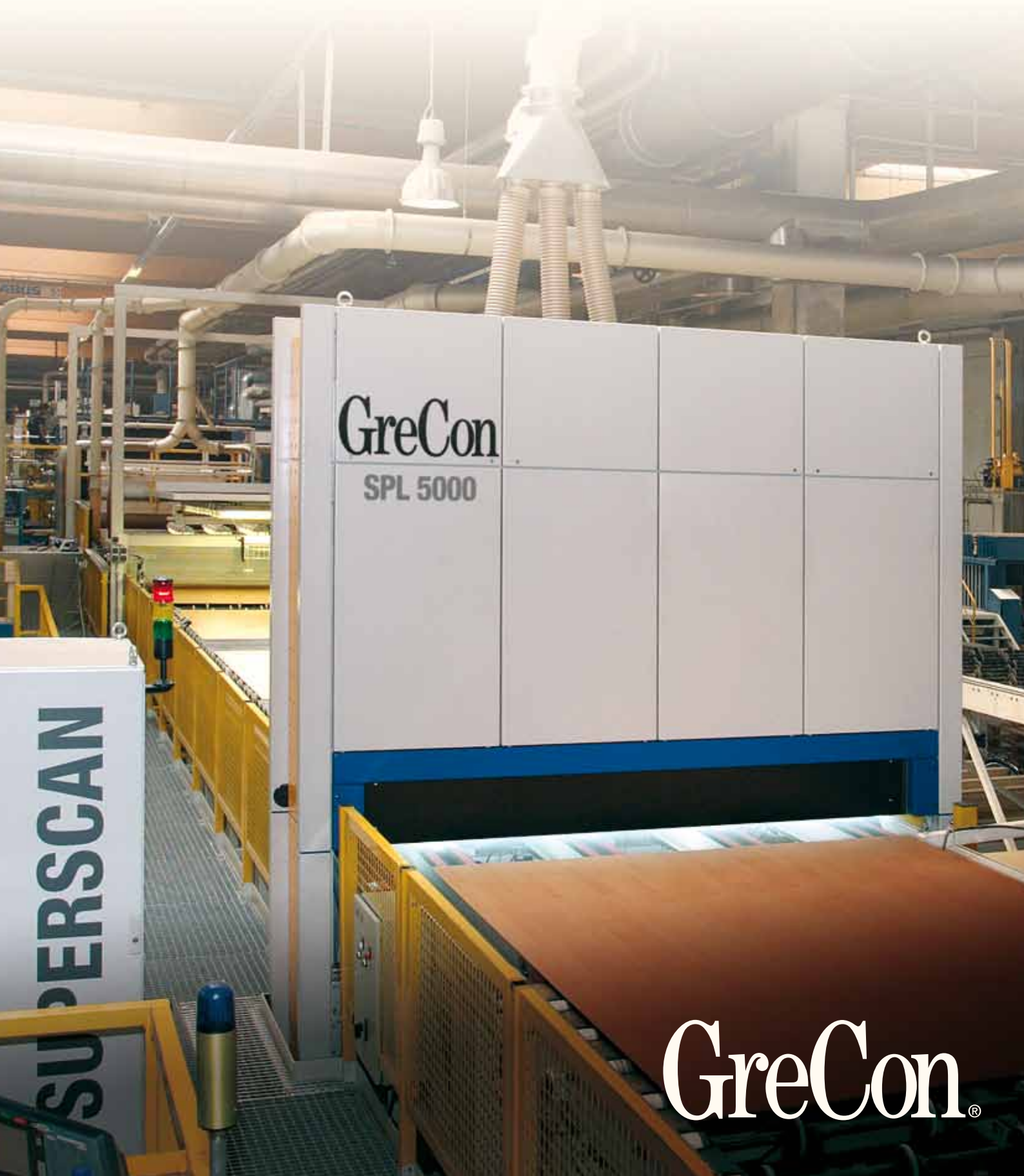


SUPERSCAN

Surface Quality Control
for Wood Based Panels



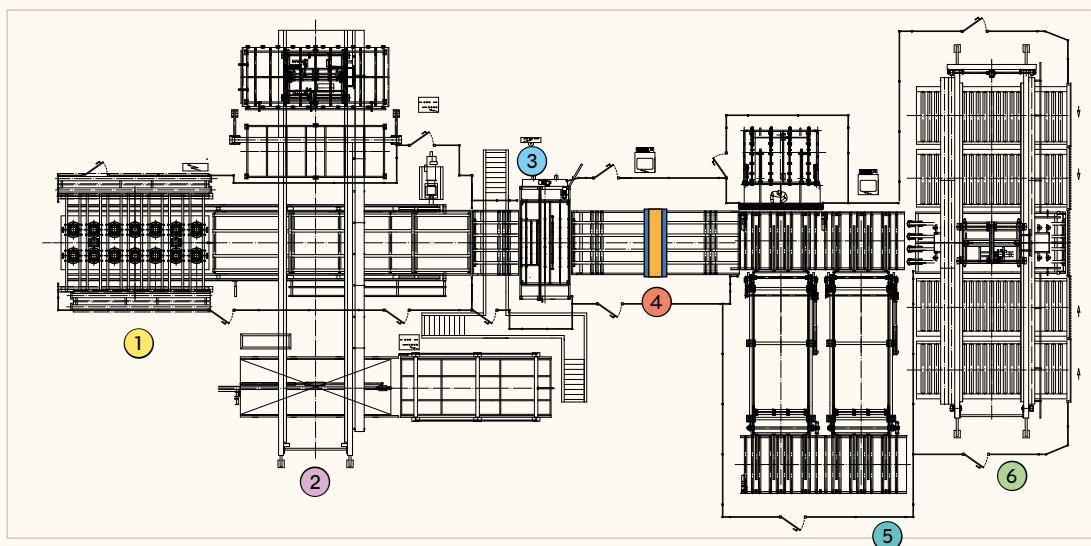
SUPERSCAN

GreCon®

The Task

Due to ever increasing production speeds and new press technologies, the demands on inspections of the panel surface are also increasing. More and more is expected of people as “control instruments”. Inspectors can be easily distracted from their task for brief moments. In this case, panels can reach downstream production processes and the customer without being inspected. This situation can lead to product return claims and unsatisfied customers

Manual Inspection



Layout of a short-cycle system with SUPERSCAN

- ① Short-cycle press
- ② Caul plate changer
- ③ Edge grater
- ④ SPL with conveyor
- ⑤ Cooling
- ⑥ Stacking

The Solution

Image processing as non-contact measuring and inspection technology is nowadays successfully used in all levels of industrial added value. This innovative technology supports the production and qualification of your products and serves the safeguarding and objectification of your production processes. Thus, fast quality control loops in time of production become possible.

You can also profit from these advantages by consequent use of surface inspection systems of the SUPERSCAN family by GreCon. These systems replace the manual inspection and, besides safeguarding production, give freedom for the handling of important tasks by the operation staff.

Automatic Inspection by SUPERSCAN



Inspection Reliability

SUPERSCAN inspects the surface of each panel inline to ensure consistent sorting. Detailed conclusions for upstream production process adjustments are possible through fault and statistics reports. Thus, not only the sorting, but also the entire production process can be optimised. Classification of the panel no longer depends on the subjective judgement of an operator. The sorting quality will no longer be influenced by variance in concentration of the operator. Subjective judgement of people is replaced by the objective inspection provided by SUPERSCAN.

Therefore, the panel inspector can do more productive jobs, e.g., operate several coating machines over long time periods. Repeating faults must be detected as early as possible. This can be accomplished with the SUPERSCAN system without a doubt. The operator can freely define the number of allowed repetitions. After activation of this function, a relay contact is available to inform the operator that the fault limit has been reached. Thus, repeating faults can be detected when they are caused and the reason for the fault can be eliminated before large amounts of defective goods reach the stores.

Easy Operation

The image processing methods used for different applications were specifically selected to keep the operation of the systems as easy as possible. When changing the product, the necessary adjustments are made by an automatic learning process. If the product to be inspected is already known, all data can be loaded from a data base. This procedure can also be activated via higher-ranking process control systems.

