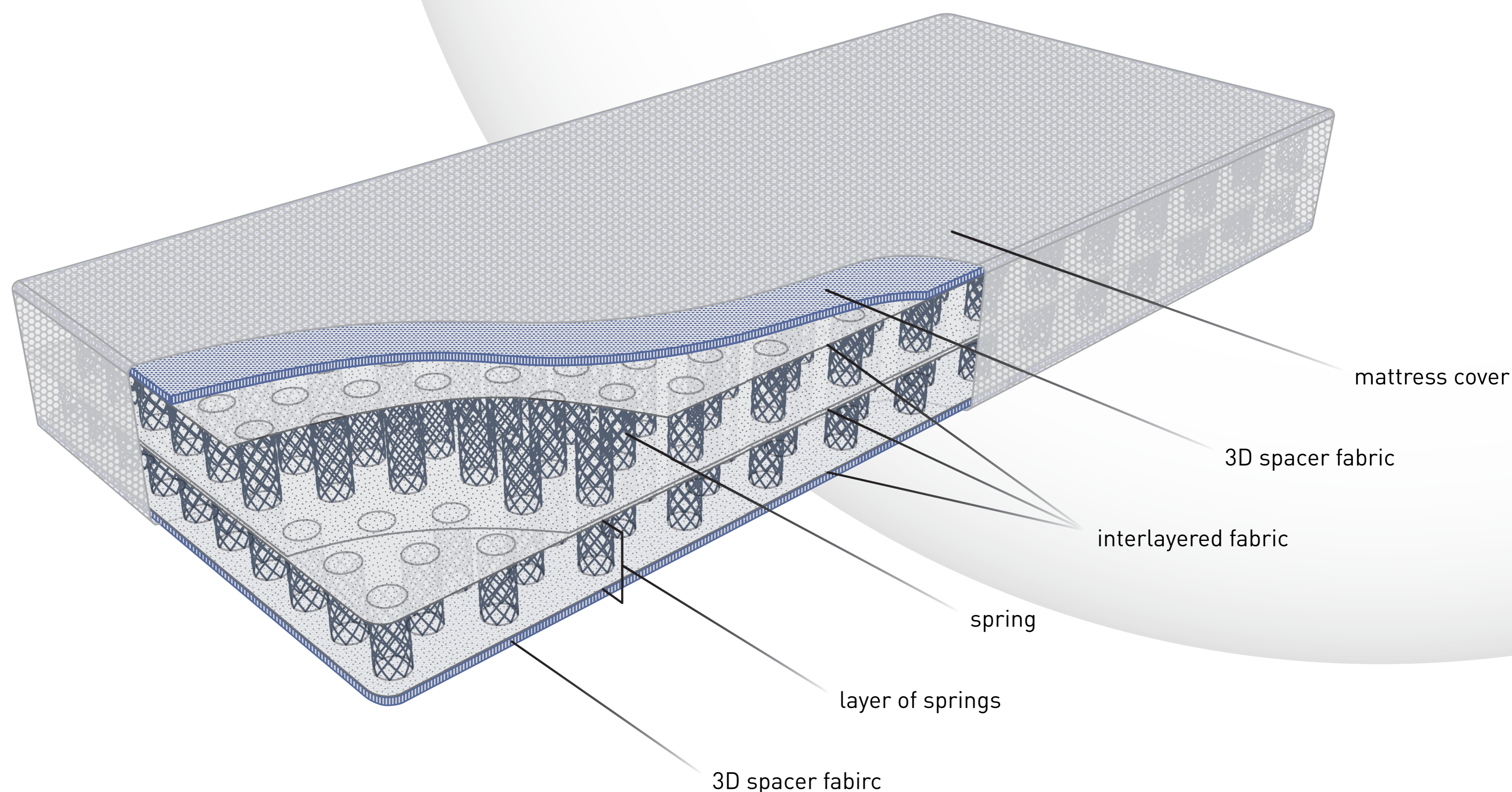
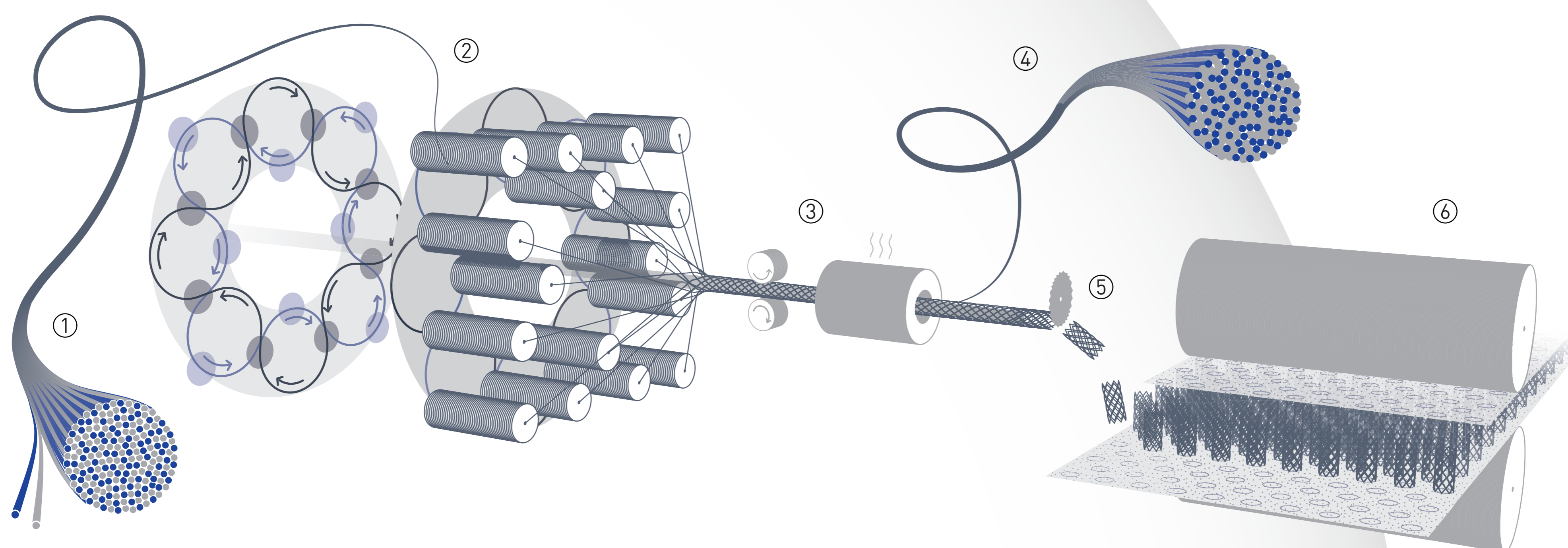
