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# GreCon

Surface Quality  
Control for Inspection  
of Raw Panels

GreCon  
Measuring  
Technology

GreCon  
Fire  
Protection



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GreCon  
SPR 5000



TEMSOL

# SUPERSCAN SPR 5000



## Your Benefit



- Reliable, objective, complete inspection of sanded panels
- Evaluation of sanding results (optically and topologically)
- Detection, classification and distinction of defect types
- Early detection of defects prior to downstream coating processes
- Detailed reports on defect location on the panel
- Independent learning of new defect types
- Creation of individual sorting criteria

## Why GreCon



- Operation ease
- Low maintenance and flexibly expandable
- Connection to PLC via Profibus
- Visualisation including reporting
- Telediagnostic service by GreCon customer service

## Automatic and Reliable Surface Inspection to Monitor the Panel Quality

The Surface Inspection System SPR 5000 inspects the surface of each panel inline to ensure consistent sorting. The automatic image processing system guarantees 100 % inspection and allows continuous, consistent sorting by detection of surface faults and defects of raw panels. Detailed conclusions for upstream production process adjustments are possible through fault and statistics reports. Thus, not only sorting, but also the entire production process can be optimised.

Besides easy operation of the system, new defect types can be learned independently and individual sorting criteria created.

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 conduct the sorting of the panels.



## Automatic Surface Inspection

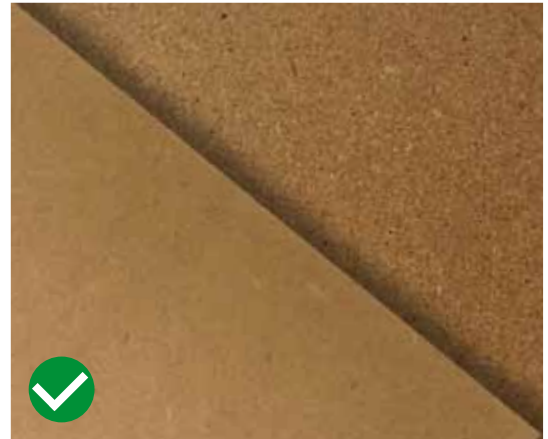
The detection of faults and defects is done by two inspection systems that are integrated in the frame and inspect the panel surface with different lighting and camera concepts. The inspection performance results from a combination of the results of both systems. One system is the basic module and uses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

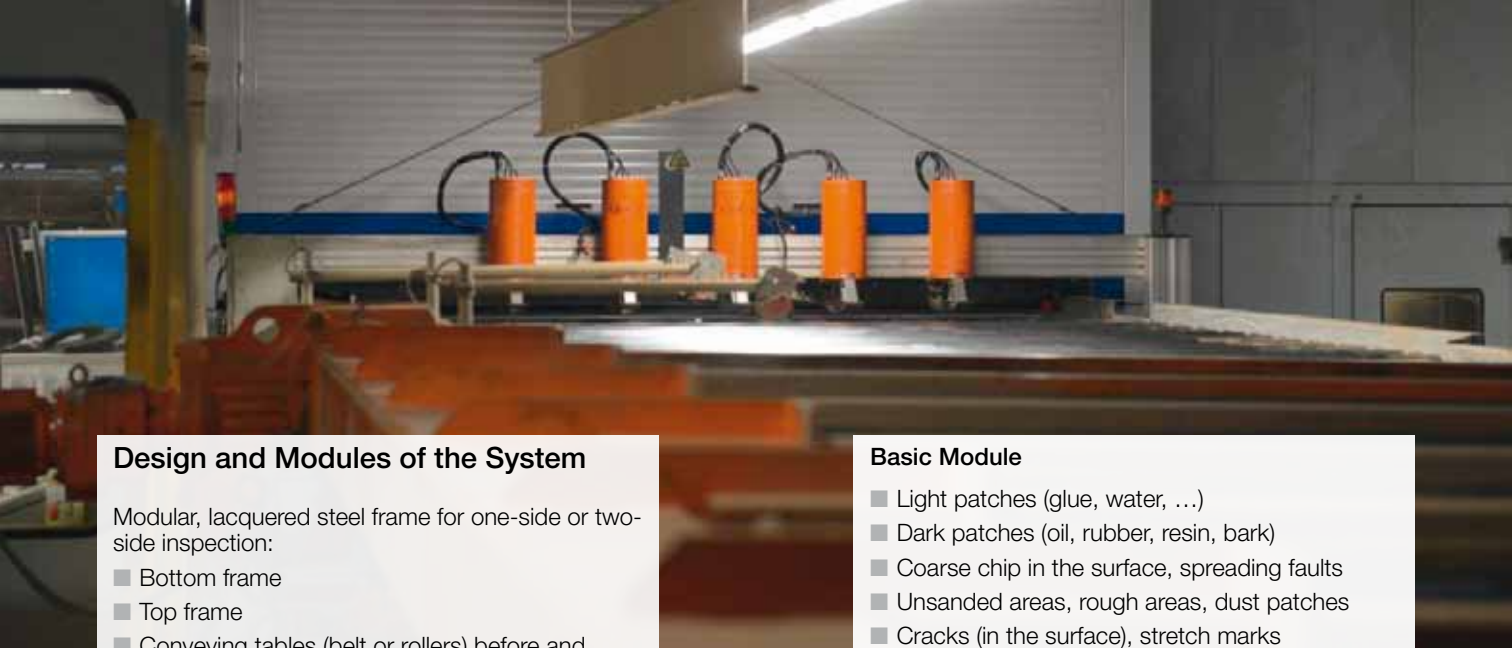
The image data from these modules are combined, defective areas located and the faults and defects classified. Panels are sorted according to allowed defect sizes that can be individually adjusted for each defect type.