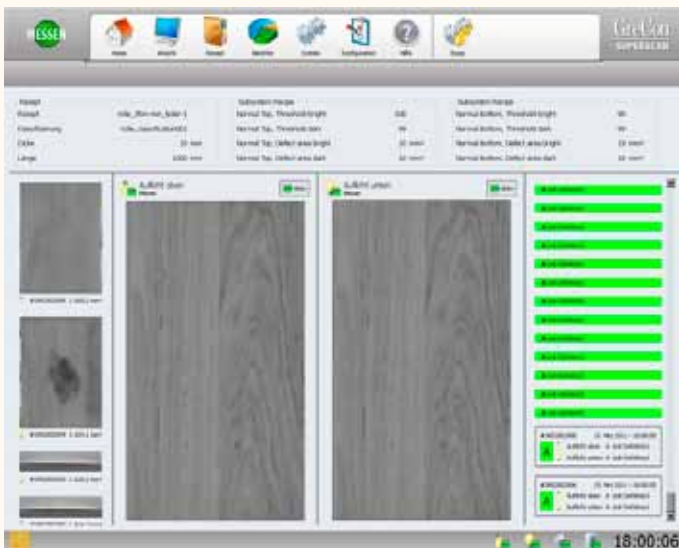
Software

■ Network Connections

For the data transmission to higher-ranking process control systems, different network connections, such as OPC or Profibus, are available.

■ Online After-Sales Service

GreCon measuring systems are equipped with a modem or VPN, which provides a direct connection to GreCon service when needed. Support, changes in parameters, software updates and trouble shooting are all possible online.



Operation surface of SUPERSCAN systems

Why GreCon



- Easy operation
- Low operating costs due to standard components
- Quick learning of new decors
- Flexibly expandable
- Remote diagnostics by GreCon customer service

Your Benefit



- Objective, constant judgement of quality
- Statistical evaluation
- Graphical representation of the whole panel
- Reliable and objective inspection
- Defect location data on press size panels makes reject reduction possible
- Reduced manpower costs

■ Reporting

Using special software, individual reports can be generated from the data base. Available reporting types are time-related reportings, such as shift or monthly reports, and order-related reportings that can be selected according to the requirements.

References

GreCon has to date supplied more than 30 systems worldwide. A large number of customers have confidence in GreCon surface inspection systems that the entire production has been equipped with a member of the SUPERSCAN family.

A Suitable System for Each Application

SPM 5000

for the two-side inspection
of furniture panels



SPL 5000

for the one-side inspection
of laminate flooring



SPR 5000

for the two-side inspection
of raw panels



SPF 5000

for the one-side inspection
of fibre sizes





Inspection of furniture panels and laminate flooring

Function

The SPM/SPL 5000 system is self-learning. Thus, the learning of new decors by the operation staff is possible within a few minutes. Two successive panels are scanned during the production process and their data compared. If the deviations between the panel scans are smaller than the preset tolerance limits, the data is used as a master. All following panels will be compared with this master. The learning procedure is simple and takes only a few minutes. New patterns like coated sheets, wood pattern, and tile structure can be learned within a very short time. As an option to the SUPERSCAN system, GreCon offers a panel marking system, which marks the defective areas by spraying fluorescent ink on the press size panel. After cutting, only the marked individual planks that are recognised as defective are sorted out. The inspection results are transferred to the PLC of the production machine, which will carry out the sorting of the panels into the correct stack.

Technical Specifications

- Panel width: 900 to 2650 mm (36 to 104 inch)
- Panel length: up to 6000 mm (236 inch)
- Production process: cycle
- Passage speed: up to 120 m/min (4.7 ft/min)
- Panel thickness: 3 to 40 mm (0.12 to 1.57 inch)
- Defect size: from 1 mm² (from 1/25 inch²)
- Power supply: 230 V / 115 V
- Frequency: 50 Hz / 60 Hz
- Compressed air supply: 6 bar (90 psi)

Modules

The detection of faults and defects is done by two inspection systems that are integrated in the frame and that inspect the panel surface with different lighting and camera concepts. The inspection performance results from a combination of the results of both individual systems. One system is the basic module and uses lighting from above. The other system uses inclined lighting and

is called reflex module.

