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# GreCon

Surface Quality  
Control for Inspection  
of Raw Panels

GreCon

Fire  
Protection

GreCon

Measuring  
Technology

GreCon

Service



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## SUPERSCAN SPR 6000



## 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



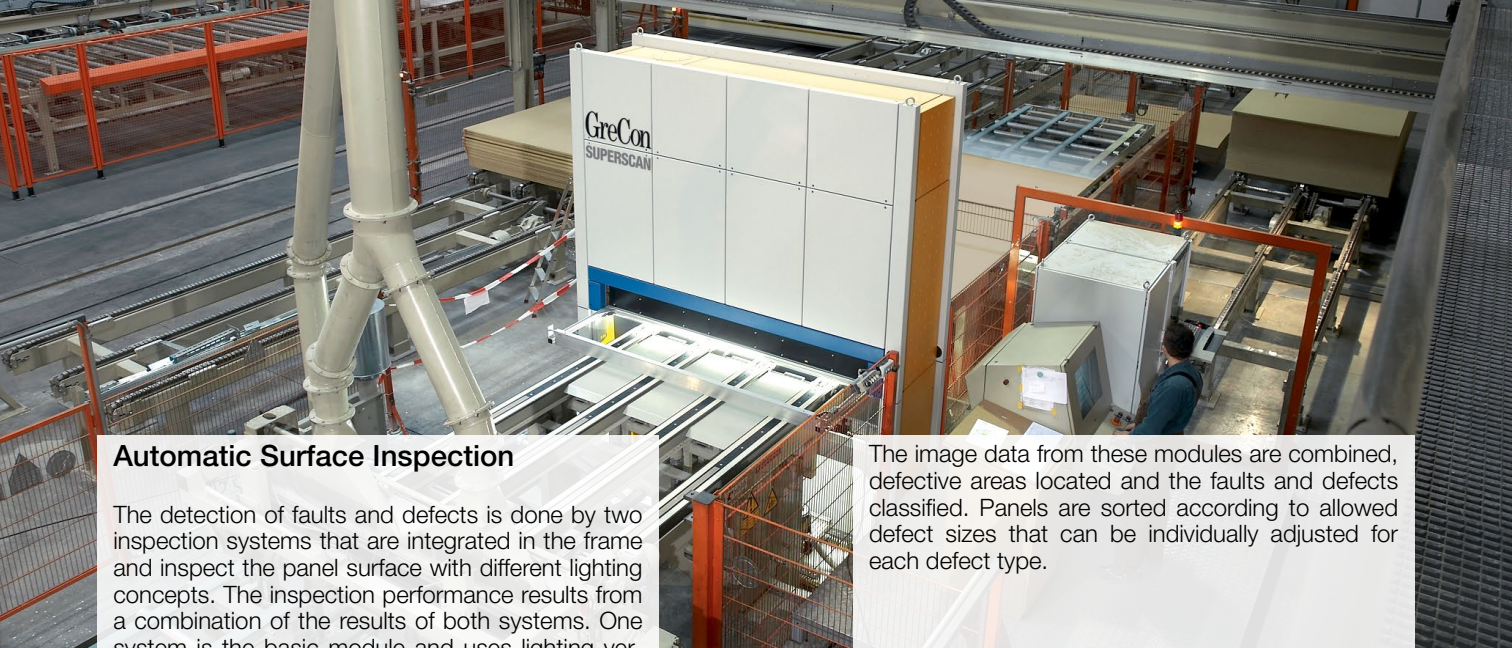
- Customer-specific system design
- High innovative capacity: more than 10 % of the employees work in the R & D division
- Worldwide customer service network: more than 80 service technicians on duty worldwide
- Efficient sales network: represented in more than 35 countries
- High expertise: more than 40 years of experience in the measuring technology sector

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

The Surface Inspection System SPR 6000 inspects the surface of each panel in line 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

