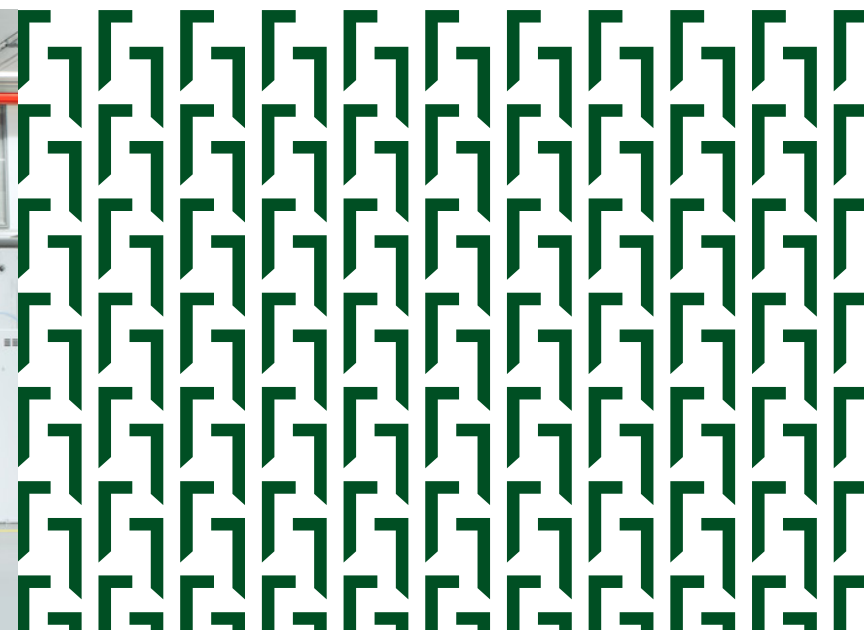
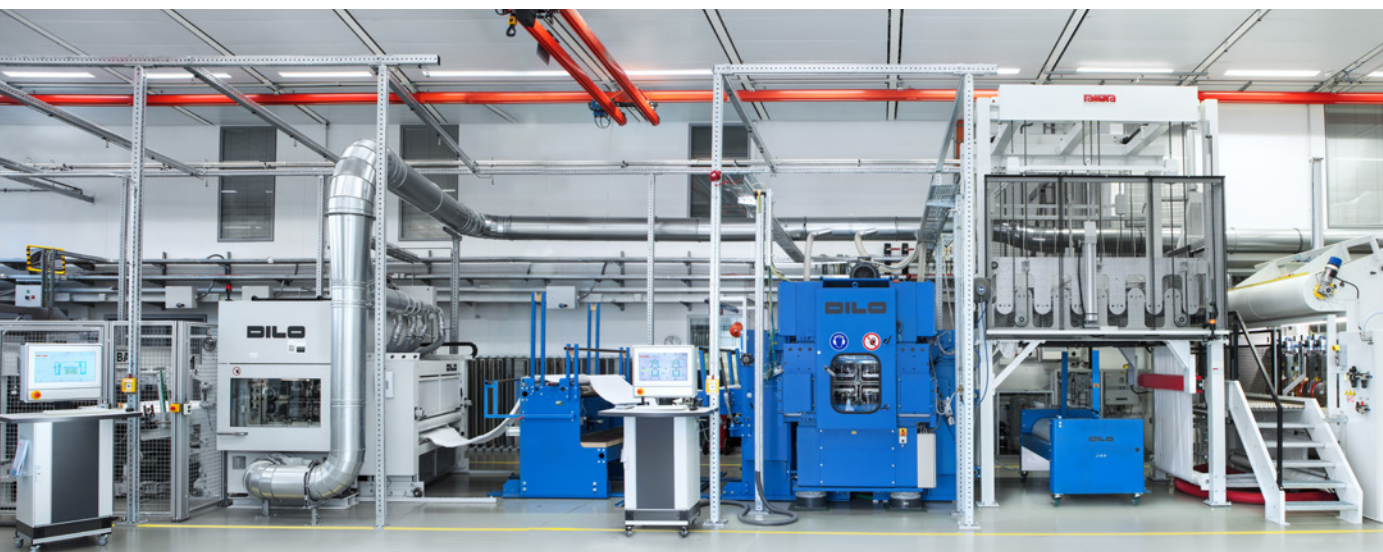


# Nonwovens

Staple fiber needle punch line – Our technology facility for your production development



