

**DIEFFENSOR**

Online Mat Scanner with Recognition of Foreign Bodies  
for Steel Belt Protection with X-Ray Technology



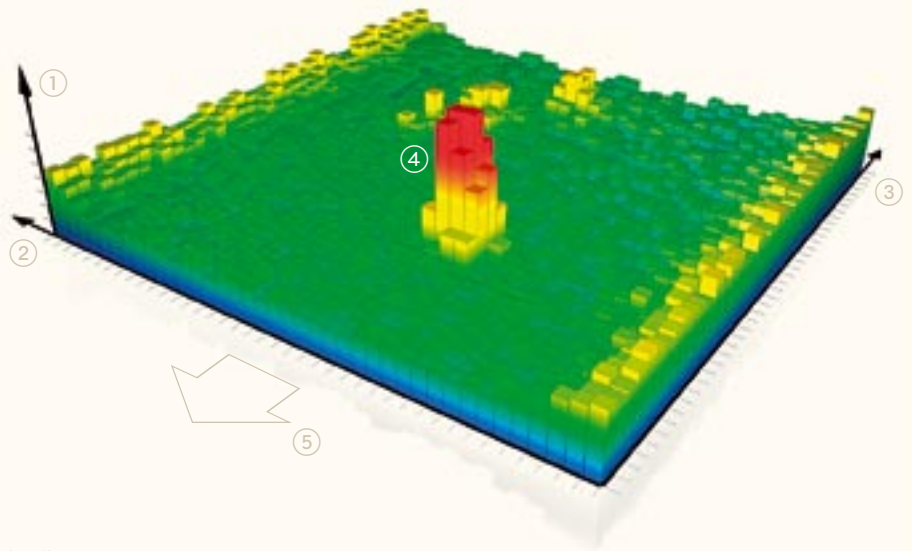
GreCon®

# Steel Belt Protection

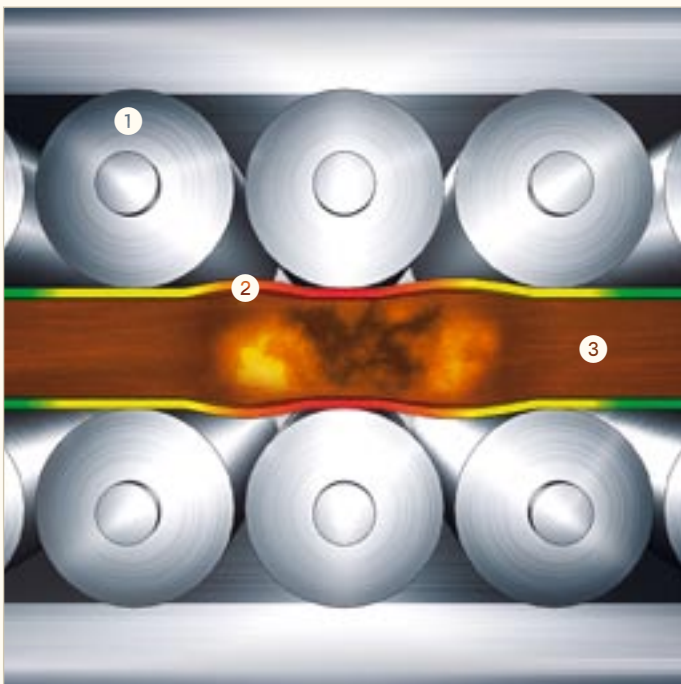
The GreCon mat scanner DIEFFENSOR precisely differentiates between harmless small foreign bodies and those which may damage the steel belt. DIEFFENSOR recognises metallic and non-metallic foreign bodies of high density located in fibre, chip or OSB mats, such as glue lumps, super-dense fibre lumps, it even detects plastic or aluminium articles which cannot be recognised with standard metal detectors or magnets. Foreign bodies may cause irreversible damage to the steel belts of a continuous press, especially when thin panels are produced. DIEFFENSOR recognises the shape and mass of foreign bodies, stores 3D pictures and trends for later evaluation.

Using DIEFFENSOR, the steel belts of a press can be effectively protected against permanent damage by high density non-metallic foreign bodies.

