

Hammer-IMS

Non-nuclear solutions for inline quality control of basis-weight

The new m-ray technology of the Marveloc 602-Curtain system is an alternative to conventional radioactive and nuclear measurement technologies. Silac Industrie, La Rochefoucauld/France, uses the solution to measure the basis-weight of felts and nonwovens of various widths – without requiring radioactive emission related licenses, training, protection and radioactive safety precautions. The 4-headed scanning machine is tailored to handle the complete range of widths of the materials. Advantages of the inline quality control system are a combined ecologic operation, high material coverage, and low TCO (total cost of ownership).

Inline felts and nonwovens quality control

Silac masters needlepunch technology to make flexible use of the broad availability of materials including natural fibers. The company uses the clean electromagnetic m-ray technology of Hammer-IMS, Hasselt/Belgium. Silac automatically feeds felts of up to 3 m wide through the measuring system. During inline operation, 4 sensors travel in cross-machine direction to obtain high material coverage. The basis-weight measuring solution measures material grammage uniformity, meaning it can detect sporadic anomalies and process drift. The system is being used for many different materials because it supports a high standoff distance and a plethora of web widths.

Non-contact quality control

With governments phasing out nuclear and radioactive measurements, Silac opted for the clean m-ray basis-weight measurement technology of Hammer-IMS. Its essential

building block is a multi-gigahertz electromagnetic wave. These waves are comparable to the waves generated by cell phones, with m-rays more than 10 times higher in frequency.

These waves are applied in a radar-like concept to measure the basis-weight of almost any non-metallic material. Recent evolutions in electronics and wireless technologies allow such high frequencies to be generated at an affordable price. With electromagnetic-wave frequencies going up, radars become more precise and thus, so do m-ray-based measurement systems.

The systems transmit m-ray waves, which are slowed down when traveling through the web material. The receiver captures these waves and records the time delay as a meas-

ure for the material's basis weight. The m-rays are non-radioactive because their frequencies are below the visible light spectrum. The radar-like concept ensures that the systems are able to work with high stand-off distances and very heavy materials. This allows m-ray-based systems to be used for quality control even in the first stages of nonwovens production lines where thick base material is processed. In the case of a dry-laid nonwovens production line, Hammer-IMS's solutions can therefore fit in all relevant places in the line. Application of a scanner before the carding stage enables quicker

Fig. 1 Hammer-IMS basis-weight measuring solution at Silac Industrie for inline measurement of grammage uniformity of felts and nonwovens

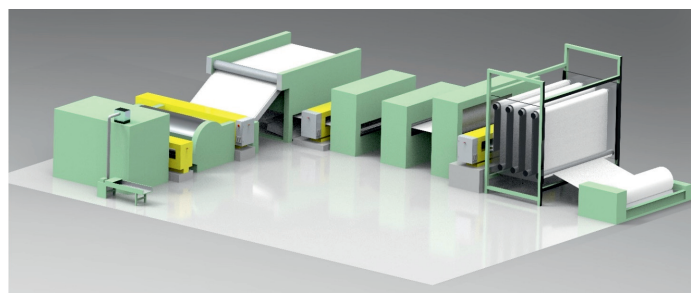


Fig. 2 Hammer-IMS delivers a solution that fits in all relevant positions in a dry-laid nonwovens production line



Fig. 3 Curtain C-frame with an arm length up to 1.5 m for flexible inline, but also offline, basis-weight measurements



feedback to the process and less material waste.

Non-radioactive and non-nuclear measurements

m-rays are by definition non-radioactive and non-nuclear, and therefore do not need special emission-related licenses, training, protection, radioactive safety, etc. This allows the customers to reduce their TCO and realize operational savings.

In addition to a range of in-line solutions, the company offers thickness and basis-weight

measuring systems for laboratory use. The clean offline measurements serve different purposes including production process optimization, material/product development, and investigation of used specimen. The Hammer-IMS measurement modules for OEM integration, mostly supporting single-head measurements, target the segment of machine builders.

New products and developments

Just recently the company introduced the new Curtain C-frame, offering an arm length

up to 1.5 m. This frame can be equipped by a 2nd sensor head which doubles the material coverage.

A new product currently under development targets the plastics industry (extrusion of films and sheets). Apart from optimizations in terms of performance and cost, the product will be more compact to fit the tight dimensional constraints for the plastics industry. The product incorporates a brand new frame, highly accurate and flexible sensor technology, and new algorithmic measurement processing. ■

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