



REINFORCING YOUR IDEAS!

We are one of the world's leading manufacturers of textile reinforcements made of carbon, glass, aramid and natural fibers for lightweight construction. Our specialists work hand-in-hand with you to ensure you get the advanced material that precisely matches your ideas.

The perfectly coordinated processes employed by SAERTEX ensure a stable and sustainable supply chain for your product. Do you want to drive the energy transition forward? Set new mobility concepts in motion? Or significantly boost the performance of your composite application? Then talk to us.



FOUNDED

1982



SALES 2021 [€m]

275



EMPLOYEES [2021]

1,100



LOCATIONS
WORLDWIDE

12



CERTIFICATES

ISO 9001
ISO 14001
EN 9100

(IN PROGRESS)

QUALITY WITHOUT COMPROMISE

Our high quality standards stem from the aerospace industry. Keyword: EN 9100. We have established APQP4WIND for our wind energy customers worldwide. All SAERTEX plants are certified to the ISO 9001 standard and the associated products to DNV-GL. Ultimately however, your satisfaction is our most important quality indicator.

ONE-STOP SHOPPING

The SAERTEX core technology comprises a unique variety of non-crimp fabrics – made of glass, carbon or other fibers. But our product portfolio offers more than that: Our pultruded SAERplanks, SAERfoam for sandwich construction and LEO for fire protection. This gives you a central, competent point of contact for all issues relating to composite reinforcement materials.

CUSTOMIZED FOR YOU

We develop the appropriate material for you. In the process, we combine lightness, stability and cost-effectiveness to create a customized solution. Since 1982, over 3,333 customer-specific SAERTEX products have been created. Thanks to our experienced application engineers and in-house laboratory, we are quickly able to realize the ultimate material for your application.

MORE EFFICIENCY FOR YOUR SUPPLY CHAIN

SAERTEX processes an average of over 100,000 tons of glass fiber and 3,000 tons of carbon fiber into multiaxial fabrics each year. Our proven process chains ensure reliable delivery performance. This is a key success factor – especially for our customers, who want to expand their global volume business. Our team is there to serve you, with local production in 11 countries on five continents.

SAVING RESOURCES RESPONSIBLY

We create innovations for a resource-saving future. And our materials make a contribution to this – whether in the wind power, mobility or industrial sectors. It is important for us to optimize our carbon footprint and we achieve this in various ways. For example, we generate our own green electricity, recycle our glass and carbon fiber waste into new products and keep transport routes to our customers and suppliers as short as possible.



DEVELOPED
REINFORCEMENT MATERIALS

>3,333



PROCESSED VOLUME
CARBON FIBER [in t ø past 3 years]

>3,000



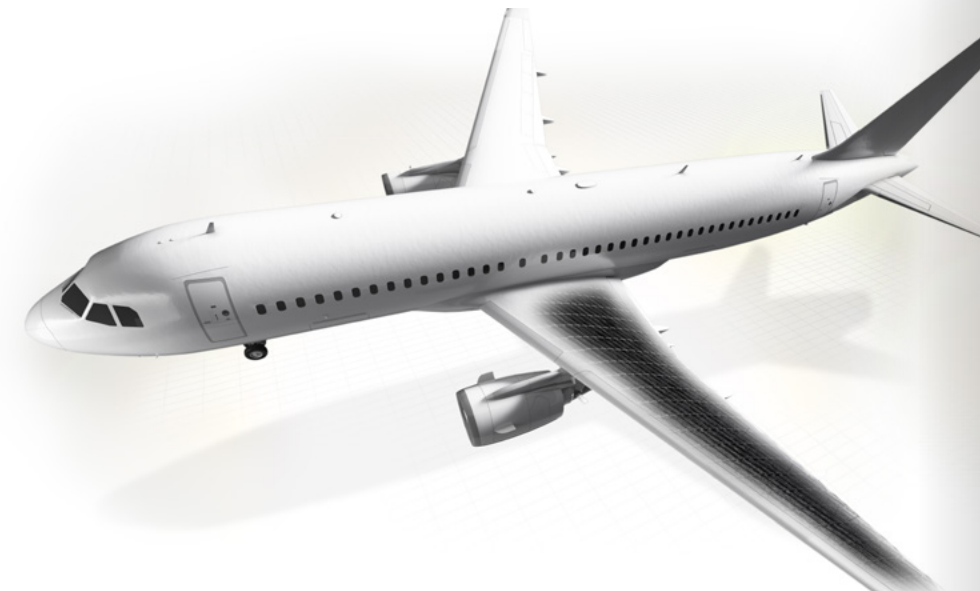
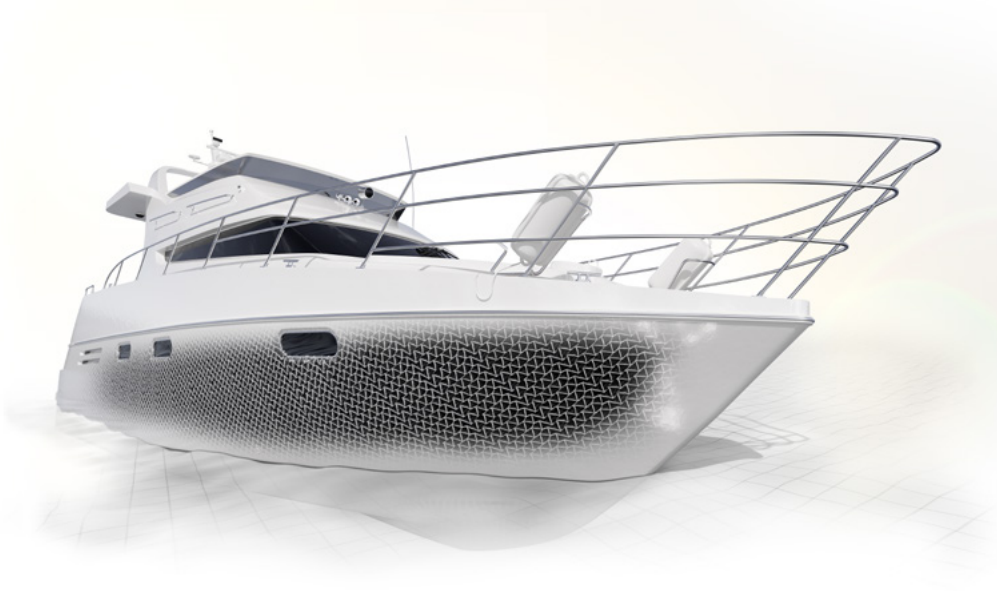
PROCESSED VOLUME
GLASS FIBER [in t ø past 5 years]

>100,000

Details exclude the figures of SAERTEX multiCom subsidiaries.

