Introduction of an integrated X-ray system for comprehensive mat inspection in panel production

Editorial by Electronic Wood Systems GmbH

Electronic Wood Systems Germany (EWS) offers a complete range of quality inspection systems. A new X-ray system for mat inspection was developed in cooperation of Electronic Wood Systems (EWS) and Siempelkamp. The first devices were evaluated with installations in MDF and OSB forming lines.

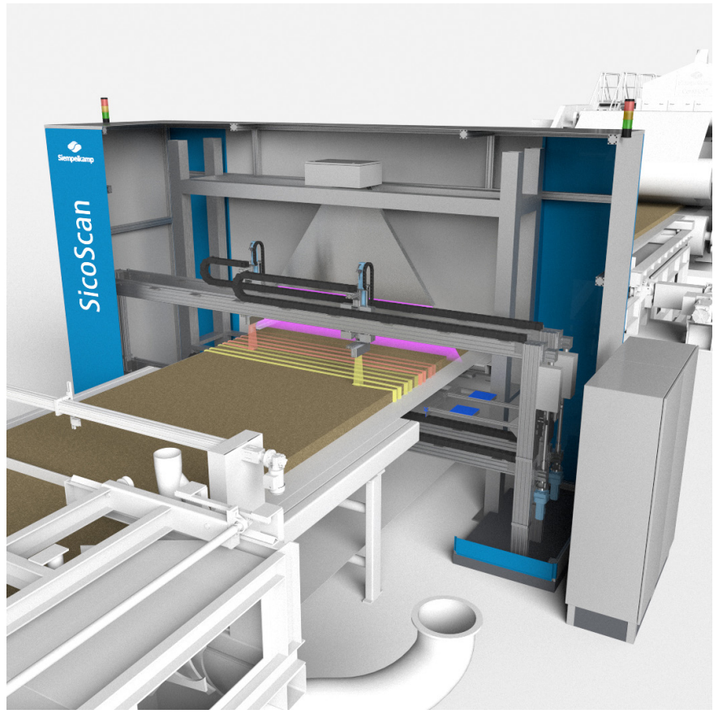
The measuring tasks in panel production are versatile and challenging and reliable inline measuring and control systems are a key factor for Industrie 4.0 in panel production. Inline measuring devices must take into account environmental, material, and process conditions. Today, with machinery and process design moving towards high performance (output), large capacities, and wide product ranges with special focus on thin panels as well as increased quality standards, measuring system technology has to meet the growing requirements, too.

Many measuring tasks are performed by X-ray systems. EWS has developed individual X-ray scanners suited to particular tasks in panel production. MultiEnergy Technology – a core feature of the latest EWS X-ray devices – enables variable measuring parameters. At this, X-ray properties of the gauge are automatically adapted to current area weight based on recipe information, to provide consistently high measuring precision over a wide production range. It can be compared to utilising a micro scale for small objects and a respectively large unit for heavy-duty stuff.

A new device for mat inspection in the forming line is introduced under the brand EcoScan NEO. It has been developed by EWS in cooperation with Siempelkamp, Germany and offers one system with independent X-ray devices for individual tasks. These comprise:

- High-precision area weight measurement by self-adjusting high-speed flying meas-uring heads and
- Intelligent foreign body detection across the mat by self-learning algorithm.

Figure 1: X-ray area weight measurement and foreign body detection installed in OSB forming line.



For area weight measurement, two low-power X-ray units with high-speed detector travel synchronised cross-wise over the mat and provide, e. g., one cross-scan of an 8 ft mat each 2.5 s. Advanced MultiEnergy Technology yields a consistently high measuring resolution of ±0.5 % of the current mat weight along total production range. Forming belt variations are compensated – a vital benefit for production of ultra-thin MDF.

Foreign body detection device comes with fundamentally different design and was developed in cooperation with FORCE Technology, Copenhagen, Denmark. A high-power fan beam covers the complete mat hitting a full-width line detector directly beneath the forming belt. Fine geometrical resolution and intelligent data evaluation facilitates detection of foreign bodies down to 1.6 mm within milliseconds. Regular mat inhomogeneities are considered to avoid false detections.

As common for SicoScan systems in fully-automated plants, the new X-ray system is fully-integrated and requires minimised operator interaction. It has already been proven in installations in MDF and OSB production in Germany and USA.

Figure 2: Mat inspection by flying measuring heads (area weight) and full-width fan beam (foreign bodies).

About EWS

Electronic Wood Systems (EWS) is an internationally-operating high-tech company headquartered in Hamelin, Germany. It was founded in 1996 and is run by the two engineers Hauke Kleinschmidt and Matthias Fuchs. This innovative developer and manufacturer of inline quality inspection systems, spark detection/ extinguishing equip-ment, and laboratory systems for the panel industry has established itself as most innovative company in its field, with hundreds of its high-tech products in operation in panel manufacturing plants all over the world. These systems facilitate improvements of panel quality as well as savings in material, energy, and labour to EWS' customers.

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