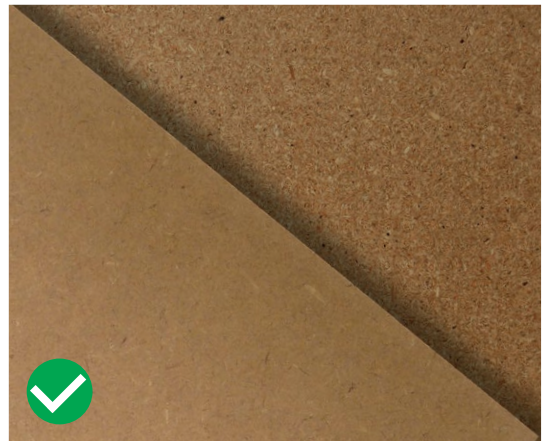
The detection of faults and defects is done by two inspection systems that are integrated in the frame and inspect the panel surface with different lighting concepts. The inspection performance results from a combination of the results of both systems. One system is the basic module and uses lighting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

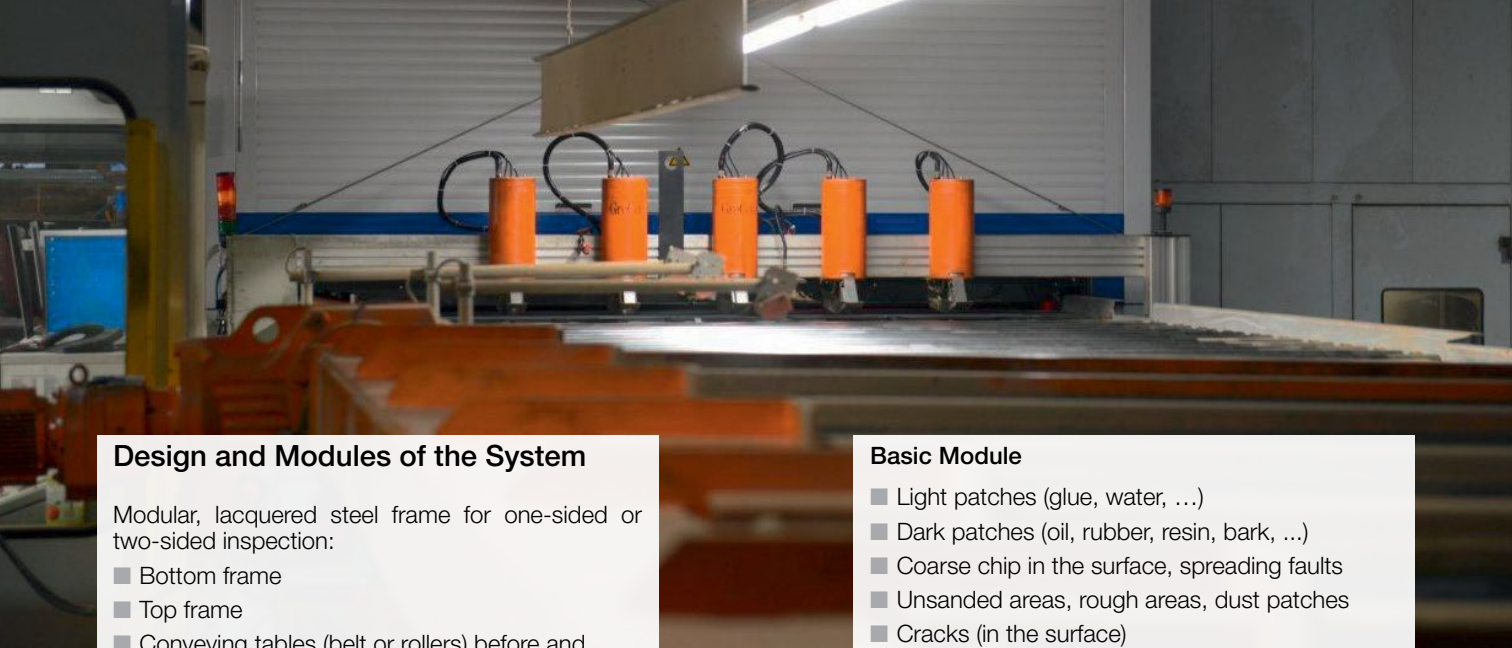
The image data from these modules are combined, defective areas located and the faults and defects classified. Panels are sorted according to allowed defect sizes that can be individually adjusted for each defect type.