ADVANCED MATERIALS FOR LIGHTWEIGHT CONSTRUCTION

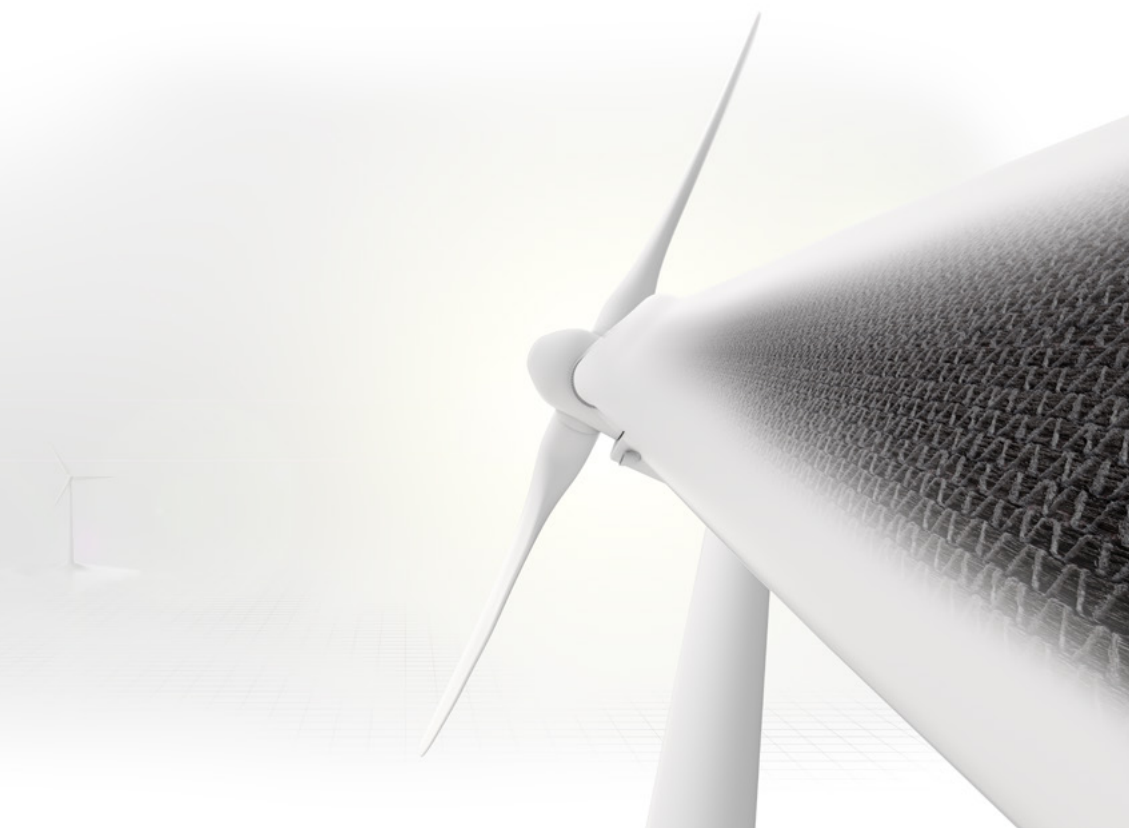
Are lightness and durability persuasive arguments for you? Then SAERTEX is the right choice. Our technical textiles enable components to be made lighter, more durable and longer-lasting. And they offer this for numerous industries.



SUCCESS TOOK ITS COURSE

The first SAERTEX customers included manufacturers of skis, snowboards and similar sports equipment. Materials from SAERTEX have found their way into many well-known sports brands, boat building and transportation companies.

Our company achieved a further key milestone in 1996: Through the McDonnell Douglas Blackwing Project, SAERTEX was able to gain a foothold in the aerospace industry with its carbon fiber multiaxial fabrics. We intend to steadily expand our circle of prestigious clients in the aerospace industry. And we are open to young companies offering innovative solutions for manned and unmanned aerial vehicles.



HELPING SHAPE THE ENERGY & MOBILITY TRANSITION

SAERTEX has also become established as a long-standing and reliable supplier of glass and carbon multiaxial fabrics to the automotive industry. Our developments continue to power e-mobility into the future. They serve, for example, to protect electric batteries, reduce weight, provide corrosion protection and offer impressively high energy efficiency.

We are a partner to the wind energy industry and develop innovative materials for worldwide rotor blade manufacture. Our composite materials allow us to combine stiffness and strength with lightweight structures to make rotor blades over 100m long.

EXPLAINED AS SWIFT AS THE WIND: FROM FIBER TO COMPOSITE COMPONENT

SUPPLIER

SAERTEX

CUSTOMER

This is our step-by-step guide to how a component made of fiber-reinforced plastics is created. It uses a wind turbine rotor blade as an example.

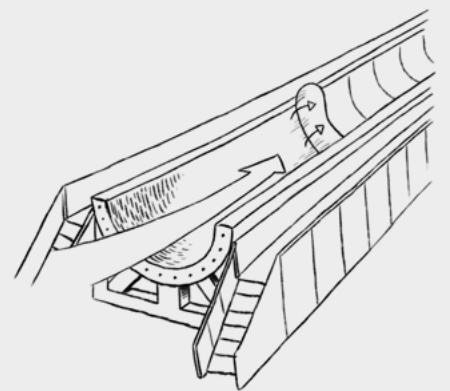
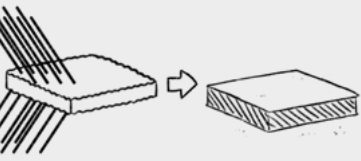
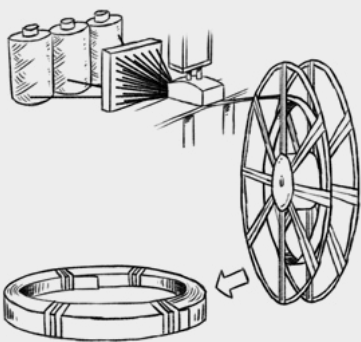
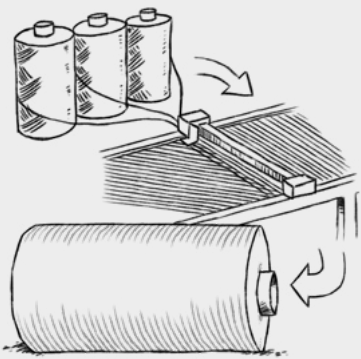
GLASS FIBER ROVING
Sand is smelted in furnaces, thereby producing the glass fiber roving. By this we mean a strand of fiber filaments arranged in parallel. Sizing ensures the adhesion properties of the roving.