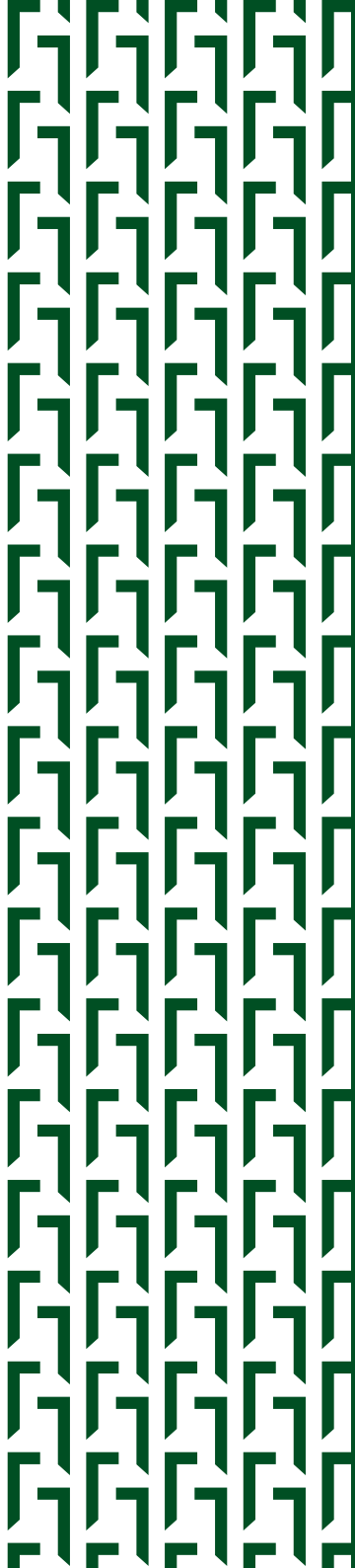
## Groz-Beckert as your development partner

As a development partner, with its staple fiber needle punch line, in-house application advice and expert team from the Technology and Development Center (TEZ), Groz-Beckert offers a service that is unrivaled worldwide. The line is available in different versions for tests and joint projects in both needle and textile development. Thanks to the process knowledge built up internally, you benefit from professional advice. The focus is also on optimizing your products and processes. The line also offers you the opportunity to carry out test series. Groz-Beckert's comprehensive concept helps to prevent resource bottlenecks and downtimes on customer lines.



### Utilization concept:

- Customer projects/trials/joint development
- Test series
- Own projects
- Groz-Beckert Academy, universities, etc.



# Contents

Groz-Beckert as your development partner	2
The technology – from fiber to nonwoven	4
Total line configuration	6
Utilization options 1–4	8–9
Details of line components	10
Application technology	12
Technology and Development Center (TEZ)	13
Groz-Beckert Academy and myGrozBeckert App	14

