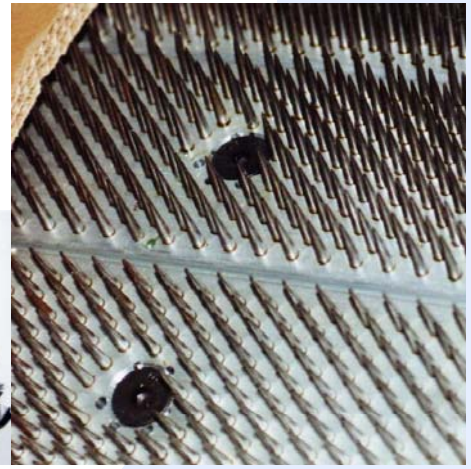
Textile recycling at STFI

SÄCHSISCHES TEXTIL FORSCHUNGS INSTITUT e.V.

Main fields of research:

- cutting and tearing of textile waste, also from special fibres, like carbon, glass, aramid, processing of plant fibres
- material cycles and recycling friendly construction, e.g. for car interior equipment, upholstery or textile packages
- nonwovens and other products made of reclaimed fibres
- use of processed waste material for filling in in composite structures
- emissions of nonwovens made of recycled materials



1. Classical textile waste recycling

Equipment for recycling of textile waste material coming from production or used textiles into reclaimed fibres or pieces

Broad installed equipment to manufacture fibre-based carded, airlay or airlaid nonwovens bonded by needle-punching, stitch-bonding and thermo-bonding from lab scaled plant (0.6 m working width) to several semi-industrial scaled plants (up to 2.6 m working width)

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2. Strand-shaped textile waste material and trim edge waste

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- Manufacturing of ropes and strands by KEMAFIL® technology (sheathing technology)
- Production of grids and mats for different applications (erosion control, renaturation of post-mining landscapes, floating islands,…) → already used in industrial scale for the production of erosion control mats






3. Waste to Airlaid – nonwovens from short fibres and dust

Example 1

- Textile glass fibres (shreddered production waste)
- Nonwovens with 450 … 700 g/m²
- 80 % glass fibres (2 mm to 12 mm); 20% bico fibres
- Thermally bonded
- Application as insulation material or plastic reinforcement

3. Waste to Airlaid – nonwovens from short fibres and dust

Example 2

- Recycling of tire cord (fluff from recycling of used tires)
- Nonwovens with 50 … 400 g/m²,
- 80 % tire cord fluff, size 0.5 to 2 mm; 20 % bico fibres
- Thermally bonded
- Good capacity to absorb oil

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4. Recycling of synthetic nonwovens

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- Agglomeration of trim edge waste of spunbond nonwovens, the waste is grinded between metal plates and through the friction the material is sintered and agglomerates
- Material is re-supplied in the production process

Recycling of carbon fibres

DEUTSCHER ROHSTOFF Effizienz Preis

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- Mechanical web formation by means of carding machine and using 100% carbon fibres or blends with other fibres components
- Fibre processing into webs by carding machine with crosslapper or at random laid web unit
- Bonding of nonwovens by needle-punching and/or stitch-bonding
- Carbon fibre nonwovens show properties qualifying them for the application in light weight construction
- In the meantime it is also possible to produce a staple fibre sliver from 100% rCF with subsequent inline-bonding into a strand-shaped textile semi-finished product

Photos: STFI