ROVING BECOMES NON-CRIMP FABRIC
In multiaxial fabrics, the rovings are laid and not woven. This means that the fibers remain straight. In the next step, several layers are laid on top of each other at different orientations and sewn together to form a textile.

CARBON ROVING
Polyacrylonitrile (PAN) based carbon fibers are produced via a carbonization process (at up to 1,800 °C). Up to 50,000 filaments (50k) are then combined to form a roving.

ROVING BECOMES PULTRUDED PROFILE
Pultruded materials are also used in addition to non-crimp fabrics. To make a pultruded plank, carbon fibers are compressed into a laminate via resin injection under controlled pressure and temperature.

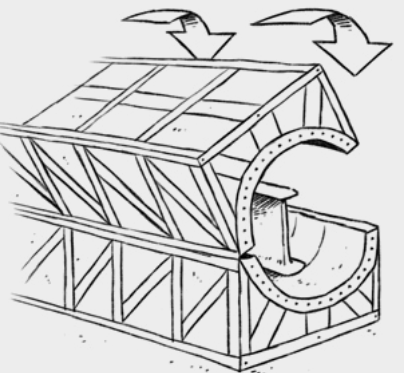
CORE MATERIALS FOR SANDWICH COMPONENTS
Some composite components are not monolithic, but are produced as sandwich structures. For this purpose, lightweight polymer foams or balsa wood are used. The foam in SAERfoam is reinforced with glass fibers.



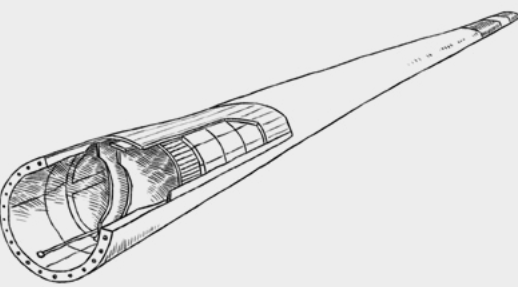
DRAPING IN THE MOLD
Manufacturing takes place primarily in the giant rotor blade molds. Cut-to-size non-crimp-fabrics are laid into the mold and smoothed out. In the process, special importance is attached to the drapability of the materials. At the same time, spar caps made of glass and carbon fiber UD fabrics or pultruded planks are used. SAERfoam, balsa or PET elements are then laid out over the entire surface. This is followed by further layers of multiaxial non-crimp fabrics made of glass fibers.



FOIL AND INFUSION WITH RESIN
The entire structure is covered with an airtight foil. The vacuum infusion process then uniformly impregnates the layers beneath the foil with resin.



CURING AND FURTHER STEPS
The composite component is now allowed to cure. After curing, the plastic foil is removed. The rotor blade is then further processed. The two halves are bonded together and the shear webs inserted. The blade is sanded and painted.



ONE-STOP SHOPPING – THE PERFECT TURNKEY SOLUTION!

An efficient decision

Do yourself a favor by purchasing your composite reinforcement materials from a single source. Our core technology is non-crimp fabrics (NCFs) – e.g. made of glass, carbon or other fibers. A new addition to in the range are pultruded profiles, SAERfoam for sandwich construction and LEO for fire protection applications.

Your benefits at a glance:

- // Single point of contact
- // Single solution approach
- // Less time taken, greater transparency

NON-CRIMP FABRICS



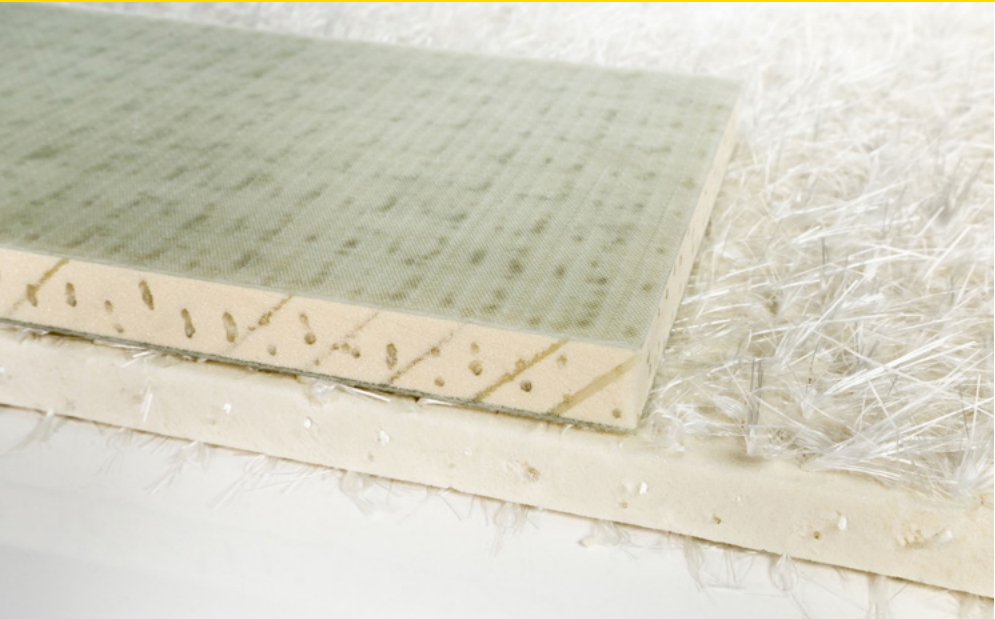
Textile reinforcements: Non-crimp fabrics made of glass, carbon, aramid and natural fibers for lightweight construction.