Types of Faults and Defects

Basic Module

- Patches, grey tinge, insects, dirt, paper displacement, paper folds, overlay faults, thermal reams

Reflex Module

- Dents, press plate faults, overlay faults, panel abrasion, synchronised grain check

UV Module

- Overlay faults, grey tinge, paper scraps

Panel Cleaning

The panel surface must be free of dirt. The SPM/SPL 5000 system cannot differentiate between loose and fixed paper scraps. The GreCon panel cleaning system works in a non-contact way and can be used both on the top and bottom panel surfaces and is almost maintenance-free.

Marking

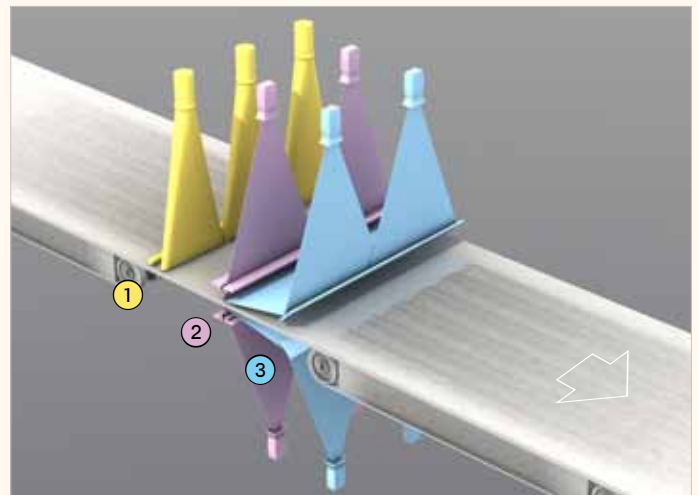
Faults and defects on the panel surface are detected and shown on the monitor. By evaluating data like type, size and position, the quality can be determined. By means of the information on the position of the fault or defect, it is possible to drastically reduce rejects.

- ① Panel cleaning module
- ② Basic module
- ③ Reflex module
- ④ UV module
- ⑤ Panel marking
- ⑥ Marking control

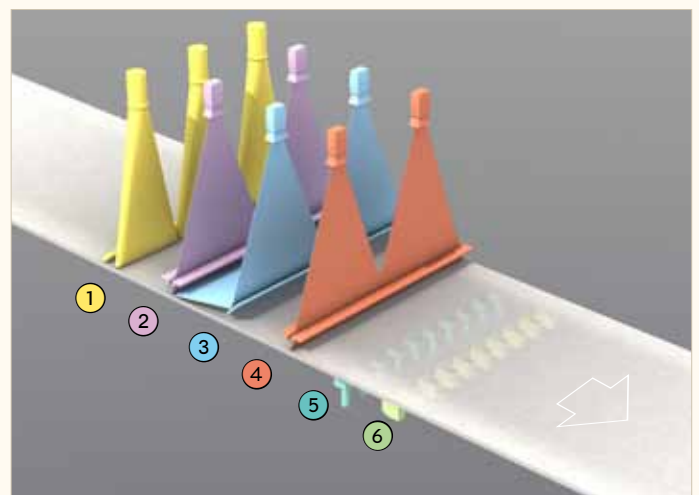
Your Benefit



- Reliable, objective, complete inspection of press size panels
- Easy operation and quick learning of new decors
- Reduced manpower costs
- Graphical representation of the whole panel
- Defect location data on the panels
- Quality classification
- 100 % consistent quality control
- Reports for quality proof
- Storage of data in SQL data base
- Statistical evaluation



SPM 5000 module options



SPL 5000 module options



Inspection of raw panels after the sander

Function

The automatic image processing system guarantees 100 % inspection and makes possible continuous, consistent sorting by detection of surface faults and defects of raw panels. The SPR 5000 system inspects the surface of each panel inline to ensure consistent sorting. Detailed conclusions for upstream production process adjustments are possible through fault and statistics reports. Thus, not only the sorting, but also the entire production process can be optimised. Each panel is inspected by a camera system on the top and bottom surfaces. Thus, defective areas are detected where the surface differs from the normal (faultless) surface. Any detected area is classified in types of faults and defects. The parameterisation of quality allocation and sorting rules is adjustable. The data of surface faults or defects of each panel is shown on the monitor. The inspection results are transferred to the PLC of the production machine, which will carry out the sorting of the panels.