- ① Weight per unit area
- ② Mat width
- ③ Mat length
- ④ Foreign bodies
- ⑤ Feed direction forming line



- ① Roller bars
- ② Deformed steel belt caused by super-dense foreign bodies
- ③ Fibre mat



Strains on steel belt



Press



## Weight Per Unit Area and Material Distribution

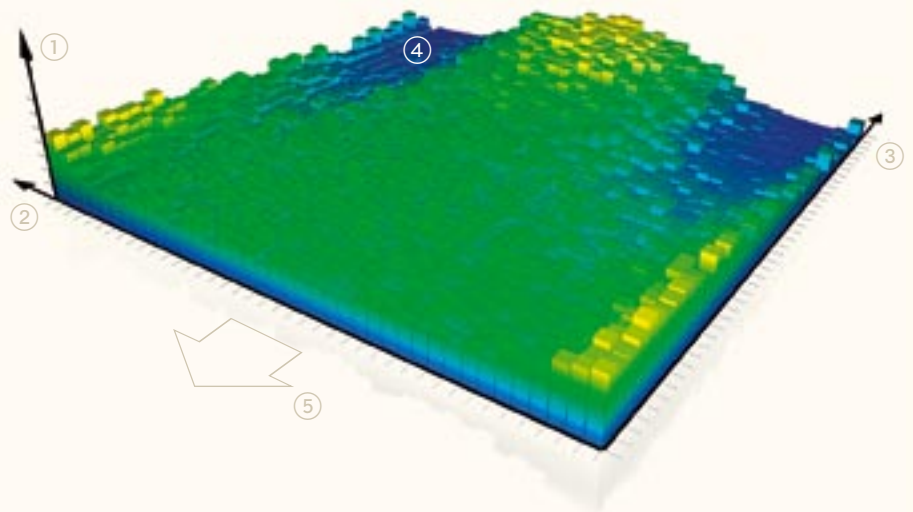
DIEFFENSOR determines, with high resolution and over the entire mat width, the weight per unit area as well as the material distribution of the fibre, chip or OSB mat.

Exact graphical and numeric representations enable the operator to adjust the forming process in due time to achieve consistent panel quality while the use of material and energy is optimised.

The permanent monitoring of the mat distribution across the production direction prior to the main press ensures an optimum production flow; belt tracking caused by imbalances in the mat can be prevented.

The recorded measured data makes it possible to easily trace production processes and to log them.

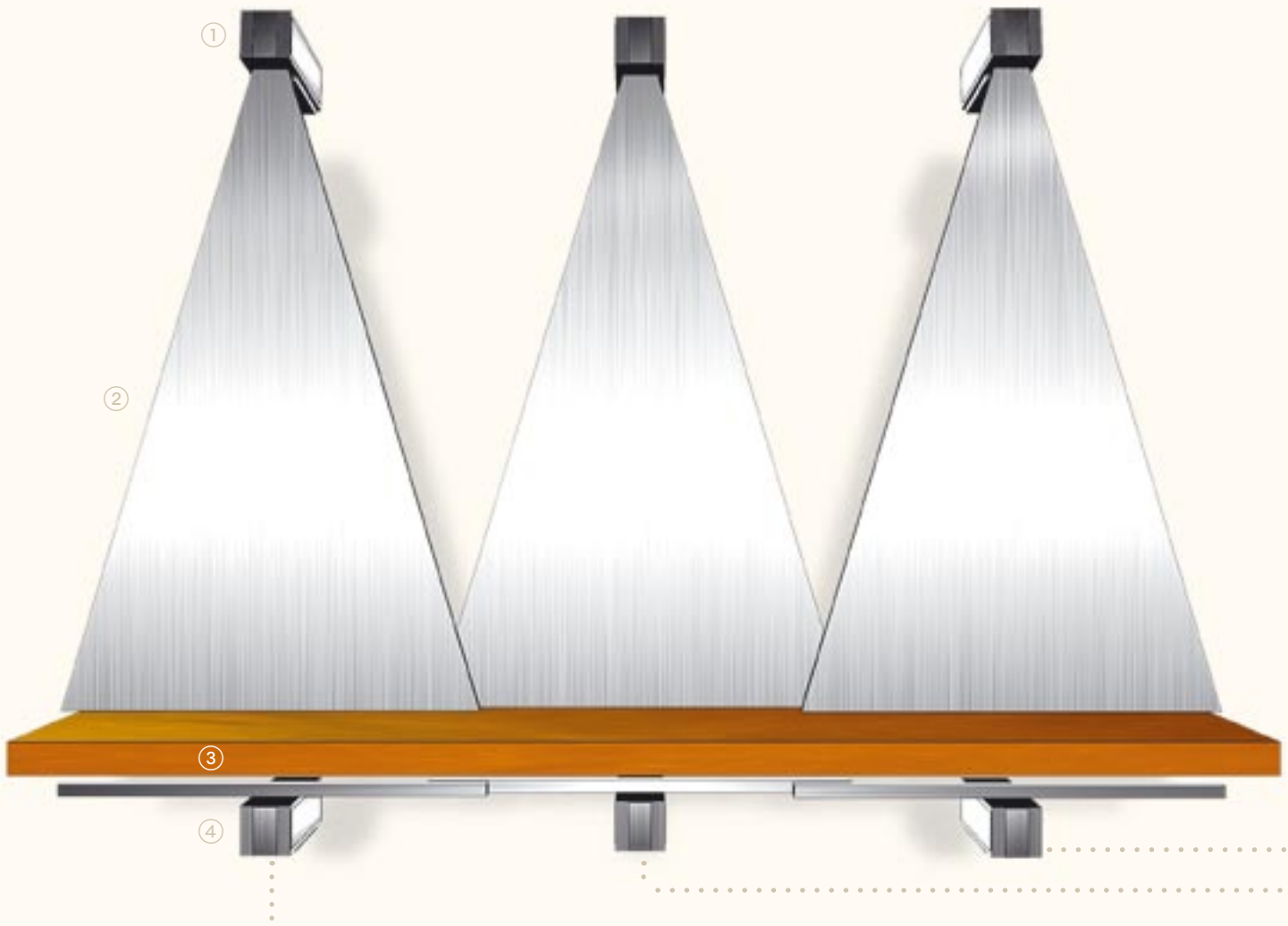
- ① Weight per unit area
- ② Mat width
- ③ Mat length
- ④ Deviation from weight per unit area
- ⑤ Feed direction forming line