PULTRUDED PLANKS



Pultruded planks made of carbon fibers for manufacturing rotor blade spar caps for the wind power sector. The new SAERplanks from SAERTEX.

CORE MATERIALS



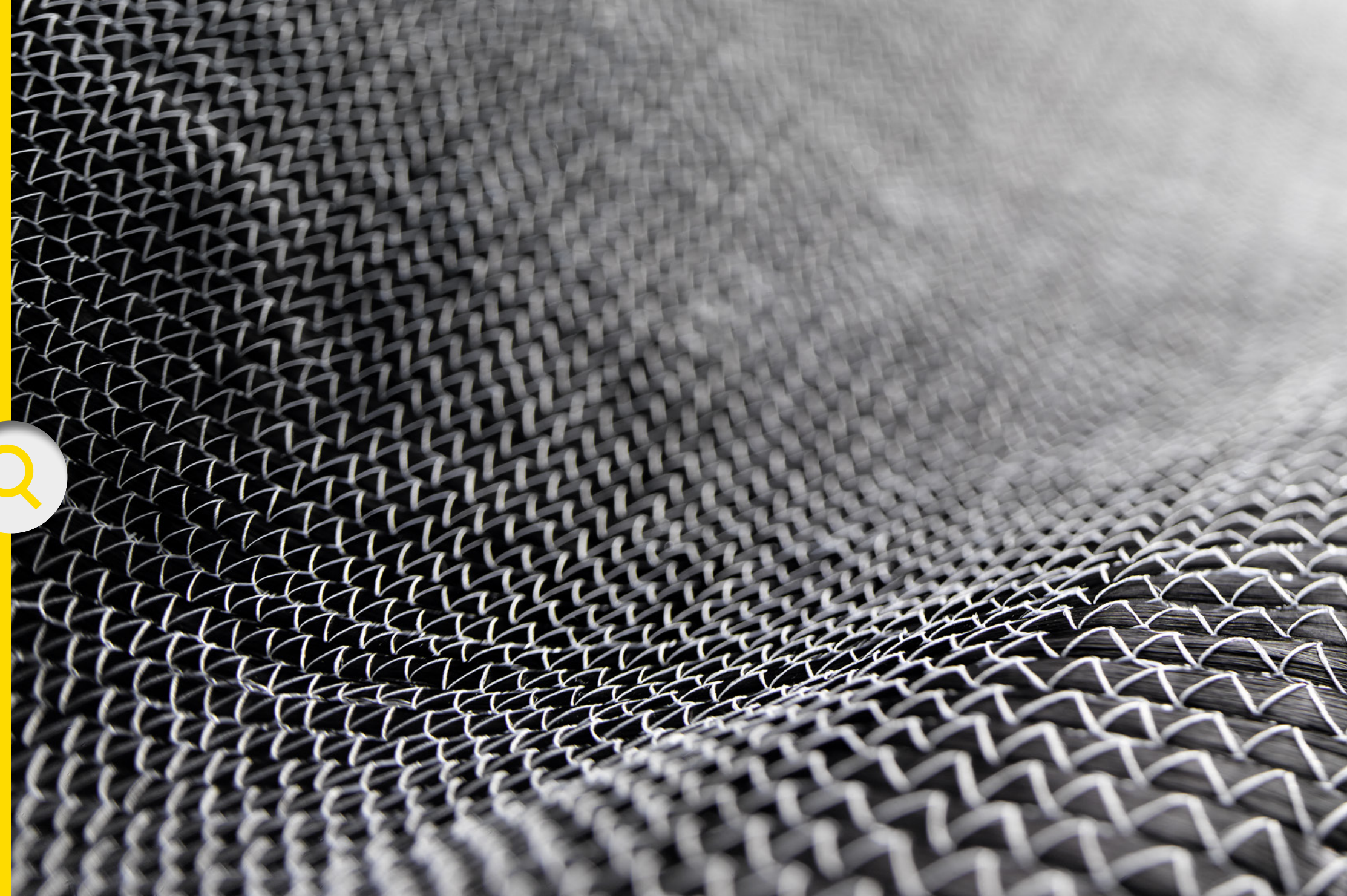
Our SAERfoam, with glass fiber reinforced foam for sandwich construction.

FIRE PROTECTION FOR COMPOSITES



Our unique SAERTEX LEO product line for composites with the highest fire protection requirements.