Technical Specifications

- Panel width: up to 3150 mm (124 inch)
- Panel length: up to 12000 mm (472 inch)
- Panel thickness: 1 to 80 mm (0.04 to 3.15 inch)
- Panel speed: up to 200 m/min (7.9 ft/min)
- Panel gap: min. 1 s
- Temp. panel surface: up to 90 °C (194 °F)
- Temp. production hall: up to 45 °C (113 °F)
- Power supply: 230 V / 115 V
- Frequency: 50 Hz / 60 Hz

Modules

The detection of faults and defects is done by two inspection systems that are integrated in the frame and that inspect the panel surface with different lighting and camera concepts. The inspection performance results from a combination of the results of both individual systems. One system is the basic module and uses lighting

from above. The other system uses inclined lighting and is called topological module.

Types of Faults and Defects

Basic Module

- Light patches (glue, water, ...)
- Dark patches (oil, rubber, resin, bark)
- Coarse chip in the surface, spreading faults
- Unsanded areas, rough areas, dust patches
- Cracks (in the surface), stretch marks
- Break-offs at panel edge or corner
- Cross-stripes, sanding mistakes, chatter marks, holes, indentations
- Dents, elevations, blisters
- Pin stripes

Topological Module

- Unsanded areas, rough areas, dust patches
- Cracks (in the surface), stretch marks
- Break-offs at panel edge or corner
- Cross-stripes, sanding mistakes, chatter marks, holes, indentations, dents, elevations, blisters
- Pin stripes

Sorting

Faults and defects are precisely allocated to the position on the panel. The panels are sorted in three classes (A, B, C).

- ① Panel cleaning module
- ② Basic module
- ③ Topological module

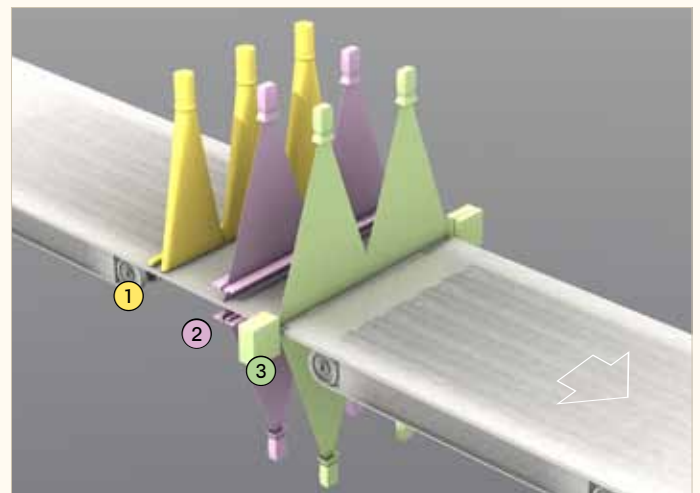
Your Benefit



- Inspection of the raw panel for the following processing
- Evaluation of the sanding process
- Evaluation of the condition of the sanding belts
- Reliable, objective, complete inspection of press size panels
- Reduced manpower costs
- Graphical representation of the whole panel
- Defect location data on the panels
- Quality classification
- 100 % consistent quality control
- Reports for quality proof
- Storage of data in SQL data base
- Statistical evaluation

Panel Cleaning

The panel surface must be free of dirt. The GreCon panel cleaning system is working in a non-contact way and can be used both on the top and bottom panel surfaces and is almost maintenance-free.



SPR 5000 module options



Inspection of fibre sizes

Function

The automatic image processing system guarantees a continuous, consistent monitoring of the spread fibres in the panel production. The SPF 5000 system monitors the fibre sizes of the mat during the running production. Furthermore, fault reports and statistical data allow detailed conclusions of the upstream production process.

The fibre mat is inspected by a camera system on the top surface. The individual fibre sizes are analysed. This process is done continuously during the running production so that representative information on the fibre distribution is available. The very energy-consuming process of fibre processing can be optimised by means of this information. Furthermore, consistent surface properties can be guaranteed.

