

CARBON- AND COMPOSITE FIBER PROCESSING AND RECYCLING

AUTEFA Solutions leads the way



Sächsisches Textilforschungsinstitut e.V. (STFI)

» Carbon fiber waste for industrial use

» From recycled carbon fibers to carbon fiber-nonwovens



20 000 tons of waste per year accumulate during the production of carbon fiber-reinforced components. Added to this quantity are carbon fibers from components, which have reached their lifetime and should be recycled in a reasonable way. These fibers are no waste but a high-quality material. AUTEFA offers solutions and shows how carbon fibers can be industrially used again being recycled to nonwovens.

When recycling carbon fibers the matrix content of the waste to be recovered must be determined first. If materials include matrix (prepreg, hardened components) the matrix first has to be removed, e.g. by pyrolysis. Dry, resin-free waste can be directly processed on AUTEFA Solutions recycling plants. The woven fabrics or layers (laid webs) are cut into chips and opened on **AUTEFA Solutions UniRec Tearing Machine**. With the thus prepared fibers different nonwovens can be produced.

FOR WEB FORMING THE FOLLOWING MACHINES ARE AVAILABLE BEYOND OTHERS:

- **Aerodynamic Webforming Machine Airlay K 12:** delivers a voluminous nonwoven with isotropic fiber orientation and medium fiber separation at the same time.
- **AUTEFA Solutions Carbon Card:** enables a very good fiber separation with unidirectional orientation.
- The card for processing carbon fibers can additionally be combined with **Crosslapper TOPLINER**, in order to influence the fiber orientation, the surface weight and the width of the nonwoven.

FOR FIBER BONDING THE FOLLOWING MACHINES ARE AVAILABLE:

- **Needle Loom Stylus:** enables mechanical web bonding and offers the possibility to process 100% carbon fibers.
- **Thermobonding Oven HiPerTherm:** by adding a thermoplastic fiber multifunctional nonwovens are manufactured by thermal bonding.

AUTEFA Solutions combines reliable technologies and long-standing experience of the well-known companies AUTEFA, Fehrer, F.O.R. and Strahm Hi-Tex and is part of China Hi-Tech Group Corporation (CHTC). AUTEFA Solutions offers sophisticated and innovative solutions for the processing and recycling of carbon fibers. By choosing the right process for web forming and web bonding the properties of the produced carbon fiber nonwoven can be optimized for all required applications.

Since 2010 the company is concerned with the re-utilization of recycled carbon fibers to carbon fiber nonwovens and has already successfully placed in the market two industrial production plants and one laboratory plant. The new "Center for textile lightweight engineering" of the Saxony Textile Research Institute (STFI) is equipped with state-of the art plant technology and particularly bears the signature of AUTEFA Solutions company.

FROM FIBER RECYCLING TO NONWOVENS:

- For carbon-, glass-, aramid- and natural fibers
- Turnkey lines
- Recycling of carbon and composites
- Fiber opening and fiber preparation
- Web forming
- Web bonding (mechanical and thermal)

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