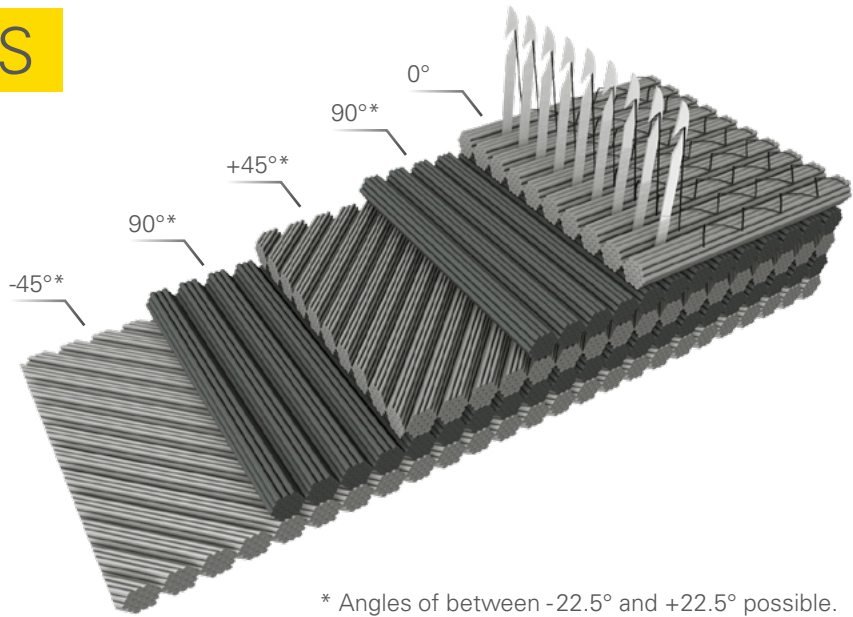
HERE YOU WILL FIND YOUR
REINFORCEMENT



TREND SETTING: NON-CRIMP FABRICS

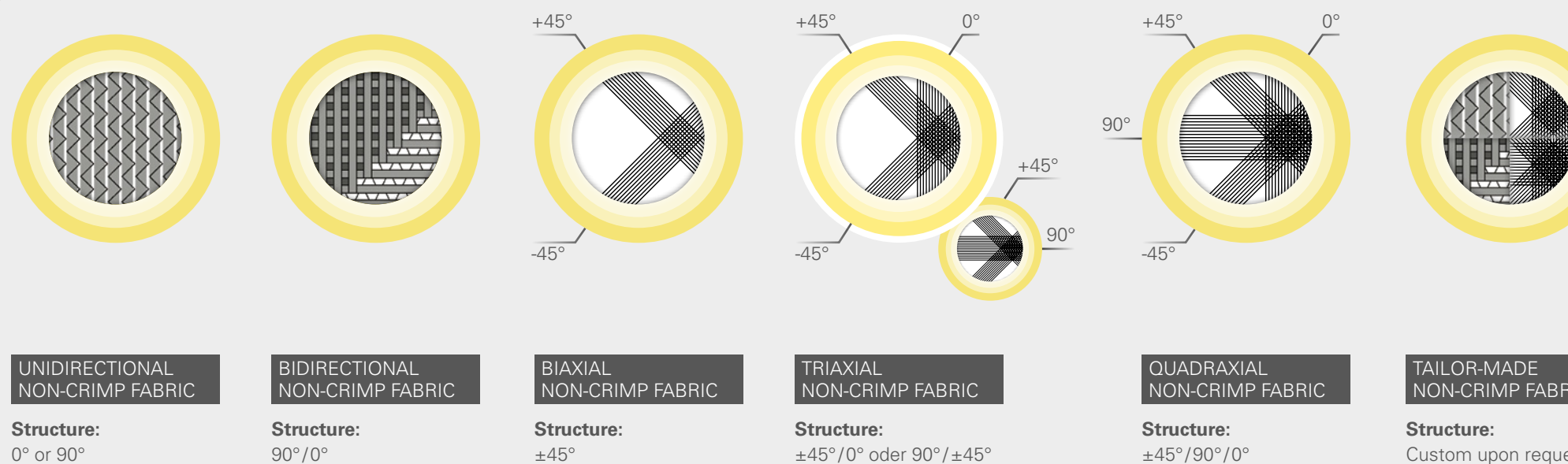
How a SAERTEX non-crimp fabric is made:

The rovings are laid without fiber undulations, thereby giving them a high mechanical load capacity. The special feature here is that it is possible to have multiple layers – with differing directional orientations. The individual layers are sewn together to form a textile reinforcement.



* Angles of between -22.5° and +22.5° possible.

UNDERLYING MULTIAXIAL STRUCTURES



OUR PRODUCT RANGE

Over 3,333 reinforcements made of glass, carbon, aramid and natural fibers.

Learn more on page 18

Learn more on page 19

	NON-CRIMP FABRICS			PULTRUDED PLANKS	CORE MATERIAL
Product range	UD/bidirectional	Multiaxial	SAERcore	SAERplanks	SAERfoam
Material type	Textile reinforcement (dry)	Textile reinforcement (dry)	Textile reinforcement (dry)	Pultruded profile (cured)	Engineered core (dry)
Raw material input	Glass (E, H), carbon (12–50k), aramid, flax, basalt		Glass (E)+PP	Carbon + hybrid resin	PU foam + glass (E)
Fiber processing	Straight fibers		CSM*	Straight fibers	3D bridges
Structure	Unidirectional/bidirectional	Multiaxial	CSM/PP/CSM	Unidirectional	–
Fiber orientation	0°/90°	-22.5° to +22.5°	various	0°	–
Number of layers	1 (UD) or 2 (BD)	2–5	3	1	–

ADDED VALUE PRODUCT FINISHING

Self-adhesive – with SAERfix adhesive	Yes	Yes	Yes	No	Yes
Powder binder preforming	Yes	Yes	No	No	No
Integrated fire protection – LEO	Yes	Yes	Yes	No	Yes
Integrated flow mesh – SAERflow version	Yes	Yes	No**	No	No
Cutting & kitting	Yes	Yes	Yes	No	Yes
Toughening	Yes	Yes	Yes	No	No
Specialties	UltraFatigue; EasyDrape	LEO coated fabric	+ NCF (SAERcore MAX)	No	Drapable

RECOMMENDED FOR THE FOLLOWING PROCESSES

Vacuum infusion	+++	+++	++	+++	+++
HP-RTM	+++	+++	+	+	–
RTM light	++	++	+++	+	+++
Compression	++	++	+++	–	++
Hand lay-up	+	+	–	–	–
Pultrusion	+++	++	–	–	–
Prepreg/continuous	+++	++	–	–	+

* Chopped strand mat | ** PP core as flow medium is standard

SELECTION OF MULTIAXIAL FABRICS		
Leaf spring application: UltraFatigue UD	Extreme: Aramid NCFs	Hybrid: Combined glass / carbon
Aerospace: SAERTow Carbon NCF	With adhesive: SAERfix®	Mesh of glass or carbon
Bio-based: Flax NCF	Integrated flow mesh: SAERflow®	With PP core: SAERcore®

Highly customizable: SAERTEX NON-CRIMP FABRICS

Whether fiber type, area weight, sewing, orientation or finishing: our products are individually configured for our customers and optimally adapted to various processes.

Available from stock: SAERTEX BASIC LINE

The SAERTEX Basic Line is our popular standard product range for Europe. Rapid availability is guaranteed by our three decentralized warehouse locations in Europe. The range comprises a portfolio of selected classic glass and carbon fiber fabrics together with SAERcore, SAERflow and SAERfix EP.