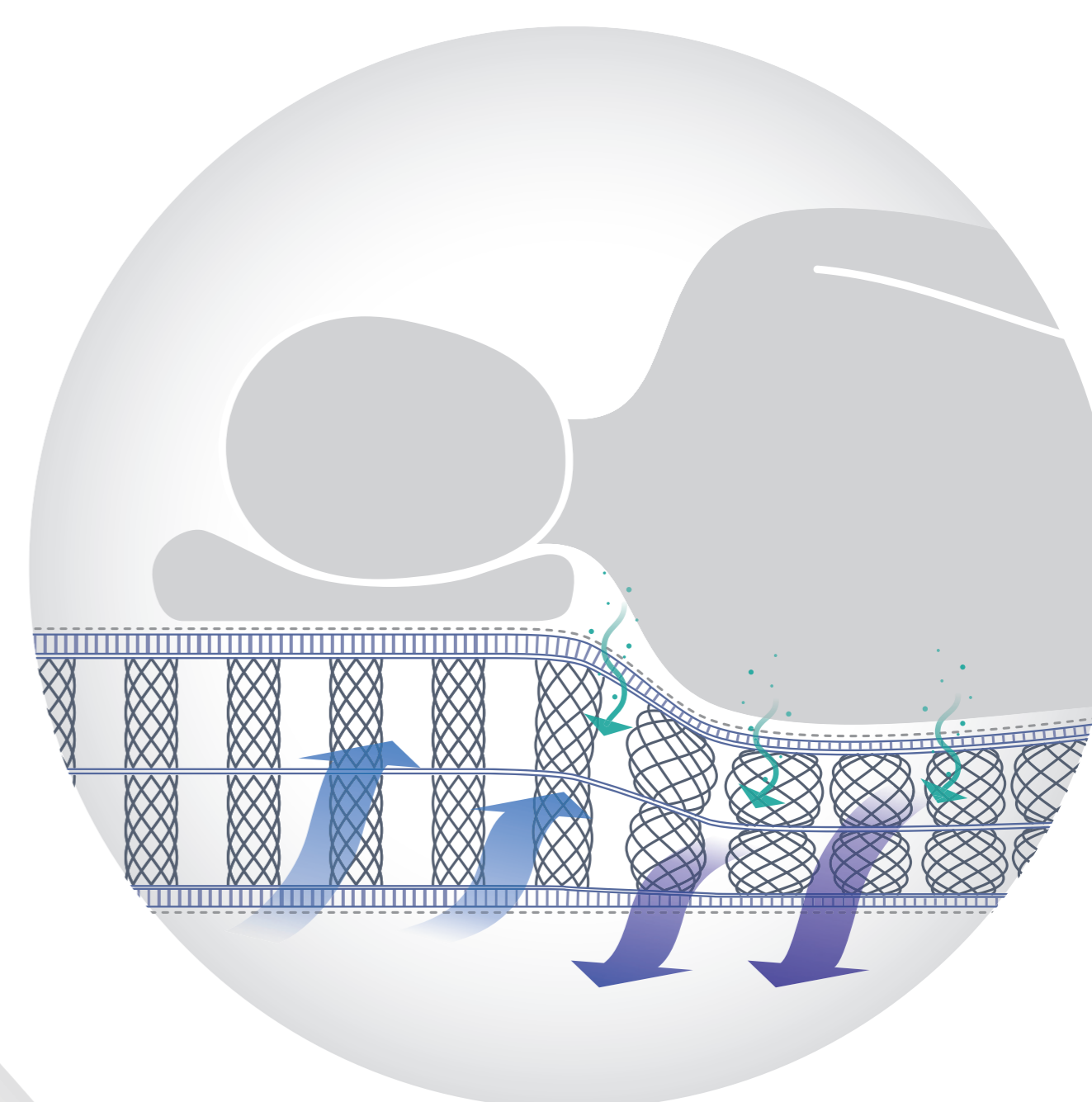