Faulty raw panel quality, bottom MDF, top particleboard



Perfect raw panel quality, bottom MDF, top particleboard





## Design and Modules of the System

Modular, lacquered steel frame for one-side or two-side inspection:

- Bottom frame
- Top frame
- Conveying tables (belt or rollers) before and after the scanner
- Different lighting modules for classification of different defects:

## Basic Module

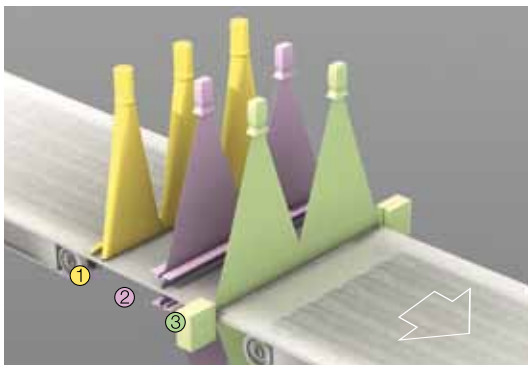
- Light patches (glue, water, ...)
- Dark patches (oil, rubber, resin, bark)
- Coarse chip in the surface, spreading faults
- Unsanded areas, rough areas, dust patches
- Cracks (in the surface), stretch marks
- Break-offs at panel edge or corner
- Cross-stripes, sanding mistakes, chatter marks, holes

## 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

Most of the mentioned faults and defects can be exclusively and clearly allocated to a special defect type by combining both modules.

SPR 5000 modules



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



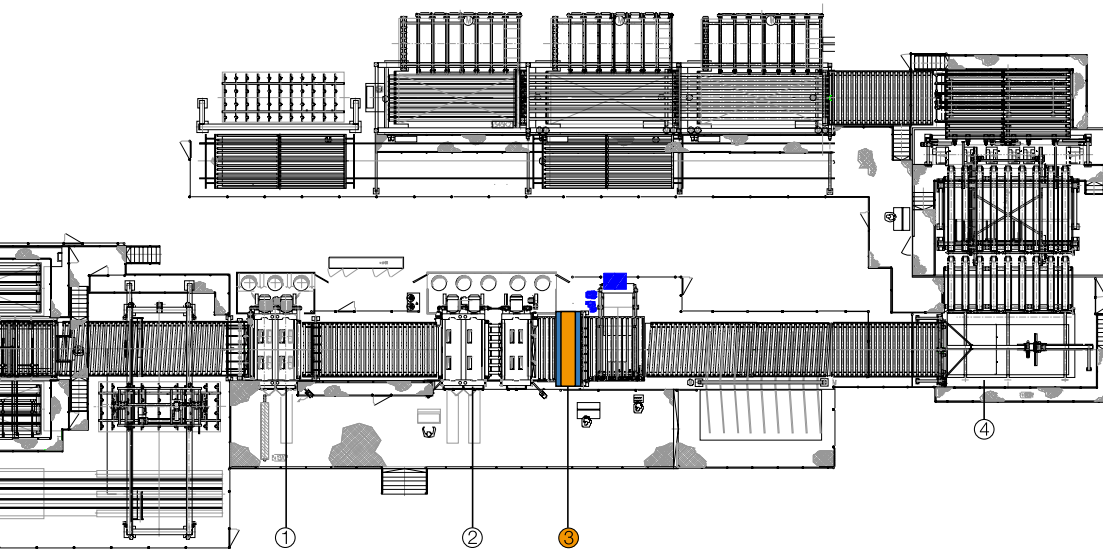
## Basic Construction and Layout

The basic construction of the measuring system is a solid, closed frame. Blinds and doors allow easy access to individual measuring components.