SAERTEX LEO® SERIES

A single solution for a range of fire protection requirements:

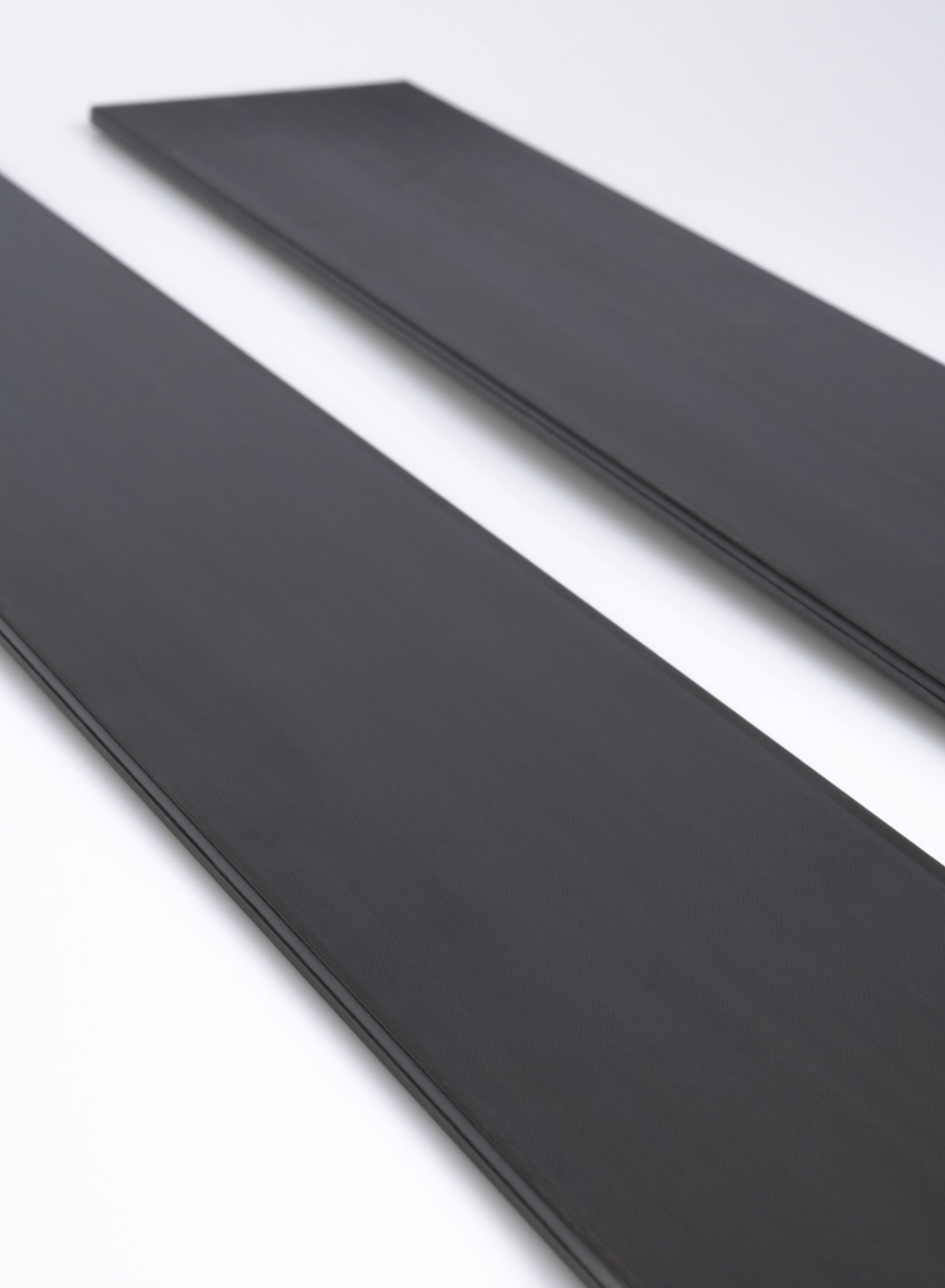
The SAERTEX LEO Series. It ensures optimum fire protection pursuant to fire protection standards EN 45545, IMO FTP and many other regulations.

The SAERTEX LEO series includes three products:

- // SAERTEX LEO System
- // SAERTEX LEO COATED FABRIC
- // SAERcore LEO



Learn more about the SAERTEX LEO® Series



NEW

SAERplanks

PULTRUDED PLANKS

A solid addition to our range: SAERplanks is the name given to our new pultruded planks made of carbon fiber and a thermosetting resin system. The planks expand our product range of reinforcing materials for use specifically in the spar cap of wind turbine rotor blades.

They are manufactured using an innovative injection process and newly developed hybrid resin, setting new standards in terms of productivity, process quality and sustainability.

The benefits to you:

- // Efficiency thanks to the hybrid resin system
- // High process reliability thanks to the innovative injection method
- // Regional sourcing from one of the 12 SAERTEX plants near you
- // One-stop shopping: single point of contact, single solution and greater efficiency thanks to our range of fabrics, core material and pultrudates



Learn more about
SAERplanks

SAERfoam®

ENGINEERED CORE MATERIAL

Lightweight, flexible, innovative: SAERfoam is a structural core material that replaces conventional materials like PVC, PET and sometimes even balsa wood. During its manufacture, ultra-light foam is combined with 3D glass-fiber reinforcements. The result is SAERfoam, a hybrid core material with scalable mechanical properties and extremely low weight.