## Measuring Principle

The DIEFFENSOR works in a non-contact method. The x-ray sources are installed below, and the high-precision sensors above the material to be measured. Depending on the specific density and the amount of the material, more or less x-radiation is measured by the sensors. Measured values are derived from these data.

- ① X-ray source
- ② Tube
- ③ Fibre mat
- ④ Detectors with evaluation electronics
- ⑤ Network
- ⑥ Visualisation



## Network Connections

Besides the local evaluation and recording of measured values by the visualisation computer, the DIEFFENSOR can be linked with higher-ranking process control systems via different interfaces, such as NET DDE, Allen Bradley Ethernet or Ethernet with TCP/IP or H1 BUS protocol and others.

## Online After-Sales Service

GreCon measuring systems are equipped with a modem from which a direct connection between the GreCon after-sales service and the measuring systems can be made. Changes in parameters, software updates and support are all possible online.

# Software

The visualisation software of all GreCon measuring systems is based on Windows. DIEFFENSOR's software consists of the following program modules:

## Recipe Management

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This is a product data base in which different panel types and production parameters, which are relevant for the measuring system, may be stored.

## Visualisation

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The core of the software package is the visualisation software. It records all measured values and processes them graphically. The simple menu structure, which is standard for all GreCon measuring systems, makes an intuitive operation possible.

Clear information and graphics enable the operator to quickly and effectively intervene in the running production process. The measured values are represented as 3D picture. Out of tolerance limits are marked with changes in colour and tolerance relays, with voltage-free outputs, are activated.

## History Data Base

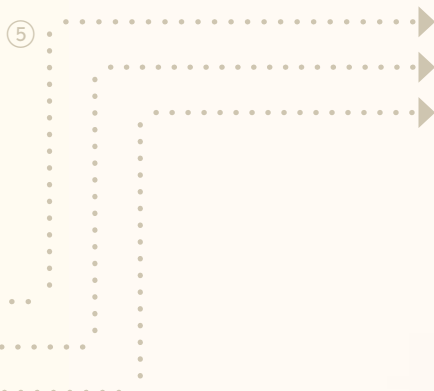
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In this data base, measured values can be stored and exported to other file formats for further processing.

## Steel Belt Protection

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The software which has been especially elaborated for this task allows for a sensitive inspection of the fibre mat regarding unwanted foreign bodies. Adequate precautions can be activated through quick signals given to the press control.



## Technical Specifications

- Mains voltage:..... 230 V / 115 V
- Frequency: ..... 50 Hz / 60 Hz
- Total power consumption: ..... 8 kVA
- Compressed air supply:..... 4 to 6 bar / 58 to 87 psi
- Measuring ranges: ..... 0 to 40 kg/m<sup>2</sup> / 0 to 8.2 lbs/ft<sup>2</sup>
- Mat speed: ..... 0 - 1.500 mm/s / 0 to 295 ft/min
- Mat height: ..... 30 - 400 mm / 1.182 to 15.76 inch
- Mat width: ..... up to 3.300 mm / up to 130 inch
- Resolution: ..... < 2x2 mm<sup>2</sup> / < 0.08 to 0.08 inch<sup>2</sup>