Technical Specifications

- Inspection width:400 mm (16 inch)
- Temp. production hall:..... up to 45 °C (113 °F)
- Power supply: 230 V / 115 V
- Frequency:50 Hz / 60 Hz
- Installation place: after pre-press

Modules

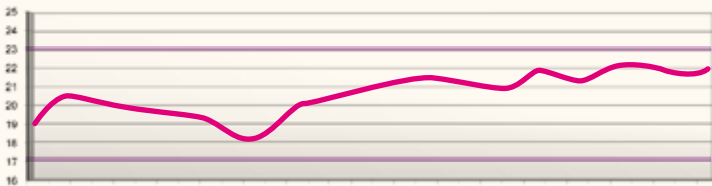
Image recording is done by an inspection system that is integrated in the frame and that inspects the mat surface with a special lighting concept. The inspection performance results from an analysis of the fibre sizes.

Production

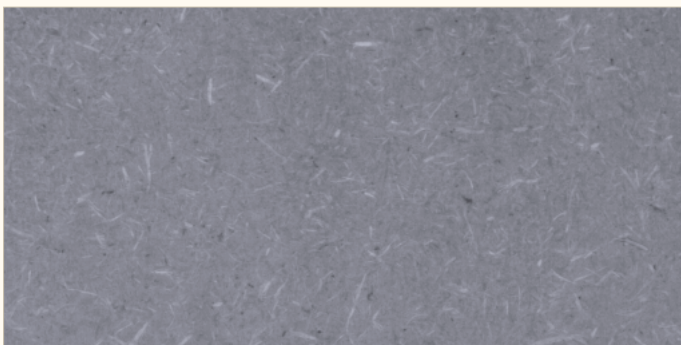
The goal is to analyse the demands placed on the surface of the product regarding the occurrence of shives (big fibres). Thus, not only the used refiner energy, but also possible rejects can be optimised.

In case of too large or small a number of shives per surface unit, the refiner adjustment can be optimised.

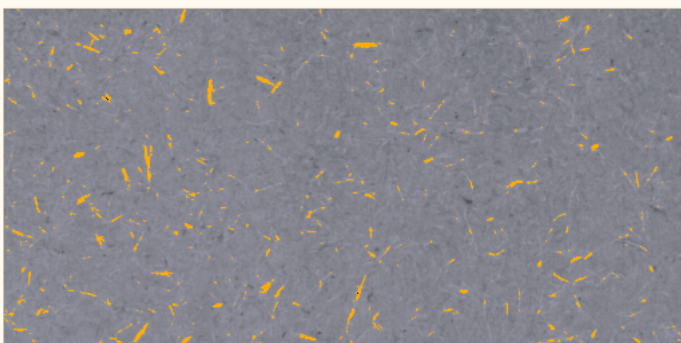
The following diagram shows the number of fibres per m² fibre mat, dependent on the production time (X-axis).



Shives per surface over production time



Fibre mat



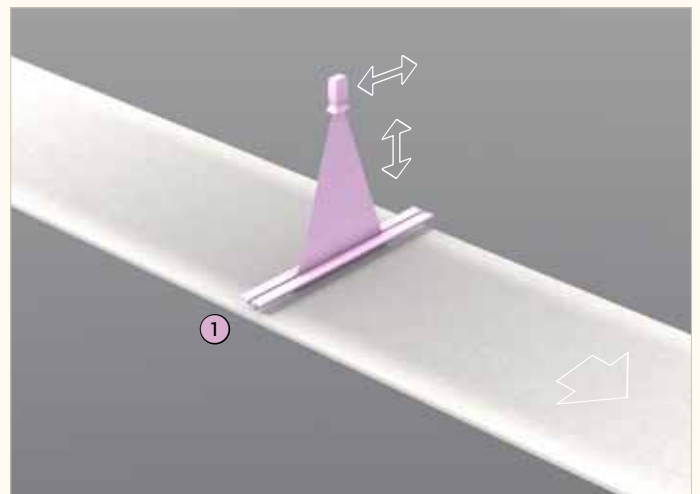
Fibre mat with identified shives

Your Benefit



- Reduction of energy consumption by controlling the fibre processing (refiner and cooker)
- Monitoring of fines, thus reduction of glue consumption possible
- Advantages for the production of panels for direct lacquering
- Evaluation of the fibre quality for panel processing (direct printing)
- Reliable, objective inspection of the fibre mat
- Consistent quality control
- Storage of data in SQL data base
- Statistical evaluation

① SPF Module



SPF 5000



OUR HEADQUARTERS AT ALFELD - BUILT BY WALTER GROPIUS IN 1911

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