



Chemical industry

Technical mesh for the chemical industry

Woven metal mesh and filter solutions

Expertise

Mesh solutions from the technological leader

GKD: Innovations and cross-sector expertise

GKD is the global technological leader for technical weave and filtration solutions produced from metal and synthetic wires, as well as technical fibers – for all industrial applications. With innovative weaving technologies and the latest material simulation methods, we create efficient technical weaves, semi-finished products, components, and filter equipment that are optimally matched to the most diverse mechanical process engineering requirements.

GKD is an important development partner and series supplier to numerous manufacturers and suppliers in the chemical industry, who benefit from tailor-made solutions, hands-on consulting, and worldwide service. GKD continuously develops new fields of application through manufacturing technology and process expertise. Thanks to our ISO certifications, our customers can also rely on certified quality worldwide.



Meshes in process engineering applications

Efficient processes require consistently high performance, coupled with maximum operational reliability. GKD supports you with mesh-based solutions here - ranging from pure mesh materials and continuing through filter inserts, up to belts for various processes.

GKD offers a combination of technical expertise and in-depth consulting for everyone involved, from equipment and system builders to end customers. This helps ensure that the most suitable product is always selected for each application. Our after-sales services, including repairs, revisions, and assemblies, also offer our customers significant added value.

This brochure provides you an overview of processes in the chemical and the processing industry that use our meshes. We differentiate between stationary mesh filtration solutions and solutions in which woven process belts are used here.

Filter media, filter elements, and process belts from GKD help save both energy and resources, while also ensuring optimized procedures to reduce production costs.

GKD is involved either directly or indirectly in practically all major transformation processes in these industries – from climate-friendly energy supply, through sustainability, all the way up to the circular economy.

Technical weave
and filters

Solid-liquid filtration

Distillation/ purification

Strict requirements, many different solutions

Solid-liquid separation or filtration is an elementary process in the chemical industry. The key process elements in the systems used are filter media produced from stainless steel, which GKD offers with separation rates ranging from just 5 µm all the way up to several millimeters, as well as synthetic filter belts.

Since a wide range of requirements have to be met in terms of mechanics, strength, and also filtration behavior depending on the equipment and process employed, many different solutions are available here. Beside particle separation size, permeability, dirt holding capacity, cleaning characteristics and strength, solutions must take into account the goal of a long service life and high process reliability. Potential options include delivery of rolled products for assembly by the customer in their facility, as well as delivery and installation of filter elements and belts on the customer's premises.

Applications

- ◆ Filtration of liquid process media
- ◆ Filtration/cleaning of process water, coolant, and wastewater
- ◆ Safeguarding of components in the process chain

Equipment

- ◆ Automatic, cartridge, back flushing, drum, and disc filters
- ◆ Micro sieving
- ◆ Belt filters and filter belt presses
- ◆ Nutsche filters

Benefits

- ◆ High degree of process reliability
- ◆ Precise separation selectivity
- ◆ Long service lives

Proven and cost-optimized

Our wire meshes are used in the production of structured packaging for distillation columns. The 5-heddle Atlas weaves employed here possess a structure that makes it possible to produce packaging with high mass transfer area, low pressure loss, and good capillary effect.

We use a wide range of materials, enabling us to satisfy individual corrosion resistance requirements resulting from the media being processed. Special material combinations make it possible to create packaging with significantly greater mass transfer area.

For the manufacturers of structured packaging, we produce individual meshes that are tailored to the final application, as well as semi-finished products for automatic processing. The meshes and semi-finished goods are then cleaned, heat treated, or perforated based on the respective requirements.

Mesh/filter media

- ◆ 5-heddle Atlas weave
- ◆ Mesh rolls
- ◆ Mesh strips
- ◆ Hybrid mesh

Benefits

- ◆ Optimum meshes for structured packaging
- ◆ Special material combinations to increase the mass transfer area
- ◆ Broad spectrum of available materials
- ◆ Packaging units for optimum automated production procedures

Metallic mesh
filter elements

Polymer filtration

Hot gas filtration

Individually optimized **screens and filters**

The materials used in the chemical and petrochemical industries, such as thermoplastics, resins, and adhesives, need to be filtered while in a highly viscous state and sometimes also at elevated temperatures. GKD produces individually optimized, as well as standardized filter screens and elements for these processes and systems.