The visual field of the camera is protected against dirt, dust, chips and light intrusion by a closed tube.

Slight overpressure provides optimum measuring conditions while cooling the light source. The lighting body is equipped with a quick-elevating motion to protect it against blisters.



## Layout of a sanding line with SUPERSCAN

- ① Sander
- ② Sander
- ③ SPR 5000
- ④ Stacking



## Software Functions

### ■ Software

The visualisation software of all GreCon measuring systems is based on Windows.

### ■ Network Connection

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

### ■ Visualisation

The core of the software package is the visualisation software. It records, stores and graphically represents all measured data. The simple menu structure, which is identical for all GreCon measuring systems, makes intuitive and user-friendly operation possible.

### ■ Database

The database stores the desired measured values, thus allowing to call up the panels inspected from a history administration for analysis at any time.

### ■ Reporting

Using special software, individual reports can be generated from the database. 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.

Detail of an identified defect: hole



Visualisation of panel section evaluation





**Service**

GreCon measuring systems are equipped with GreCon online support SATELLITE.

This provides safe, simple and fast remote support when there is trouble or to check the system. Each online support is logged and stored in the system's history.

**Applications**

In the wood based panel industry, the SUPERSCAN SPR 5000 is used in the following applications in raw panel productions:

- Technical Specifications**
- Panel width.....up to 3150 mm (124 inch)
  - Panel length.....up to 8000 mm (315 inch)
  - Panel thickness ...1 to 80 mm (0.04 to 3.15 inch)
  - Panel speed ..... up to 120 m/min (393 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)

- After the sander
- After pressing or forming processes
- Inspection of goods received for further processing

Installation in a production line





## Surface Inspection Report

**GreCon**  
SUPERSCAN

Report		System	
From	20.09.2012 01:22:32	GreCon SPR 5000	
To	20.09.2012 04:54:23	Alfeld, Germany	
Job	4711	Press 1	
Description			
<b>GreCon Testware</b>			
Production		Throughput	
From	20.09.2012 01:22:32	Boards	827 p. min 4
To	20.09.2012 04:54:23	Meter	4.408 p. min 21
Duration [h:m:s]	03:31:51		
Board Classifications			
Total	827	in %	100,0
With Defects	679	in %	82,1
A - Quality	708	in %	85,6
B - Quality	116	in %	14,0
Not Classified	3	in %	0,4
Board Area Classifications			
Total	827	in %	100,0
With Defects	679	in %	82,1
A - Quality	708	in %	85,6
B - Quality	116	in %	14,0
Not Classified	3	in %	0,4
Board States			
Total	827	in %	100,0
Measured	823	in %	99,5
Measured Partially			
Stopped	0	in %	0,0
Disconnected, Error	0	in %	0,0
Not Measured			
Stopped	3	in %	0,4
Escape Run, Disconnected, Error	0	in %	0,0
Light Control, Learn, Calibrate	1	in %	0,1
No Match	0	in %	0,0

## Surface Inspection Report

**GreCon**  
SUPERSCAN

Report		System	
From	20.09.2012 01:00:00	GreCon SPR 5000	
To	20.09.2012 04:00:00	Alfeld, Germany	
Job	-	Press 1	
Production		Throughput	
From	20.09.2012 01:22:32	Boards	566 p. min 4
To	20.09.2012 03:59:58	Inch	118.771 p. min 1
Duration [h:m:s]	02:37:26		
Board Classifications			
Total	566	in %	100,0
With Defects	437	in %	77,2
A - Quality	520	in %	91,9
B - Quality	43	in %	7,6
Not Classified	3	in %	0,5
Board Area Classifications			
Total	566	in %	100,0
With Defects	437	in %	77,2
A - Quality	520	in %	91,9
B - Quality	43	in %	7,6
Not Classified	3	in %	0,5
Board States			
Total	566	in %	100,0
Measured	562	in %	99,3
Measured Partially			
Stopped	0	in %	0,0
Disconnected, Error	0	in %	0,0
Not Measured			
Stopped	3	in %	0,5
Escape Run, Disconnected, Error	0	in %	0,0
Light Control, Learn, Calibrate	1	in %	0,2
No Match	0	in %	0,0