## Application Fields

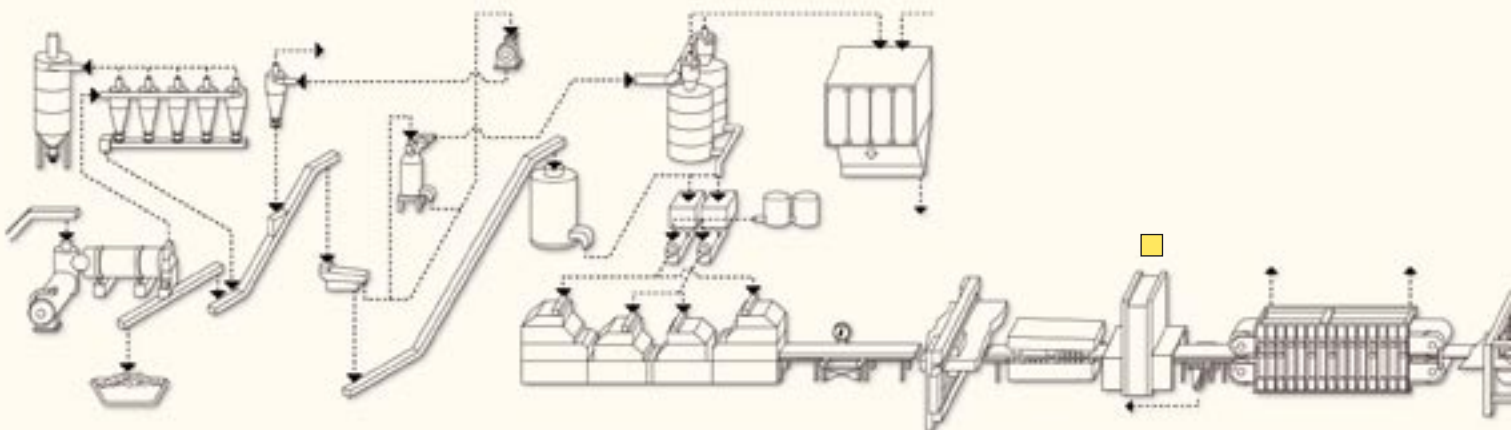
- Particleboard
- MDF board
- HDF board
- OSB
- Mineral wool
- Insulating board
- Machined car parts
- Solid aluminium frame
- non-contact measurement
- Little installation space

## Hardware Advantages

- Solid aluminium frame
- non-contact measurement
- Little installation space

## Software Advantages

- Recipe data base for automatic production change-over
- 3D representation
- Storage of the measured data in a history data base
- Preparation for network connection is standard
- Telediagnostic service through GreCon after-sales service





## Customer Advantages

- Longer life of the steel belts
- Complete picture of the spreading quality
- Investment in usual metal detection systems is not necessary
- Investment in traversing weight per unit area gauge is not necessary
- Improved product quality
- Quick return on invest

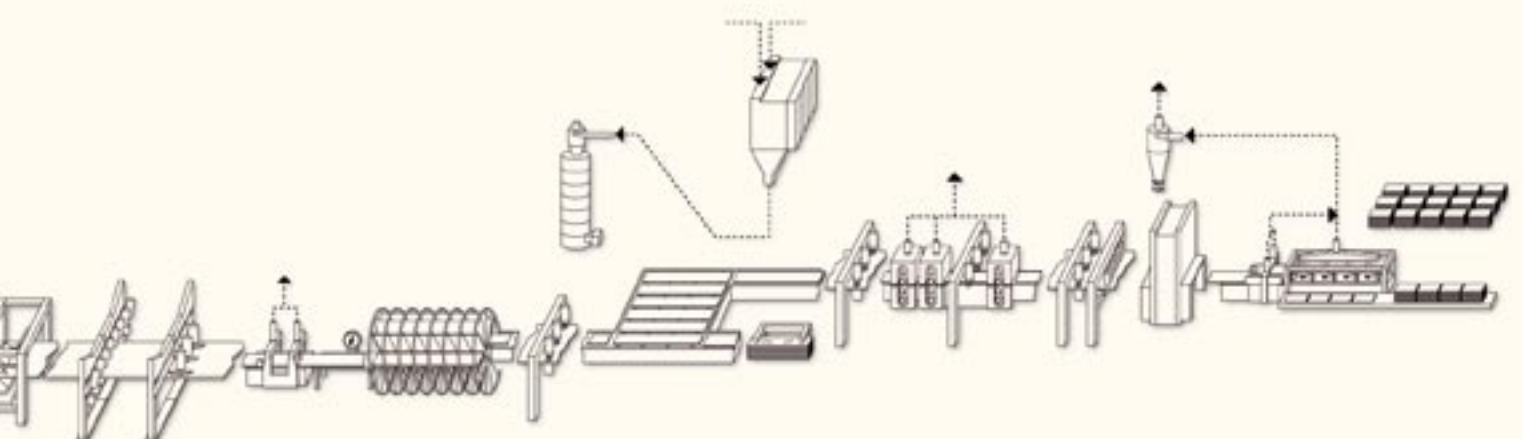
## Applications

For MDF, particleboard and OSB production, DIEFFENSOR is installed prior to the main press.

An additional application is measurement of boards that are ready pressed. This is particularly interesting when a measurement of the material distribution prior to the press is impossible or when further information is required.



DIEFFENSOR in press line



# GreCon



Fagus Factory, constructed by Walter Gropius in 1911

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