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-sided or two-sided inspection:

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

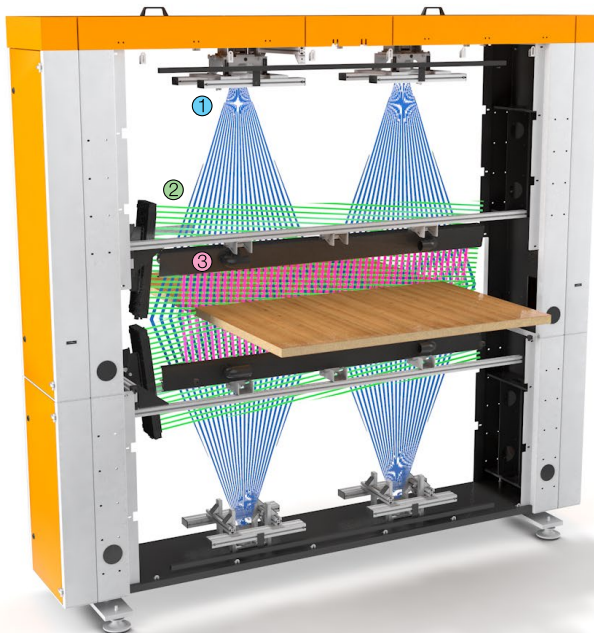
## Basic Module

- 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)
- 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)
- 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.



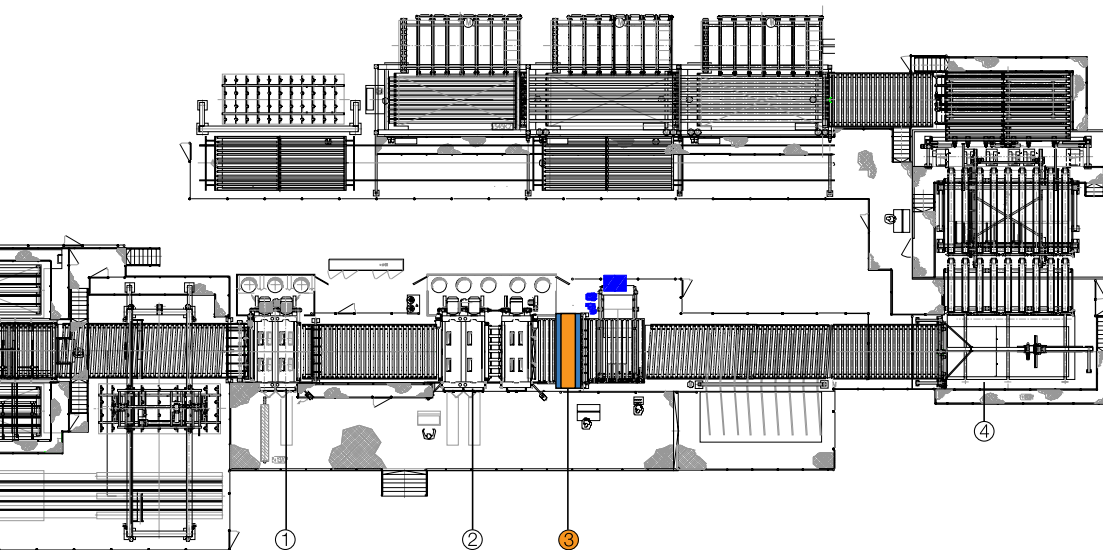
- ① Camera system
- ② LED side lighting
- ③ LED top/bottom lighting



## Basic Construction and Layout

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

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 6000
- 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 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.

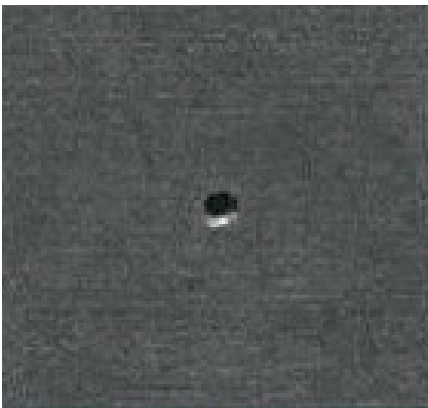
### ■ Database

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

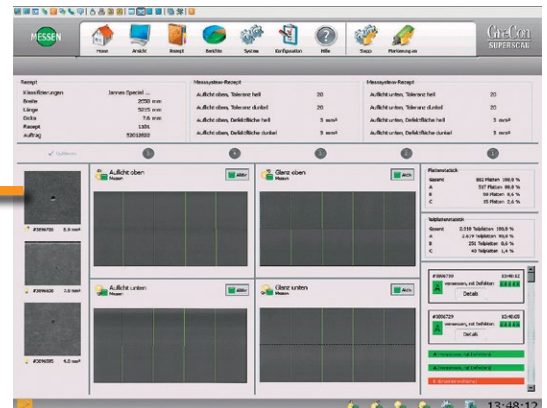
### ■ Reporting

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.

