Greater laying widths, faster material throughput, and an exact nap lay are the most important requirements for automation systems for non-woven layers. With these aims in mind, AUTEFA with its headquarters in Friedberg and Siemens developed a highly efficient non-woven layer which operates with a consistent product quality. The solution includes all basic functions as standard. Hardware and software can be easily scaled to meet requirements. Simotion D is used in conjunction with WinCC on a Simatic Panel PC. The Sinamics S120 drive system has been combined with 1FT6/1FK7 High dynamic servo motors. Several panel variants are available for the operation. The drive system is linked to the master process control by Ethernet; the machine periphery is linked by a Profibus interface to the controller.

Controlled nap lay

In a non-woven layer, the fiber nap material runs between the feed belt and the cover belt from the traversing upper carriage to the laying carriage until it is laid on a run-out table in zigzag form. The speed ratio of the feed table to the run-out table determines the number of layers and thus the material thickness. With the Simotion solution a precise, fast motion control and correct traversable speed profiles can be implemented. New technological drive profiles can also be preset.

Ideal for topliners

The technology control in the vicinity of the drive with Simotion D increases the non-woven quality with a considerably improved position accuracy. The technological knowledge of the non-woven process has to be considered in the profile control of the non-woven layer for an optimal product quality. For example, the material shrinks more at the edges than in the middle due to stretching during later solidification of the non-woven. This effect is compensated by the patented AUTEFA profile control. The prerequisite for this precise result is the highly accurate tracing of a laying carriage speed profile, the equally exact edge positioning as well as a fast reversing movement. The specific belt control in relation to the laying carriage and a nap accumulation over the whole laying width while switching from one carriage to another achieves a controlled nap laying throughout the process.