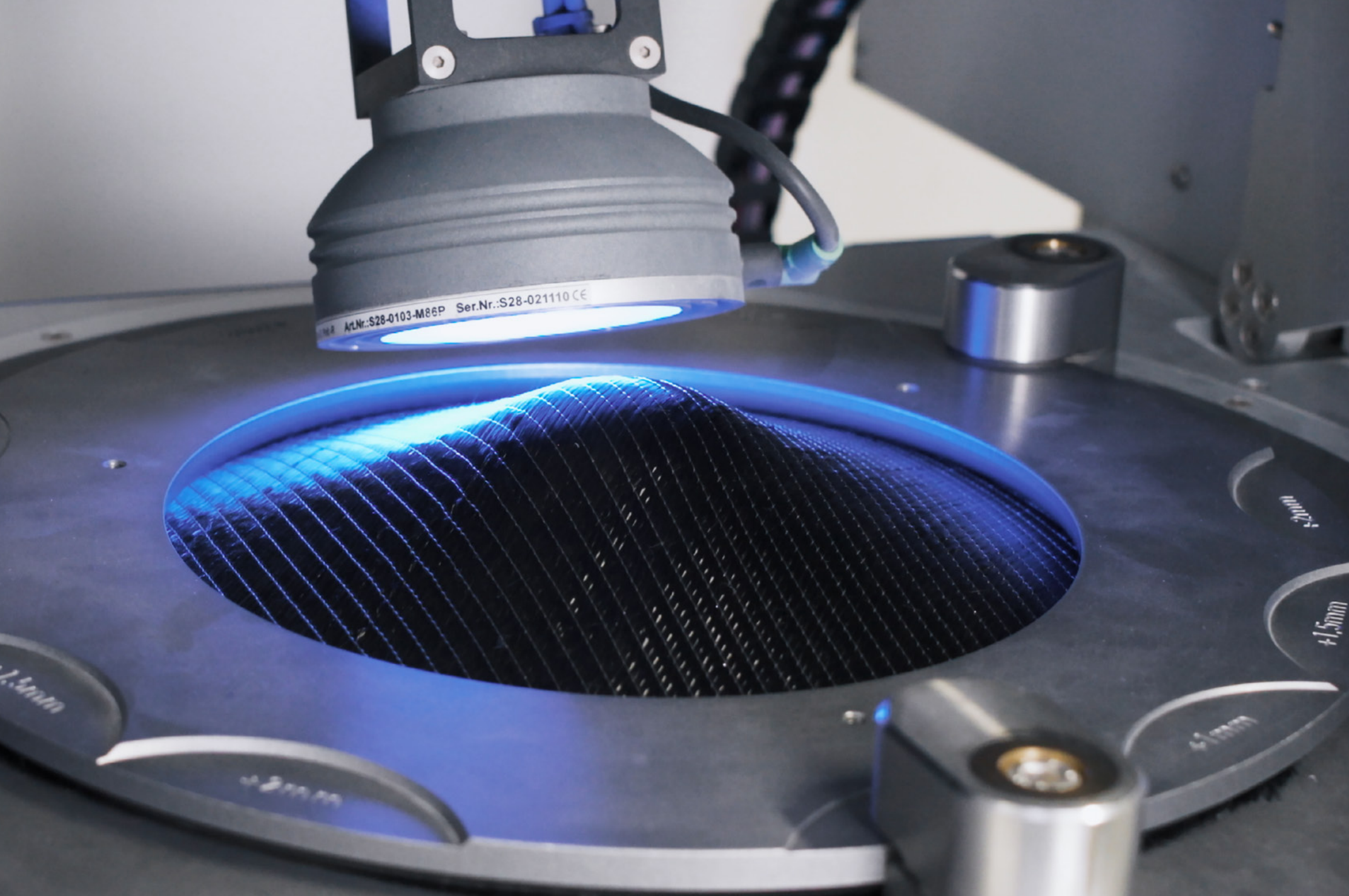
The benefits to you:

- // Lighter than PET, less expensive than PVC
- // Up to 4 times higher shear modulus than PET and PVC
- // Does not absorb water
- // Easy to process



Learn more about
SAERfoam®





FROM IDEA TO INNOVATION

You present us with your idea. We supply you with the right material to facilitate its implementation. Our SAERTEX team makes this possible by dovetailing with the links in your process chain on many levels.



CONSULTING

Our sales network covers 50 countries around the world, always placing us close to you. To ensure we're speaking the same language, our sales colleagues specialize in your industrial segment: aerospace, automotive, wind energy, industrial.



DEVELOPING

In recent years we have successfully developed more than 3,333 different items for our customers. We combine your requirements with our technological know-how. This quickly leads to concrete results – the optimal product for you.



TESTING

Our in-house laboratory, certified by DNV, offers static testing such as tension, bending and ILSS. Moreover, we also offer material fatigue, fiber-resin content and drapability testing for NCFs. Our intensive quality controls allow us to develop the perfect material for you and accelerate development processes.



PRODUCING

Our Production department is supported by our in-house engineering and mechatronics team for modifying the equipment and machines. This allows us to manufacture your SAERTEX product economically, safely and quickly. We rely on state-of-the-art manufacturing methods which include digital material inspection and role reports as well as our Smart Detect Control for aerospace styles.

SHORT ROUTES FOR YOUR SUPPLY CHAIN

We are there to serve throughout the world. Because SAERTEX has 12 local production facilities on 5 continents to manufacture our multiaxial non-crimp fabrics and core materials. Our unique network of suppliers allows over 80 % of our sites to be supplied regionally. Furthermore, our comprehensive service and distribution network covers 50 countries around the world.

- The benefits to you:
- // Stable supply chains thanks to regional sourcing
 - // Short routes: Reduced carbon footprint thanks to local supplies
 - // Service: We are available locally and speak your language