We offer special filter media such as optimized weaves for filtration applications here. We also produce special filter media from suitable materials for applications with increased corrosivity.

Our production methods enable us to manufacture small series and also offer cost-optimized manufacturing of large series, while always maintaining high cleanliness standards.

Systems

Screen changers and cartridge filters from all manufacturers and in all designs

Benefits

- ◆ **Affordable production of standard screens**
- ◆ **Individual production of screens down to a separation rate of 6 µm with matched materials**

Temperature-resistant and rugged

Filtration meshes and elements for dust filtration are required for a wide range of filtration tasks for process gases and exhaust gases in the chemical industry. Filter elements and filter media produced from stainless steel can be used wherever polymer filter media are no longer suitable due to elevated process temperatures or a risk of fire.

On the basis of our production technologies, existing bag filter systems can be changed over to our metal mesh just as easily as other filter systems that use filter cartridges or filter platforms. Depending on the application, the existing filter media can be selected for either high or low dust loads.

Application

Filtration of hot gases with high or low dust loads

Systems

- ◆ **Bag filters**
- ◆ **Cartridge filters**
- ◆ **Vertical pressure leaf filters**

Media

- ◆ **TRIMETRIC mesh**
- ◆ **Mesh produced from high-temperature materials and highly corrosion-resistant materials (Ni-based)**



Technical weave
and filters

Drying

Separation technology

For powder and bulk goods

Drying of granulates and powders is an important production process in the chemical industry. GKD offers media, filter bases, and vapor filters produced from stainless steel for the systems and machines used here, such as filter dryers or reactors. These are suitable for applications subject to corrosive environments and elevated temperatures.

They are produced individually for the systems in place and can be optimized for the respective application with regard to filtration rates and mechanical strength.

For continuous belt systems, we offer permeable belts produced from stainless steel and also polymer materials, assuming the respective operating temperatures permit this.

Systems

- ◆ Nutsche filters
- ◆ Filter dryers
- ◆ Reactors
- ◆ Belt drying systems

Mesh/filter media

- ◆ GEKUPLATE mesh laminates
- ◆ TRIMETRIC mesh laminates
- ◆ Belts produced from stainless steel and synthetic materials

Benefits

- ◆ Durability
- ◆ Individual manufacturing for specific systems

For many different screening machines

Screening and classifying particulate materials is an important process step in the chemical industry. We can generally offer fast support here on the basis of existing standard media produced from stainless steel with filter meshes, as well as a frame screening service.

It is always possible to produce mesh that is specially adapted to the respective process, taking into account the technical requirements relating to batch sizes.

For applications in corrosive environments, correspondingly optimized meshes can also be custom-produced in high-alloyed metals such as nickel-based materials.

Systems

Screening machines from a wide range of manufacturers

Mesh/filter media

- ◆ Square weave
- ◆ Oblong weave
- ◆ Broad weave

Benefit

Rescreening service for existing screen frames



Fluidization



Spare part and filter medium

Strength and temperature resistance

Wire mesh and metal mesh laminates from GKD are used in fluidizing conveyor lines, discharge aids, or ventilation systems. GEKUPLATE metal mesh laminates for fluidization combine the characteristics of high mechanical strength with defined permeability. This allows conveyor systems to be equipped with precisely matched media. To satisfy special requirements, fluidization media produced from GKD wire mesh are equipped with an additional separating layer for defined exclusions sizes in the particle spectrum.

The YMAX weaves represent an alternative to metal mesh laminates. These high-strength, multi-ply wire meshes produced from stainless steel or in the form of glass/stainless steel hybrids can be supplied as roll material and used as an alternative to textile media. They are suitable for use in a wide temperature range and can also be used for fire hazardous applications. For fluidization applications, we produce GEKUPLATE metal mesh laminates, YMAX weaves, discharge bases, ventilation elements, and components with special 2D and 3D contours.

Applications

- ◆ Discharge bases
- ◆ Ventilation systems
- ◆ Fluidizing conveyor lines

Mesh/filter media

- ◆ GEKUPLATE metallic mesh laminates
- ◆ YMAX weaves produced from stainless steel and as hybrids

Benefits

- ◆ Wide range of permeabilities available
- ◆ Components with special 2D and 3D contours
- ◆ Also suitable for use at high temperatures

For special filter types and filter elements

The filter elements of disc and leaf filters (Niagara filters) are subject to high stress, particularly in the systems used in the chemical industry. This results in a limited useful life of the filter media, which in turn requires the filter discs or leaves to be replaced.