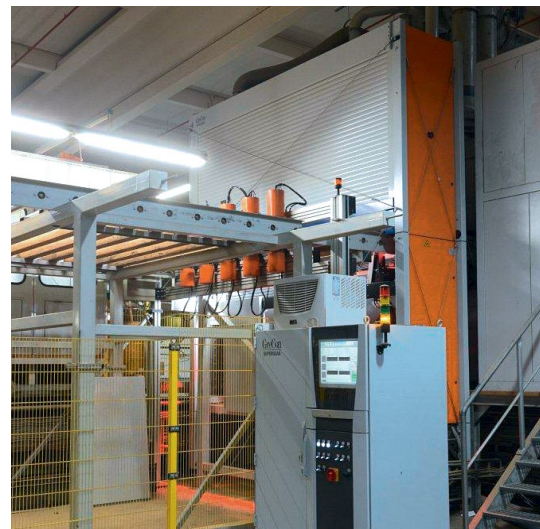
**Applications**

In the wood based panel industry, the SUPERSCAN SPR 6000 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)
  - Defect size..... from 4 mm<sup>2</sup> (0.006 square inch)
  - 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


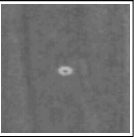




## Surface Inspection Report

**GreCon**  
SUPERSCAN

Report		System	
From	20.09.2014 01:22:32	GreCon SPR 6000	
To	20.09.2014 04:54:23	Alfeld, Germany	
Job	4711	Press 1	
Description			
<b>GreCon Testware</b>			
Production		Throughput	
From	20.09.2014 01:22:32	Boards	827 p. min 4
To	20.09.2014 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
C - Quality	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
	Exposure Control, Learn, Calibrate	1	in % 0,1
	No Match	0	in % 0,0

Report		System	
From	10.08.2014 01:46:55	GreCon SPR 6000	
To	10.08.2014 02:36:21	Alfeld, Germany	
Job	4711	Press 1	
Recipe			
<b>Wooden Decor</b>			
Description	-	Post Cuts Classifications	1 x 2 1st Choice
Board			
<b>391.925</b>	Date	10.08.2014 01:55:00	Quality A
	Defect Area	0,0270 in <sup>2</sup>	
Defect			
	Class	Bright	
	Position	28,2 in / 78,0 in	
	System	Bottom Normal	
	Decor Type	Wandering	
	Brightness Deviation / Defect Area	65 / 0,0054 in <sup>2</sup>	
	Brightness Tolerance / Defect Area	30 / 0,0046 in <sup>2</sup>	
	Bright	30 / 0,0046 in <sup>2</sup>	
	Dark	31 / 0,0046 in <sup>2</sup>	
			
Board			
<b>391.927</b>	Date	10.08.2014 01:57:00	Quality A
	Defect Area	0,0054 in <sup>2</sup>	
Defect			
	Class	Bright	
	Position	26,6 in / 12,9 in	
	System	Bottom Normal	
	Decor Type	Wandering	
	Brightness Deviation / Defect Area	56 / 0,0054 in <sup>2</sup>	
	Brightness Tolerance / Defect Area	30 / 0,0046 in <sup>2</sup>	
	Bright	30 / 0,0046 in <sup>2</sup>	
	Dark	31 / 0,0046 in <sup>2</sup>	
			
Board			
<b>391.933</b>	Date	10.08.2014 02:02:53	Quality C
	Defect Area	0,0229 in <sup>2</sup>	
Defect			
	Class	Dark	
	Position	42,3 in / 3,8 in	
	System	Bottom Normal	
	Decor Type	Wandering	
	Brightness Deviation / Defect Area	35 / 0,0229 in <sup>2</sup>	
	Brightness Tolerance / Defect Area	30 / 0,0046 in <sup>2</sup>	
	Bright	30 / 0,0046 in <sup>2</sup>	
	Dark	31 / 0,0046 in <sup>2</sup>	
	