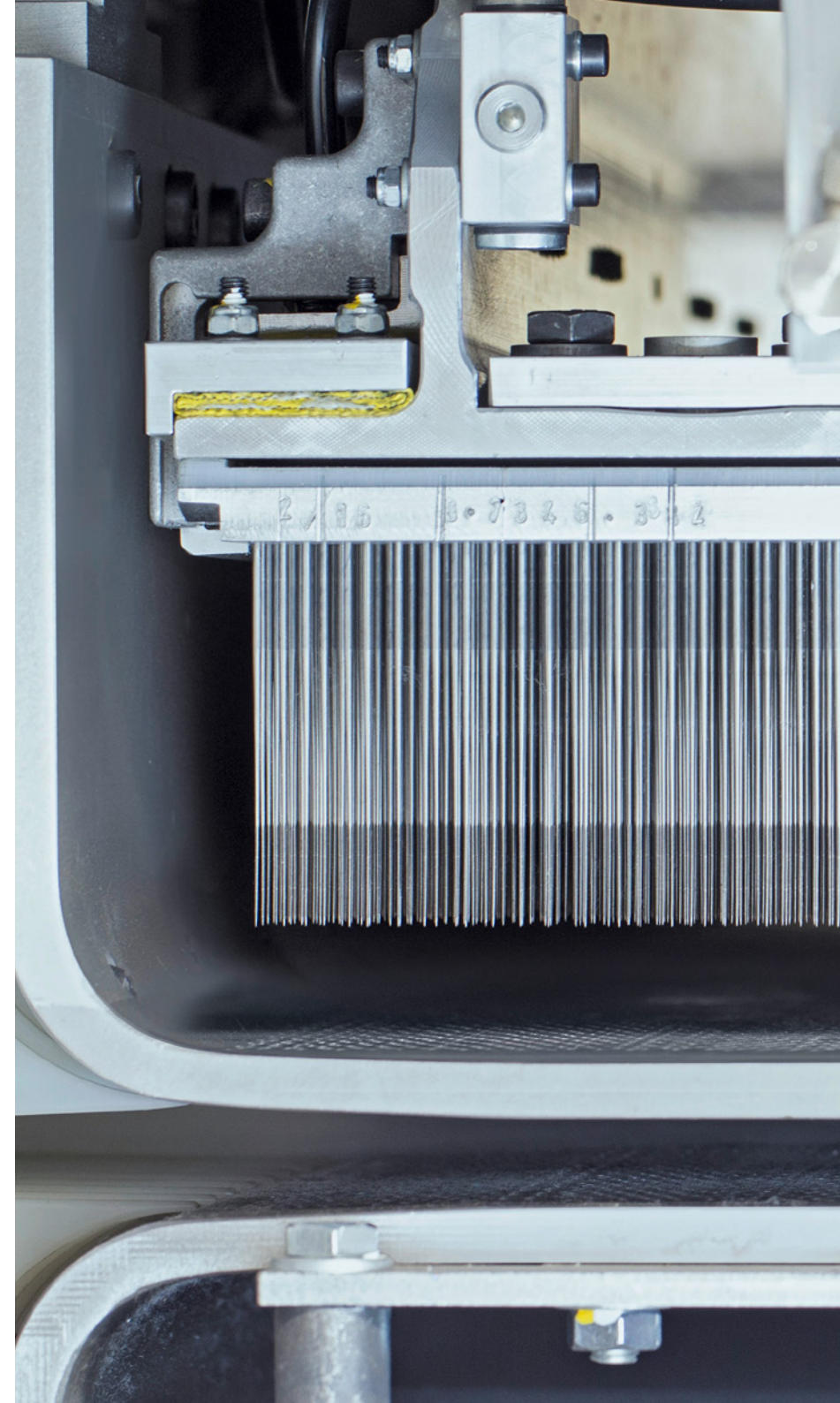
## The Technology – from fiber to nonwoven

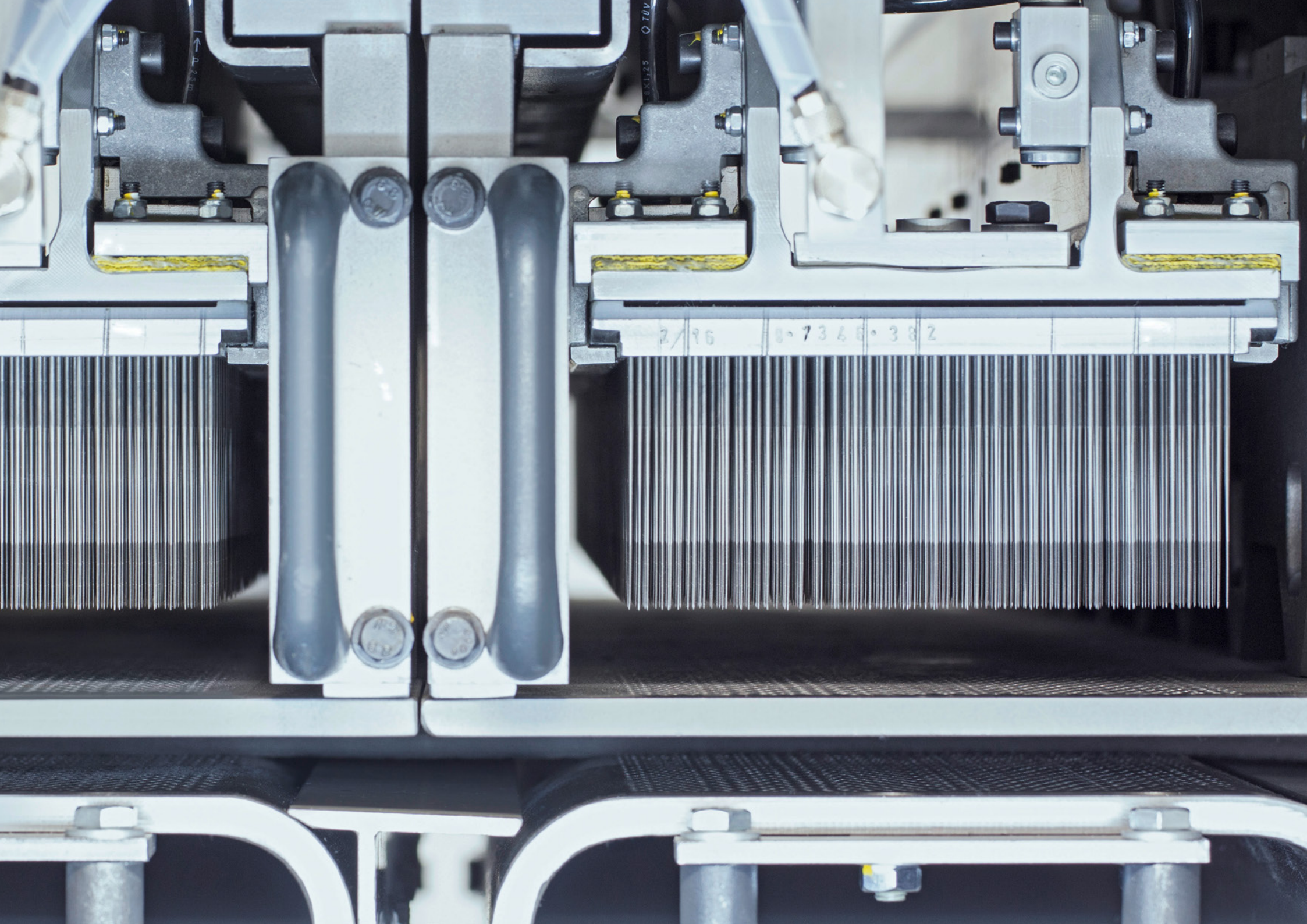
**Nonwovens are textile fabrics made entirely or in large part from fibers. At the Groz-Beckert Technical Center Felting fibers are mechanically bonded by needle punching, which means continuous process from fiber to needle punched nonwoven.**