Working in close coordination with users, GKD offers a fast rescreening service for filter elements. Filter media are both produced and fitted in tandem, and it is also possible to adapt and optimize systems using alternative filter media.

Beside our rescreening service, we can also supply complete filter leaves as spare parts for all standard filter types of this kind. The use of our Neverleak technology, available as an option, provides even greater process reliability and a longer service life here - particularly in the case of leaf filters.

Services

- ◆ Repairs and spare parts for all standard disc and leaf filters
- ◆ Professional preparation and repairs of filter elements
- ◆ Rescreening of filter leaves and frames
- ◆ Upgrades through use of optimized filter media

Technical weave

Specialized: Mesh types and materials

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- 1 Plain dutch weave
- 2 Volumetric weave
- 3 Gekuplate
- 4 Dutch twilled weave
- 5 5-heddle atlas weave
- 6 Oblong weave
- 7 Square weave

Individual: Wide range of solutions

The demands placed on technical weaves differ according to industry. That's why, at GKD, we match our products individually to the requirements of our customers. Using modern looms and production machines, we are able to produce a wide range of industrial mesh and structures. And when it comes to reproducible procedures, we look for the greatest and most reliable efficiency. That is how GKD achieves optimum product quality. Our technical weaves are produced in widths of up to four meters.

Mesh parameters

- ◆ Aperture
- ◆ Open mesh area
- ◆ Retention rate
- ◆ Flow values
- ◆ Porosity
- ◆ Bubble point
- ◆ Tensile strength
- ◆ Material

Materials

The choice of material as well as its quality and processing are very important for the properties of the wire mesh product. Certain requirements can only be fulfilled by certain materials.

We offer an extensive portfolio of weaveable materials to satisfy the requirements of any application. In terms of metal chemistry, this starts with the most commonly used chromium-nickel stainless steels such as 1.4301/1.4401 and stretches all the way up to highly corrosion-resistant alloys such as Hastelloy and titanium materials.

Material	Description	AISI/UNS	Wire diameter
1.4301	X5 Cr Ni 18 10 (V2A)	304	> 0.016 mm
1.4306	X5 Cr Ni 18 11	304L	> 0.016 mm
1.4401	X5 Cr Ni Mo 17 12 2 (V4A)	316	> 0.015 mm
1.4404	X5 Cr Ni Mo 17 12 2	316L	> 0.015 mm
1.4841	X10 Cr Ni Si 25 20	314	> 0.030 mm
1.4539	X1 Cr Ni Mo Cu 25 20 5	904L	> 0.025 mm
1.4760	X1 Cr Ti La 22 (Crofer)	S 44535	> 0.120 mm
2.4602	Ni Cr 21 Mo 14 W (Hastelloy C-22)	N 06022	> 0.040 mm
2.4956	Ni Cr 22 Mo 9 Nb	N 06625	> 0.035 mm
2.4060	Ni 99.6	N 02200	> 0.036 mm
2.4066	Ni 99.2	N 02200	> 0.036 mm
2.4068	LC-Ni 99.2	N 02201	> 0.036 mm
2.0060	Copper	E-Cu 57	> 0.030 mm
3.3555	Aluminum	Al Mg 5	> 0.036 mm

Other alloys on request: industrialmesh@gkd-group.com

Drying, cooling, conditioning

Impressive all-rounders

GKD belts are used for drying, cooling, and conditioning a wide range of products. Based on whether powder, granulate, or strands are being processed, we use mesh types produced from stainless steel or synthetic materials. Special materials are available on request. Stainless steels, for example, offer greater resistance to acids and alkalis, while synthetic meshes can be used at temperatures of up to 180 °C (PPS) or 240 °C (PEEK).

So-called hybrid meshes, which combine synthetics with metal, are also available for static discharge in potentially explosive areas. Belts produced from semi-twisted smooth meshes – such as stainless steel and synthetics with small apertures or pore sizes and high air permeability – are used for fine and ultra-fine powders. Belts with larger apertures demonstrate their strengths with coarser products or wider product webs. In both application scenarios our belts show low belt oscillation tendency, so they are easy to keep on track using active belt control systems, and thereby offer long service lives.

