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GreCon

Inline Thickness
Measurement for
Quality and Production
Assurance

GreCon
Measuring
Technology

GreCon
Fire
Protection



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TEMSOL
DMR 6000



Your Benefit



- Quick and timely recognition of quality deviations
- Production control within precise tolerance limits
- No excess material required to be added for sanding = reduction of production costs (0.1 mm ~ 0.8% material)
- Display of optimisation potentials after changes in the production (intentional or unintentional)
- Measurement data to regulate the press

DMR 6000 - Inline Thickness Measurement for Quality and Production Assurance

Fluctuations in panel thickness and deviations from nominal values reduce quality. Your customers will identify these as product defects .

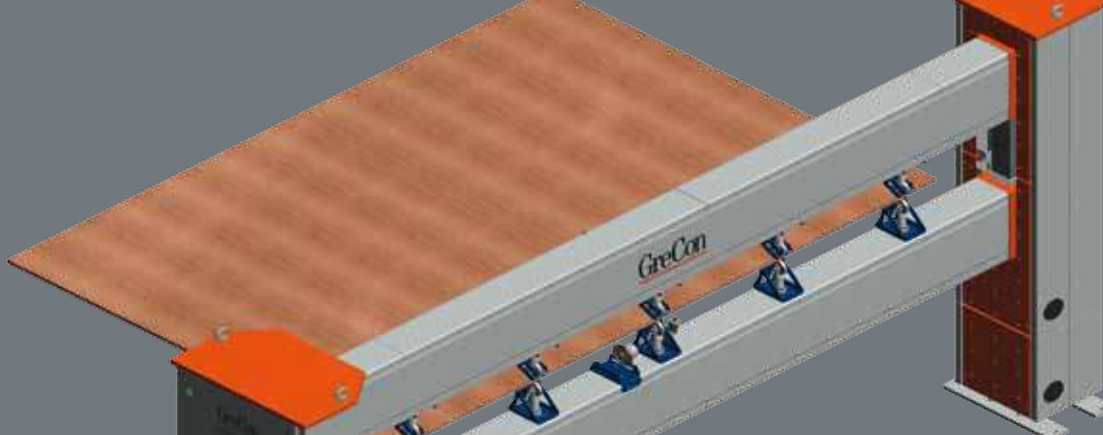
The GreCon Thickness Gauge DMR 6000 provides accurate information to ensure a high quality standard by a quick adjustment of the production process.

All measured data can be transferred to an automatic process control or press control system. This reduces time periods required for product changes or production start-ups and rejected product is minimised with the DMR 6000.

Why GreCon



- With ct-frame, calibration, maintenance and service during the running production
- Low maintenance required due to closed frame construction
- Optimised frame construction
- Non-warping, temperature-resistant measurement due to solid carbon fibre components
- Measuring system analysis according to MSA
- Raw density measurement possible in combination with board scales



Design and Construction of the System

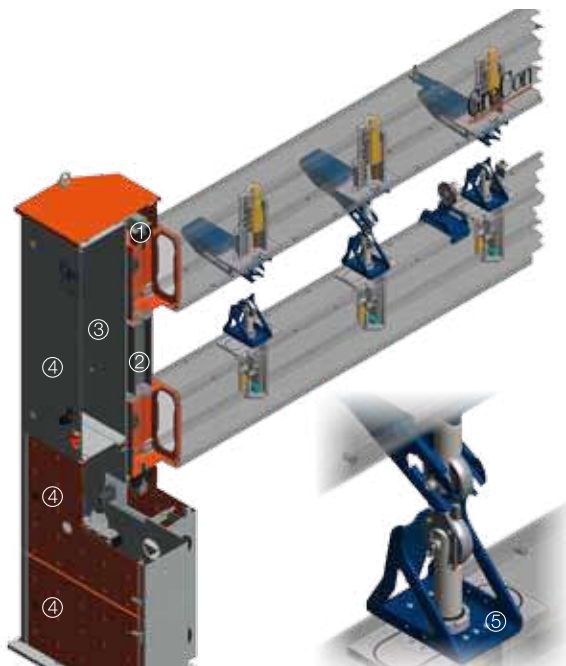
The innovative frame concept of the thickness gauge includes an optimised frame construction and allows non-warping, temperature-resistant measurements using carbon fibre components.

An optimum distribution of horizontal forces by a concentric track arrangement was considered and contributes to the high precision. The closed

frame protects all components, such as cable and air channels, measuring head electronics and compressed air supply, against damage from surrounding industrial environment. A modification of the conveyor is only necessary in individual cases. Easily accessible inspection flaps allow optimum access to the measuring system at any time.

Measurement is done in a contact way which allows absolute measurement of dimensionally stable materials, such as MDF, OSB, particleboard, leather, caoutchouc, plexiglass, insulating paper.

The selection of the measuring heads is specified according to the material to be measured.



- ① Floating mounting of the measuring frame on the frame uprights
- ② Temperature-resistant module for minimum calibration expense
- ③ Integrated pneumatic and electric supply
- ④ Easily accessible inspection flaps
- ⑤ Automatic calibration unit



Measuring Principle

A consistent measuring accuracy of the system is ensured by an automatic calibration system.

For contact measurement, high-precision rollers contact the material and convert thickness variations into vertical motion within the transducer. The measurement is achieved with an optical element inside the transducer heads.

The measuring heads are installed in pairs, opposite each other, above and below the panel to ensure accurate measurements, even during bending or vertical movement of the panel.