Fibers enter the line in the form of bales. Bale openers gently open the firmly compressed fibers. In subsequent steps the fiber tufts are purposefully opened, blended, separated and then pre-opened. Using the components dosing opener, card feeder and suction conveyor belt, the fibers are uniformly fed in. Then the fiber flock mat, its weight and uniformity ensured by an electronic belt weigher, is fed into the take-in rollers of the nonwoven card. The card opens the fiber tufts to individual fibers and, using various roller combinations, merges them together into a uniform fiber web. This fine fiber web is layered in the downstream crosslapper to a defined width and number of layers until the necessary fabric weight has been reached.

Subsequently, the web can be stretched by a web drafter in order to adapt the fiber orientation and fabric weight to the requirements of the end product. A special compression and feeding system also optimally feeds bulky nonwovens into pre-needling. During needling the loose fibers are reoriented and entangled with the help of needles with barbs on their working parts. This increases the friction between the fibers and also the strength of the whole fabric. Finally, the nonwoven can be cut and wound to the desired width.

Needle punch unit of a Dilo DI-LOOM OD-II 20





2/96 8-7346-382

## Total line configuration

The line can manufacture felts with fabric weights from 50 to 1,500 g/m<sup>2</sup> and a width of 1,500 mm at pilot plant scale. A wide variety of fibers and fiber blends can be processed, as well as other materials such as woven fabric, knitted fabrics and foils. The line is primarily laid out for applications with a fineness range of 0.9 to 17 dtex and a fiber length of maximum 90 mm. Coarse fibers can be processed within limitations, for example, the line reaches a throughput of up to 400 kg/hour for a polyester blend with 6.7 dtex.



Fiber opening

With a product portfolio containing thousands of needle types, Groz-Beckert offers a wide range of options for improving your products and developing new products. There is also the option of adjusting the humidity in the Technical Center according to your needs in order to simulate production conditions, for example. Alongside the use of the line, Groz-Beckert

offers inspections accompanying the test: Thickness, fabric weight and air permeability, as well as tensile strength and the nonwoven profile can be tested directly in the Technical Center Felting to enable a quick response to changes in product properties and to adapt testing parameters. Penetration force, for instance, can also be measured.



Nonwoven card with crosslapper and web drafter

Information on our accredited  
central laboratory



Needling

Textile, chemical and/or metallurgical tests can also be carried out in accredited in-house laboratories. Short paths facilitate fast response times, interdisciplinary expertise and synergy effects within the Technology and Development Center (TEZ).