Self-controlling TRACKMATIC™ belts are the first choice for basic dryer and cooler designs that can operate without active belt control. Aperture sizes from 0.1 mm to 8.0 mm allow these to be adapted to the most common requirements of V-crimp belts. The LIGHTWEIGHT TRACKMATIC™ belts from GKD are also self-controlling. Thanks to its unique mesh design, this belt type combines the benefits of smooth meshes and V-crimp meshes. This range of mesh types (stainless steel or a stainless steel/synthetic combination) is used in applications requiring self-controlling belts but with the properties of smooth mesh.

Systems/machines

- ◆ Belt dryers
- ◆ Belt coolers
- ◆ Floatation dryers
- ◆ Conditioners
- ◆ Dryers that use mesh (nutsche filters, filter dryers, reactors)

Meshes

- ◆ Semi-twisted metal mesh (single to quadruple warp)
- ◆ Synthetic meshes: Linear Screen, twill meshes, Atlas meshes
- ◆ TRACKMATIC™ belts
- ◆ LIGHTWEIGHT TRACKMATIC™ belts
- ◆ GEKUPLATE mesh laminates
- ◆ TRIMETRIC mesh laminates

Benefits of GKD process belts

- ◆ Long service lives
- ◆ Excellent running properties
- ◆ Easy system configuration
- ◆ Mechanically and thermally stable



Process belts

Foaming/ floating and vulcanizing



Non-marking and resistant

GKD meshes are used in feed ovens for the manufacture of PE foam materials or rubber profiles. Beside fine and stable-tracking mesh types, non-marking seams make an important contribution to the high quality of our customers' products.

In addition to semi-twisted stainless steel meshes, TRACKMATIC™ belts and LIGHTWEIGHT TRACKMATIC™ belts demonstrate their respective strengths in the individual applications.

Manufacturing foam materials and rubber/silicone profiles requires process belts that display a low deformation tendency - not only when exposed to standard chemical and mechanical influences, but also during thermal cleaning. The mesh specialists at GKD offer process belts produced from temperature-stable stainless steels with low scaling tendency for these challenging application areas.

This material, used in smooth and low-marking mesh and seam types, enables our customers to achieve excellent product quality. We regularly receive positive feedback on the high-grade and durable nature of our woven seams, which we also improve and optimize through continuous refinement of our in-house capabilities and the technical methods. This applies both to our endless joints and joined woven seams.

Systems/machines/equipment

- ◆ Feed ovens
- ◆ Vulcanizing ovens
- ◆ Foam ovens
- ◆ Flotation ovens

Meshes

- ◆ Semi-twisted metal mesh
- ◆ Square mesh

Mesh parameters

- ◆ Low-marking woven seams
- ◆ Long service lives
- ◆ Stable tracking
- ◆ Mechanically and thermally stable
- ◆ Low deformation tendency
- ◆ Revision service



Belt filtration / vacuum belt filtration



Pressing and drying of sludges

Effective and durable

Fast dewatering and the lowest possible final moisture content: in the production of fertilizers and also the flue gas desulfurization (FGD) process, slurry must be dewatered effectively to secure the highest possible dry matter content. When extracting phosphor for fertilizers, on the other hand, a highly selective filter grade is the key, since the composition of phosphate-containing minerals can vary significantly.

For FGD gypsum, on the other hand, securing optimized water and air permeability is the main objective. Even salts such as sodium chloride are dewatered using vacuum belt filters. GKD developed the Vacubelt® range of filters specifically for this application. These belts are generally produced from a single-ply woven polyester mesh with excellent cross stability, which in turn secures a low creasing tendency. All of the belts have two things in common: excellent cleaning properties and a long service life.

Applications

- ◆ Filtration/cleaning of process media, coolant, and wastewater
- ◆ Sludge dewatering

Systems

- ◆ Belt filters / vacuum belt filters
Belt filters and filter belt presses
- ◆ Automatic filters / back flush filters
- ◆ Cartridge, disc, and drum filters
- ◆ Nutsche filters/micro sieving

Benefits

- ◆ Selective and reliable
- ◆ Effective and durable
- ◆ Laterally stable and easy to clean

Meeting special challenges

Due to their often heterogeneous composition, industrial sludges that require dewatering can present a particular challenge for pressing belts. Our highly stretch-resistant and dimensionally stable process belts, which are used in the pressing of sludges to effectively increase the dry matter content, are produced on heavy-duty looms for metal mesh or state-of-the-art spiralizing machines. An optimum relationship between permeability and aperture size with fast cake buildup and good release characteristics helps secure efficient dewatering with high throughput performance.

