applications, an important engineering focus of the RASCHIG Process Division, is the intensive support of our customers with column revamp layouts. Revamps with increased capacities for existing columns require a thoughtful choice of the applied technology. In case a customer is looking for more capacity, better process efficiency or lower pressure drop, RASCHIG offers the optimal solution, with regards to packing, internals and trays.

RASCHIG has extensive expertise in column revamp projects. We work in close relationship with installation crews on a worldwide basis in order to offer one hand solutions to our clients.

Supervision and Installation

A careful design demands careful installation. We recommend that you use a RASCHIG supervisor on site to monitor the installation of random/structured packing, internals and trays.

We co-operate closely with installation companies, and can offer the installation of our products as a complete package on a worldwide basis.

Typical areas of assistance include:

- Training of mechanic crew for proper installation of our products according to RASCHIG standards
- Inspection of previously installed RASCHIG products
- Evaluation of the current plant operation and equipment (existing random and structured packing, internals and column trays) during scheduled or emergency shutdowns

Trouble Shoots

Sometimes performance problems can arise during plant operation. This can happen after start-up of grass root plants, but also after process parameters have been adjusted during regular service. In general the root cause for such failures is hard to identify. Even small changes in the temperature profile of a column for example, can have a severe effect on the internal flows and result in local flood phenomena.

In case problems come up during plant operation, our experienced engineering staff can give the following support to find an adequate solution:

- Process Simulations
- Process Evaluation
- Hydraulic and mechanical check of the installed equipment
- Experience for interpretation of column scan results
- On-site inspections





Application of RASCHIG Products

RASCHIG offers a complete product portfolio relevant for all types of process towers. Our products are used in distillation, rectification, stripping and absorption towers and can be applied to particle or droplet separation systems. Our products are also used in direct heat exchanger columns as well as in liquid-liquid extraction towers.



Crude Oil Refinery

- Crude Oil Distillation (atmospheric)
- Vacuum Distillation
- Liquefied Gas Production
- Sour Water Stripper
- Filtration



Petrochemical Plants

- Ethylene Splitter
- Propylene Splitter
- Butadiene Production
- Benzene Separation
- Toluene Separation
- Xylene Separation



Environmental Plants

- Flue Gas Scrubbing
- Waste Water Treatment
- Drinking Water Treatment



Natural Gas / Chemical Plants

- De-Ethanizer
- De-Propanizer
- De-Butanizer
- Acid Gas Removal
- Air Separation
- Titanium Dioxide Production
- Chlorine Production
- Fertilizer Production
- Ethyleneoxide Production
- Styrene/Ethylbenzene Separation
- Ethanol Separation
- Methanol Separation
- LNG Recondenser
- Noise Reduction



Refinery Plants

- Ethanol Separation
- Droplet Separation
- Filtration



Power Plants

- Sulphur Dioxide Separation
- Carbon Dioxide Separation (CCS-Technology)
- Shielding
- Decoupling

RASCHIG GmbH
РАСЧИГ GmbH



Your partner in process technology worldwide

The World of RASCHIG

Your world wide Partner in Process Technology

Our world wide agencies are waiting to support you competently and are looking forward to working intensely for our customers special requirements. Please visit our website www.raschig.de to get in contact with your local partner.



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