Measuring of penetration force

**Line specifications:**

- End product: 50–1,500 g/m<sup>2</sup> up to a width of 1,500 mm
- Material: Fibers and fiber blends as well as other materials
- Fiber fineness: 0.9–17 dtex
- Fiber length: 38–90 mm
- Other fiber types, finenesses and lengths on request



## Utilization options – flexibility from fiber to needled nonwoven

**Groz-Beckert offers you four possible  
utilization options for the staple fiber  
needle punch line:**

### **Utilization option 1: Use of the entire line**

From the fiber bale to the main needling with subsequent winding, all line components can be used.

**Fiber opening and blending > fine opening > nonwoven card > crosslapper > web drafter > pre-needling > main needling > winding**



**Utilization option 2:  
Use of the facility from the feed point of  
the bale opener until after the roller card**

For testing the processability of fibers within the carding process. The fibers are extracted after the roller card.

**Fiber opening and blending > fine opening  
> Carding line**



**Utilization option 3:  
Utilization of the line beginning with the  
feeding point of pre-needling**

After feeding in a slightly pre-needed fabric, it can be pre- and main needled.

**Pre-needling > main needling  
> Winding incl. cutting device**



**Utilization option 4:  
Use of main needling**

After feeding in a pre-bonded web, needling tests can be carried out.

**Main needling > winding incl. cutting device**

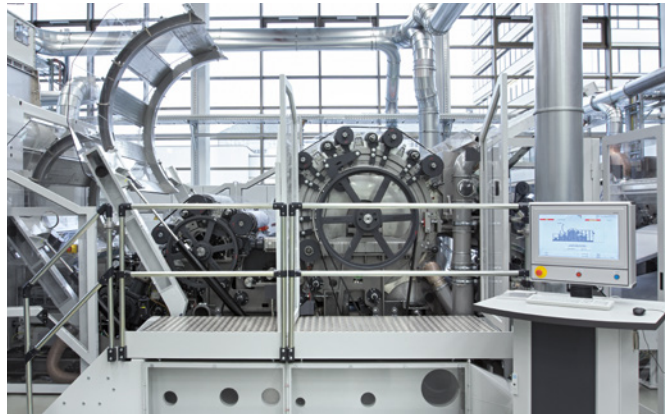
## Details of line components



### Fiber-opening and blending

Dilo Temafa

- 2x Baltromix
- Carding willow
- Resin applicator: capacity 500 l
- High-capacity blender
- Width 1,200 mm
- Feeding point for utilization option 1



### Nonwoven card

Dilo Spinnbau

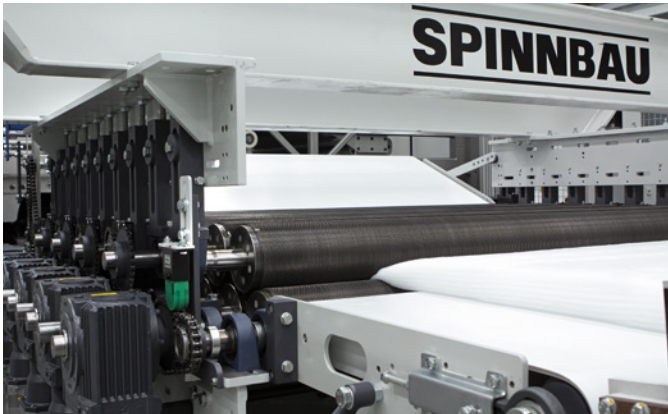
- MultiCard MC 3-5 CC
- Double doffing cylinder with condensing roller
- Working width 1,500 mm
- Fabric-weight regulating system



### Crosslapper

Dilo Machines

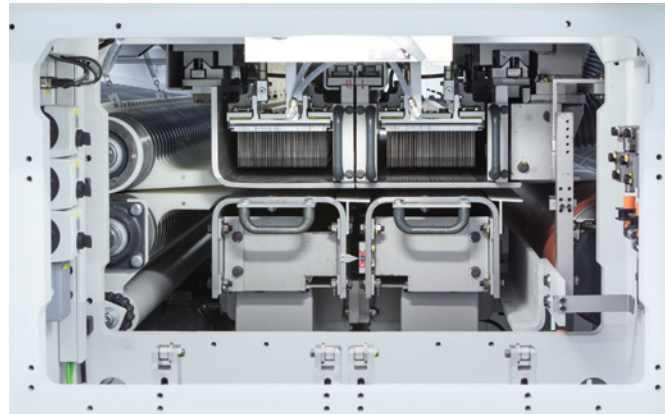
- DiloLayer, DLBS
- Horizontal two-apron layer
- Max. laydown width 2,000 mm
- Max. input speed 80 m/min
- Max. web height 300 mm