The process belts are produced from abrasion-resistant and rugged synthetic monofilaments. Beside PPS meshes developed specifically for this application with an operating temperature range from 180 to 200 °C, the hybrid mesh types in the CONDUCTO range are also available for drying in potentially explosive areas. Thanks to longstanding cooperations with leading manufacturers of filter belt presses and dryers for pre-dewatered sludges, GKD understands precisely what these applications require.

Applications

- ◆ Pressing/dewatering of sludges
- ◆ Drying of industrial sludges

Systems

- ◆ Thickeners/ventilation systems
- ◆ Filter belt presses
- ◆ Belt dryers

Benefits

- ◆ Stretch-resistant and abrasion-resistant
- ◆ Dimensionally stable and low creasing
- ◆ High air permeability and high discharge capacity
- ◆ Easy to clean

Production

Manufacture: Highest standards

What's more, products from GKD are produced to the highest standards – all the way up to production for clean room standards.

Manufacturing: From weaving to finishing

Weaving, cutting, cleaning, rolling, punching, finishing, and much more – GKD produces the full range of industrial mesh and systems from metal, synthetics, and technical fibers using the latest looms and manufacturing equipment. Always lead-ing with the individual requirements of customers in mind. Adopting a step-by-step approach, we first analyze the demands on the material and the type of application, and then optimize processes and services. This eye for detail, many years of development excellence and process expertise, as well as our consistent cost-benefit orientation are what make GKD a sought-after partner around the world.

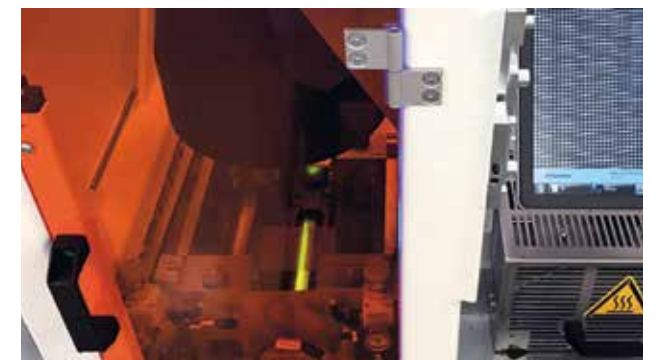
Our services

- ◆ Process and requirements analyses with material simulation tools (GeoDict/OpenFOAM)
- ◆ Consultation on the choice of material
- ◆ Application optimization and customized component design
- ◆ Continuous analysis and further development
- ◆ The latest manufacturing methods and leading production standards
- ◆ Certified know-how and decades of expertise

Guaranteed: Certified quality

GKD excels at more than just production. We also have our own laboratory, where we thoroughly inspect all of our meshes and associated components. It's vital that quality products from GKD meet the customer's desired specifications precisely. That's why our physical and technical laboratory conducts tests in the following areas:

- ◆ Product development
- ◆ First sample inspection
- ◆ Inspection in the event of damage
- ◆ Inspection in the event of a complaint
- ◆ Customer-specific tests
- ◆ Quality assurance during the production process



The focus of all testing scenarios is on securing benefits for the customer. Our employees boast the best material and testing expertise, work with the latest laboratory technology, and maintain relationships with professionals from the fields of inspection technology and research. Our laboratory experts monitor the entire lifecycle of GKD products.

Inspection procedures (selection)

- ◆ Mechanical and physical testing
- ◆ Chemical testing
- ◆ Quality-assurance mesh testing

Service

GKD worldwide: Close to the customer



International: Manufacturing and supply chains

With more than 900 employees worldwide, the GKD Group is a leading international technology and service company. With its headquarters in Düren, Germany, GKD also operates production sites in the USA, Chile, South Africa, India, and China. Locations in France, Spain, and Dubai as well as worldwide representatives ensure that we

are close to the customer all over the world. Our understanding of service includes developing individual solutions for individual customers. GKD produces around the world but relies locally on short distances. A broad network ensures delivery security so that we are always able to respond to customer requests quickly and with flexibility.

Through precise logistics, the use of recycled materials, and production processes that are gentle on resources, GKD promotes sustainable actions in keeping with our guiding principle: **FOR A HEALTHIER, CLEANER, SAFER WORLD.**

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