12*
LOCATIONS
WORLDWIDE



5
CONTINENTS

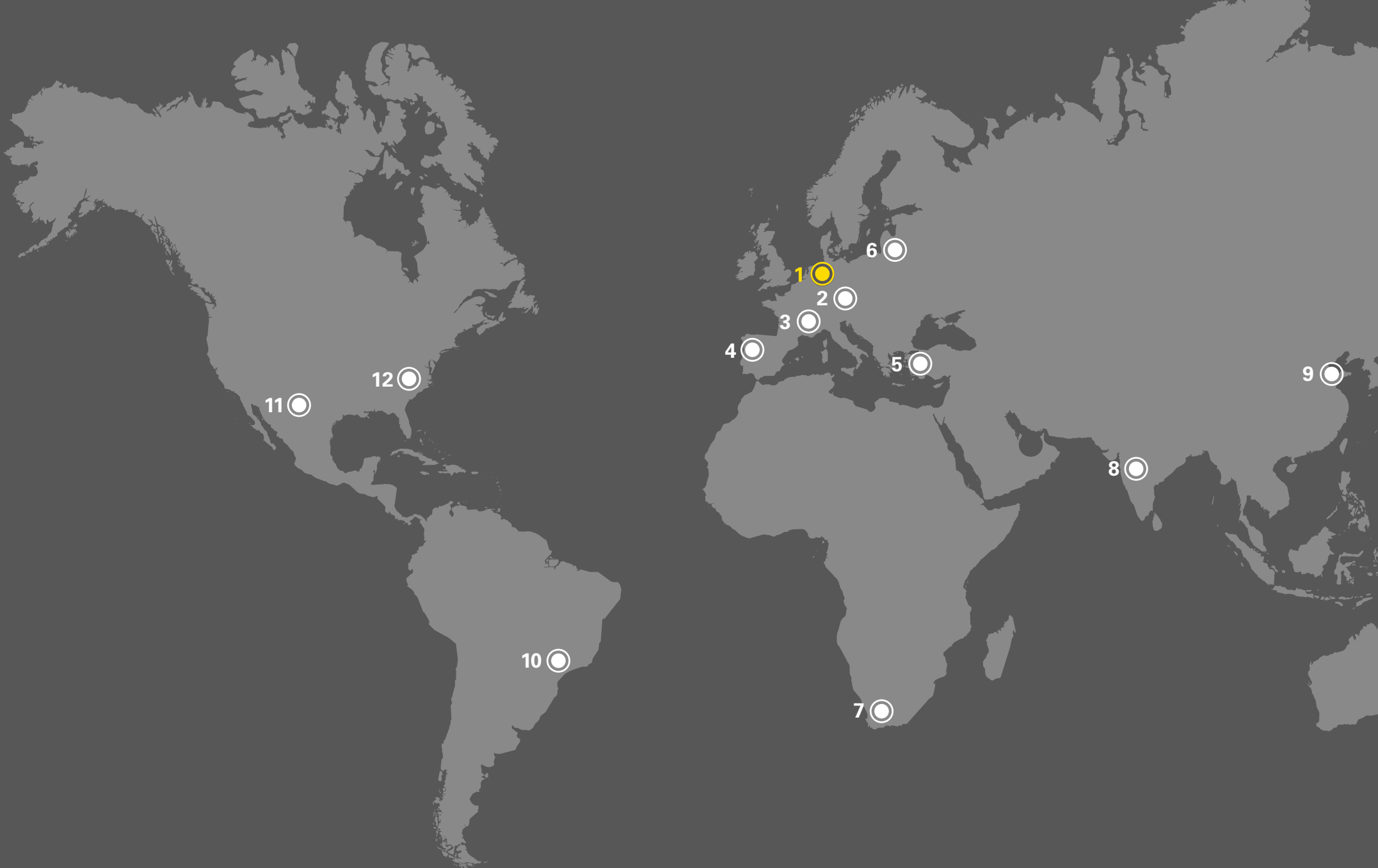


2021
PLANT OPENING
IN MEXICO



>80 %
REGIONAL SOURCING
RAW MATERIALS

* Excluding SAERTEX multiCom®



- | | | | |
|--|---------------------|-------------------------|--------------------|
| 1. SAERTEX Germany Saerbeck Headquarters | 4. SAERTEX Portugal | 7. SAERTEX South Africa | 10. SAERTEX Brazil |
| 2. TK Industries Selbitz | 5. SAERTEX Turkey | 8. SAERTEX India | 11. SAERTEX Mexico |
| 3. SAERTEX France | 6. SAERTEX Baltics | 9. SAERTEX China | 12. SAERTEX USA |

IT ALL STARTS WITH A CLEAR VISION

SAERTEX INNOVATION FOR A RESOURCE-SAVING FUTURE

Sustainable engineering. The goal for the future. Our primary focus here is to minimize weight and maximize the service life of components. Lightweight construction with SAERTEX materials means both requirements are fulfilled at the very highest level. Conventional materials such as steel and aluminum make way for advanced fiber-reinforced plastics.

As a responsible company, we are continuously working on reducing our carbon footprint in the long term. We have already successfully implemented many measurable improvements for you. We are ready for the future.



SAERTEX GROUP EXAMPLES AT THE SAERBECK SITE IN 2021:

// **Waste reduction** through recycling fiber residues: approx. **5,000 t** over the past 5 years

// Generation of **green electricity**: **ø 3.2 m kWh per annum** through photovoltaic systems on the plant roofs

// **Cycle-to-work scheme benefits**, charging infrastructure for **E-mobility** in progress

// **EcoProfit certification** since 2009, Preparations for **ISO 14001** in 2022

// **Energy savings** of approx. **580,000 kWh** or approx. **314 t CO₂** in the past 5 years through:

- / Construction of new, energy-efficient production hall & administration building
- / Modernization of the machine fleet

- / Roll-out of an energy-monitoring system
- / Conversion of lighting to LED

RETHINK! RECYCLE!

Production residues result from the manufacture of multiaxial fabrics made of glass, carbon and aramid fibers. These residues accrue in the form of filaments from vacuumed fibers or even textile fabrics. However, we do not consider this as waste, but valuable raw material, which we recycle. This is a key part of our sustainability activities. For the future.

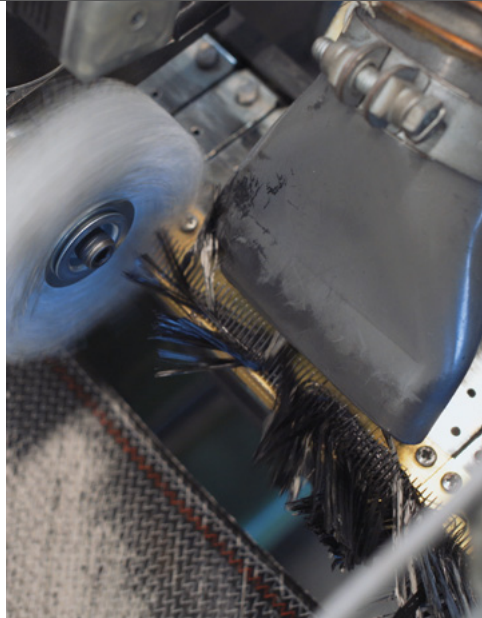
RECYCLING OF CARBON FIBER MULTIAXIAL FABRICS WITH WIPAG:

To ensure that new products are created from the recyclable materials we have established fixed process sequences. The recyclable materials are collected, sorted and further processed using various industrial processes. In this way new, high-quality products for the automotive or sports industries are created.



To video

COLLECT



Fiber residues are extracted during the ongoing production process.

SORT



Sorting by yarn, fibers or textile fabrics.

PREPARE



Established processes for glass and carbon fiber residues.

GRANULATE



Example –WIPAG: thermoplastic compound (PP or PA) with 10 to 40 % carbon fiber content.

END PRODUCT



These include automotive fittings and snowboard bindings, for instance.

LOCATIONS ON FIVE CONTINENTS – FOR YOUR GLOBAL PROJECTS

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Current references and videos showcasing international applications can be found on our website at www.saertex.com and our LinkedIn channel.

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