### Web drafter

Dilo Spinnbau

- Web drafter VST19
- Max. working width 2,000 mm
- Feeding point for utilization option 2
- Optional bypass



### Pre-needling

Dilo Maschinen

- DI-LOOM OD-II 20
- Needle board pitch (needle/m)
  - 2x 4,500
  - 1x 1,917 & 1x 4,500
- Max. working width 2,000 mm
- Other needle densities available upon request
- Feeding point for utilization option 3



### Main needling

Dilo Maschinen

- DI-LOOM OUG-II SB 15
- One-board operation from top: 1,917 needles/m
- One to four-board operation and tandem arrangement, alternating or simultaneous. Needle board pitches (needles/m): 5,036, 8,000, and further pitches and partial configurations on request
- Max. working width 1,500 mm
- Feeding point for utilization option 4
- Winding incl. cutting

## Application advice

### Technical Center Felting – worldwide from consultation to solution

We offer you a unique service package for application advice. With the help of the Technical Center Felting, specific solutions can be developed efficiently. Comprehensive expertise in all areas of the nonwovens industry is available. The focus here is on the manufacture of needled nonwovens.

Experienced experts work out solutions with you to a wide range of issues. The support ranges from the selection of the optimal felting and structuring needles, to basic tests, process optimization and product development.

Careful listening, clever combinations and innovative thinking are only some of our strengths. Our experts from the fields of felting, carding and from the TEZ (Technology and Development Center) will do everything in their power to identify the best approach for your individual requirements.





## Technology and Development Center (TEZ)

**On about 25,000 m<sup>2</sup> the TEZ combines scientific equipment and orientation with the economic standards of a successful industrial enterprise. The core goal of achieving concrete economic benefits from every project rests on a sound scientific basis. The paths to added value can vary.**

### A unique platform

Committed textile experts, real production machines and facilities, longstanding experience and comprehensive knowledge – excellence is merged at the TEZ. Competencies for different textile production and joining procedures are uniquely bundled and synergies generated.

In addition to the technical centers, the Groz-Beckert central laboratory has areas for material testing, a chemistry laboratory and a textile laboratory.

With no loss of time, the company can fall back on its wide-ranging products and far-reaching machine-building know-how. This facilitates testing and allows existing products to be adapted to new fields of application.

### The TEZ in a few words

- Joint development of market-ready products and applications related to textiles
- New potentials and boosted efficiencies along the textile value chain
- The offer: knowledge transfer and training, services and testing, co-development and co-innovation
- Competence centers for textile production and joining procedures – short paths from ideas to series-production readiness
- Bundling of the competencies of the Groz-Beckert Group: analysis, needle and parts production, mechanical engineering competence



## Groz-Beckert Academy

**Apart from offering personal application advice, Groz-Beckert has always supported their customers by providing product as well as basic knowledge along the textile value chain. Since 2012 this part of the comprehensive service package has a name: The Groz-Beckert Academy has set itself the task of sharing and passing on knowledge, imparting experiences as well as making know-how and competencies accessible.**

Whether it is knitting, weaving, felting, tufting, carding or sewing – the Groz-Beckert Academy offers a comprehensive training program that covers all the most important textile production and joining methods. Using a mix of theory and practice, our experienced trainers share expertise and know-how. As a result, the participants are optimally equipped for their tasks within the textile world.

The course range covers various basic, advanced and special training courses, which are held in the Technology and Development Center (TEZ) in Albstadt. Moreover, the Groz-Beckert Academy offers individual trainings on-site at the customer's location.

All courses are offered in German and English. Selected courses are also held in additional languages, such as Spanish and Chinese.



**Groz-Beckert KG**

Parkweg 2

72458 Albstadt, Germany

Phone +49 7431 10-0

contact-sewing@groz-beckert.com

www.groz-beckert.com

Any depictions of our products are not to scale and are intended only for purposes of illustration. They therefore do not reflect the original.

TM = Groz-Beckert uses the symbol for product identification and reserves the corresponding rights to this symbol.

® = Registered trademark of the Groz-Beckert Group.

© = This publication is protected by copyright.

Groz-Beckert reserves the right, in particular, to take legal action against reproduction, processing, translation or distribution that is carried out without the express written consent of Groz-Beckert.