To protect the measuring heads against mechanical damage, they are equipped with relatively large rollers. The top heads have special inclined inlet rails to avoid damage through blisters, for example.

ct-Frame

To increase the continuous system availability, the DMR 6000 can be equipped with a ct-frame. The system can be serviced at any time by moving the ct-frames sideways out of the production line. Maintenance, diagnostics and repairs can be carried out during the running production.

Additionally, the mobile construction of the system allows an escape run in case of big blisters and thus prevents the measuring system from being damaged.



Measuring System Analysis (MSA), Type-1 Study

GreCon checks the accuracy and repeating accuracy of a DMR 6000 during the internal system check after the system is built. The measurement capability of the system is a calculation of statistical quality parameters based on the measured results. The operator can repeat this procedure at any time after installation and start-up of the measuring system thus providing a reproducible system check.

User-Friendly, Simple, Robust and Accurate

High availability, operational reliability and, above all, consistent measuring quality are ensured by the calibration with integrated self-diagnosis system and the construction of the system. This leads to high confidence in the system and acceptance by the operator.

The MSA ensures that the displayed information constitutes a reliable basis for the monitoring and optimisation of the production process.

Set-Point Positioning

The measuring heads will stay in their positions after the last measurement. This reduces the mechanical strain of both the panel edges and the measuring heads. The consumption of compressed air is also reduced. Even with compressed air failure, the heads will stay in their last position.

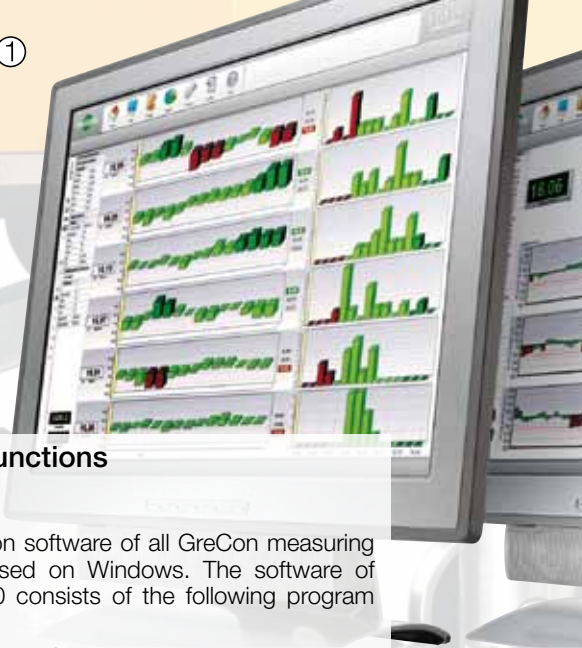
Combination with other Measuring Systems

Since the thickness gauge is a modular system, it is possible to change the measuring requirements at any time.

The system can be combined with the Ultrasonic Measuring System UPU 6000 and a Board Scale to provide a quality assurance station.

This combination is primarily used after continuous presses.

①



Software Functions

■ Software

The visualisation software of all GreCon measuring systems is based on Windows. The software of the DMR 6000 consists of the following program modules:

■ Network Connection

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

- ① Visualisation of raw panel production
- ② Visualisation of sanding line

Detail of a roller



②



■ 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 operation possible. Clear information and graphics enable the operator to quickly and effectively adjust the running production process. If a board scale is integrated, weight values and average raw densities will be visualised, as well as the thickness values.

■ Recipe Management

This is a product database in which different panel types and production parameters can be stored.

■ Database

The database stores the measured values, thus allowing to call up the panels produced from history for analysis at any time. The data can be exported to other file formats for additional processing and evaluation.

■ Report Function

The report function allows automatic production of reports, such as shift or production reports, for freely definable time periods.



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.

Technical Specifications

- Supply voltage..... 230 V / 115 V
- Frequency 50 Hz / 60 Hz
- Power consumption750 VA
- Compressed air supply..... 6 bar / 90 psi
- Compressed air consumption
per measuring track..... 0,7 l / 0.025 cf
- Max. number of heads
per electronics evaluation20 (10*)

* for 2-side measurement (pairs of measuring heads)

Measuring Accuracy per Measuring Track

- Standard
Resolution0,01 mm
- Option
Resolution0,001 mm

Deviations on demand.

Optionally, we offer a check of measuring means, in which the standard deviation as well as the accuracy of measured values are determined.


Calibration

An automatic calibration system ensures consistent measuring accuracy for all measuring principles. The measuring heads are brought together and calibrated.

For thickness measurement with ct-frame, calibration is done outside the material flow which makes a utilisation in endless productions and panel productions with small panel gaps possible.

Thickness measurement after sander





References

The DMR 6000 is used in the following applications:

- Carbon board
- Fibreboard
- Gypsum board
- Glass fibre board
- Rubber
- Wood based panels
- Insulating cardboard
- Plastic boards or endless plastic foils
- Solid wood
- Mineral fibre
- Wet fibreboard
- Leather
- Linoleum
- Pallet blocks
- Plexiglass
- Plywood
- Expanded metal
- Insulating materials

Applications

■ After the Press

In the wood based industry, thickness gauges are combined with GreCon Ultrasonic Measuring Systems UPU 6000 and Board Scales to a quality assurance station. Data is recorded and evaluated by one central visualisation computer.

■ Sanding Line

A combination of up to three thickness gauges is used for final quality control in the sanding line.

For example: a 1-track thickness gauge is installed before the calibration sander, a 2-track system after the calibration sander and a 3-, 5- or 7-track system after the finishing sander. Besides quality control, the measured data can be used to adjust the sanders to the desired thickness values.