

Making quality of nonwovens measurable

Hanwha Advanced Materials Germany GmbH utilises Mahlo quality control

Hanwha Advanced Materials Germany GmbH has broken new ground with an in-house nonwoven production facility for its components. In order to optimize the production processes, the manufacturer of high-performance materials uses a quality measuring system from Mahlo.

The headquarters of Hanwha Advanced Materials Germany GmbH is located in the heart of Bavaria, in the Sieben-Täler town of Dietfurt. The manufacturer of high-quality, acoustically effective solutions for automotive engineering belongs to the Korean Hanwha Group, a conglomerate with around 60,000 employees worldwide and a turnover of 55 billion US dollars. The German site currently employs around 250 people who, as Tier 1 suppliers (direct suppliers) for all well-known German automotive manufacturers, primarily produce acoustically effective components such as vehicle underbody panels and textile wheel arch liners. The multilayer structure of the vehicle parts, typical for Hanwha, ensures that noise generated by splash water and road surface is minimised. Up to seven different material layers are required for the desired result. This demands a lot from production.



Fig. 1: Hanwha Production

Own nonwoven fabric ensures top quality

“The particular challenge with textile wheel arch liners is to achieve high acoustic absorption without neglecting robust mechanical requirements,” explains Martin Hering, head of materials development at Hanwha. In order to offer customers maximum quality, Hanwha already wanted to influence the use of materials, Hering continues. Therefore, it was decided to produce its own nonwovens in order to guarantee top quality from the very first fibre. For this project, the Hanwha managers were also looking for a partner who could help make the production processes as reliable and efficient as possible. They came across Mahlo GmbH + Co KG in Saal an der

Donau less than 50 kilometres from the company's site. The traditional company from Lower Bavaria is known for its high-quality systems for measuring and controlling important quality parameters for web materials. With the Qualiscan QMS-12 quality measuring system, Mahlo not only presented the perfect solution for Hanwha – the corporate culture of the two companies also fits together.

Hanwha was founded in 1952 after the Korean War with the ambitious goal of reviving the economy of the battered country. Seven years earlier, the engineer Dr. Heinz Mahlo laid the foundation stone for Mahlo GmbH with his “electrotechnical workshops”. Both companies have continuously developed over the past decades and have written unparalleled success stories. Hanwha has integrated more and more areas into the group and thus developed into a global corporation. The most recent addition was Hanwha Advanced Materials Germany GmbH in 2015. In addition to market leadership in the field of automatic textile straightening systems, Mahlo has also assumed a leading position in process and quality control and expanded this position over the years. The accumulated know-how and experience of the machine manufacturer convinced his partner in this case as well. “The system impresses with its reliability and variability as well as simple operation and integration into the production line,” describes Hering.

In order to reliably meet the requirements of the automotive sector, Hanwha has set itself high standards for the process. This means that very narrow tolerance limits are used in production. In nonwoven production as a preliminary stage for the forming process of textile wheel arch liners, the nonwoven normally consists of a mixture of PP and PET fibres. “Here, in addition to the primary determination of the material mixture and the fibre use, the design of the carding machine and the needling technique influence the final nonwoven product,” explains the head of material development. The possibility of minimizing product fluctuations in the company's own production helps to achieve low reject rates in the subsequent process steps.

Minimize process fluctuations – optimize lateral profile

Mahlo's experts have installed a Qualiscan QMS-12 quality measurement system with the Gravimat DFI sensor, tailored to Hanwha's needs, to determine the basis weight of the nonwoven blend. This allows the supplier to determine whether the longitudinal and transverse profiles of the goods comply with the specifications. “We installed our Webpro M measuring frame at the point in the line after the webs were laid crosswise and continued into the needling machine,” describes Mahlo sales manager Thomas Höpfl. The integrated Gravimat DFI sensor traverses the running web continuously. A multi-channel receiver with double ionization chamber evaluates the incoming measuring radiation and determines the basis weight of the fabric by exact calculation of the measured values. Due to the optimized sensor design, temperature fluctuations in the measuring gap and the position of the web in the measuring gap (pass-line effect) have no influence on the measured value or can be compensated. The recorded measurement data is transmitted via an interface to adapt the incoming profile in the needle machine. Höpfl is certain: “To obtain such a uniform product is only possible with our device. This is because not only is the weight determined in the longitudinal direction, but an even lateral profile is also ensured.”



Fig. 2: Mahlo Qualiscan QMS-12 integrated in Hanwha production line

The results also convince those responsible at Hanwha. “The Mahlo QMS helps to ensure continuous product monitoring in nonwoven production,” says Hering. In this way, one can reliably monitor and control whether the specified basis weight is adhered to. “As a result, the reject rate is consistently at a very low level. But it wasn't just the machine performance that convinced the global player. “Due to the Korean mentality, Hanwha is not only interested in short-term decisions, but also in long-term planning,” says Hering. Mahlo's service principle fits the concept perfectly. The service center can be reached 365 days a year. The Team Viewer Tool makes it possible to remotely assess the condition of the Mahlo system, locate errors, update software or perform data backups. This allows problems to be solved quickly and without travel costs. “Thanks to the high degree of in-house production, we can ensure a supply of spare parts well beyond the specified periods,” adds Höpfl.

The high demands that Hanwha places on its own products were also evident in the Mahlo systems. “The system reliably supplies exactly the data that we need to optimize our production processes.” This creates the best conditions for a long-term, successful business relationship.