Federkern 3.0



'Federkern 3.0' ('innerspring 3.0') is a new type of a innerspring mattress that differs from conventional mattress regarding its material and its spring principle. The exclusive use of PLA (polylactic acid) - a biodegradable thermoplastic - and sustainably grown cotton allows the composting of the whole mattress. Furthermore, the high cotton content of the innerspring and the open and airy structure ensures a balanced content of moisture - both inside and outside of the mattress, because cotton fibers can absorb up to 65% of their own weight in water. Thus, the formation of deleterious mold in and under the mattress is counteracted.

The body fluid that is transpired during the sleep gets through the mattress cover and the 3D spacer fabric into the mattress and is absorbed there by the cotton fibers. The airy springs, the large distance between the springs to each other and the net-like structure of the fabrics allow the air to circulate inside the mattress. With every movement of the body, an air exchange takes place in the mattress (convection): warm and moist air penetrates to the outside - fresh and dry air to the inside. Thus, the cotton fibers release the absorbed moisture again. By varying the material proportion of the springs, different degrees of hardness and thus different ergonomic features can be achieved.



Manufacturing process of the spring

A homogeneous blended yarn is spun from PLA and cotton fibers ① and gets braided to the spring structure in a braiding machine ②. This

braided structure is then heated ③, whereby the PLA-fibers melt to each other and around the cotton fibers ④, which creates a fiber matrix composite. The stiffness of the braided sleeving increases after cooling down. After that short and

dimensionally stable springs are cut from the rigid structure, which are then placed between two textiles ⑤. Finally, two hot rollers melt the upper and lower ends of the springs to the interlayered fabric and fix everything to one layer ⑥.