

Rethinking **floor inspection** with innovative camera and lighting technology



ColourBrain Flooring 4.0
by Baumer Inspection

The inspection of laminate flooring planks has been part of Baumer Inspection's portfolio since 2003, which comprises inspection systems for process control and defect detection of furniture panels, decorative papers, floorboards and surfaces or edges of furniture parts worldwide. With the further development of the ColourBrain Flooring system, the change and trend in laminate flooring production towards structured surfaces with the natural appearance of a wood structure were taken into account.

Therefore, in the further development of the ColourBrain Flooring 4.0 system, Baumer Inspection has focused on the following goals, which have been implemented:

DEFECT DETECTION

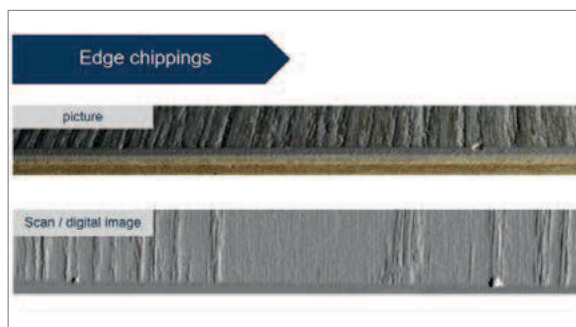
The focus of the system revision is on defect detection even on highly structured surfaces. Milling defects, such as "mousing teeth" or edge chipping, are a defect category in the profiling area. Both lead to a downgrading of the planks and are additionally alarmed so that the machine

operator can minimise the cause of the defective milling.

In addition, the use of UV LED lights enhances the contrast between transparent and milky, as well as missing overlay layers so that weaker and smaller defects in the overlay can be detected.

ASSIGNMENT OF DEFECTS TO PROCESSES

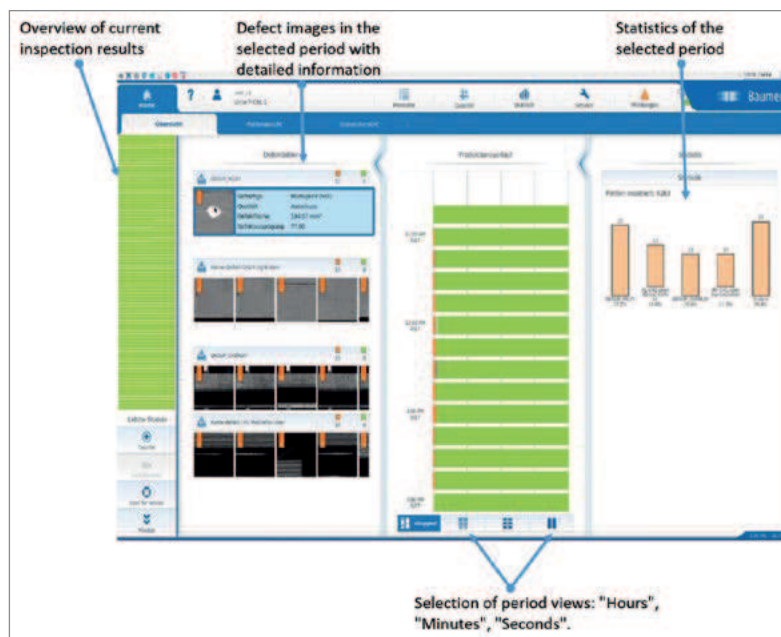
A new feature of ColourBrain Flooring 4.0 is the assignment of defects to processes in which they primarily arise. Among others, a



A poorly milled edge with "mouse teeth" on the left and two edges chipping on the right

distinction is made between: profiling defects, such as defects on the edges and profiles; coating defects, such as pressed decor particles, contamination, as well as overlay defects and paper misalignment; and handling defects, such as damage or scratches.

While the cause of profiling defects can be at least partially eliminated, thus reducing costs, the flooring manufacturer usually does not influence the development of coating defects. However, all detected defective planks are rejected regardless of their cause. The various defects are automatically assigned to defect groups by the inspection system. Quality matrices are used to set the tolerances for each defect group.



Display of defects with detailed information that occurred in the set period

USER INTERFACE

The Flooring 4.0 system features a new, intuitive graphical touch user interface. The Baumer Cockpit provides an overview of the current production. The inspection results with the plank qualities, defect logs and the production statistics are displayed scalable over different periods — from a single view of the plank up to a period of several minutes or hours.

SIMPLIFICATION OF PRODUCT DATA MANAGEMENT

By using templates, Baumer Inspection brings order and clarity to product data management. Similar structured planks are grouped so that there is minimal need to find suitable inspection settings for hundreds or thousands of different flooring items, but only for a handful of templates.

SMART GRADING

Smart grading with tolerating harmless events, such as loose particles and loose milling residues, leads to an increase in the first-choice rate. Harmless incidents such as loose or fluttering particles are detected by the inspection system independently, classified and tolerated, so that the plates are not degraded in these cases.

SYSTEMATIC COMPARISON OF SYSTEMS

Consistent data management enables systematic comparison of several Flooring 4.0 systems in a plant or group, thus ensuring that the same article is assessed with the same criteria in different lines or locations.

COMMISSIONING AND MAINTENANCE TIMES

The Flooring 4.0 is calibrated and preset in a standardised manner at Baumer

so that commissioning can be carried out quickly, and with the shortest possible line downtime, according to the company.

SELF-MONITORING FOR OPERATIONAL SAFETY

Due to the self-monitoring functions and the reporting of changes such as temperature rise, lighting drop, failure of computers, cameras, lights or deposits on lights or mirrors, a high level of operational reliability can be achieved.

Baumer recommends that the function is optimally complemented with the systems ColourBrain V-Shape 4.0 for checking the bevel coating of the bevel line, and with ColourBrain Clip for checking the correct clip insertion after clip assembly. 