

GMS1100™

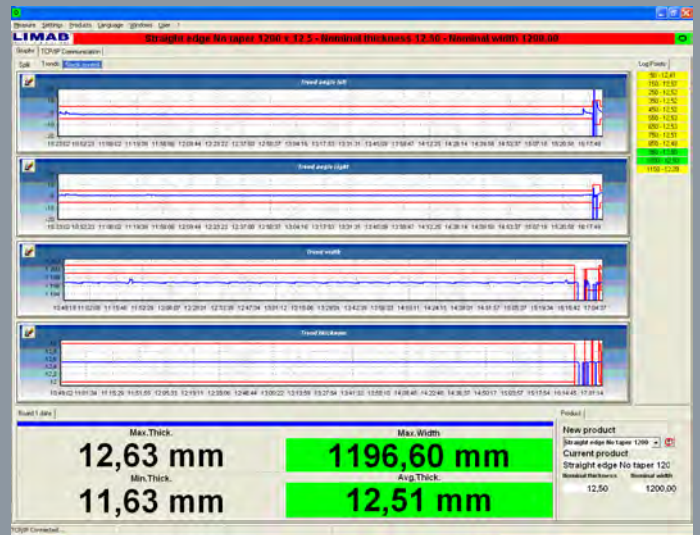
Gypsum Board Dimensional Measurement System



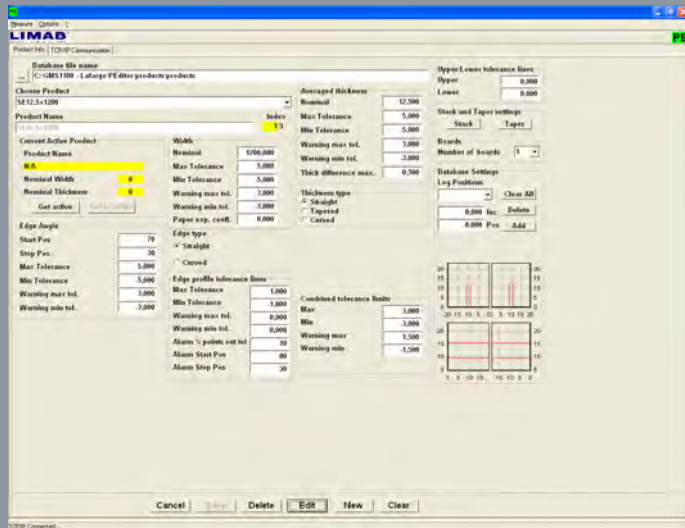
- *Thickness and taper profile, width, edge profile and edge angle measurement*
- *Feedback for mixer operators improves process and product quality*
- *Out of tolerance alarms*
- *Can integrate with other process machinery*
- *Increased yield – quick pay back*



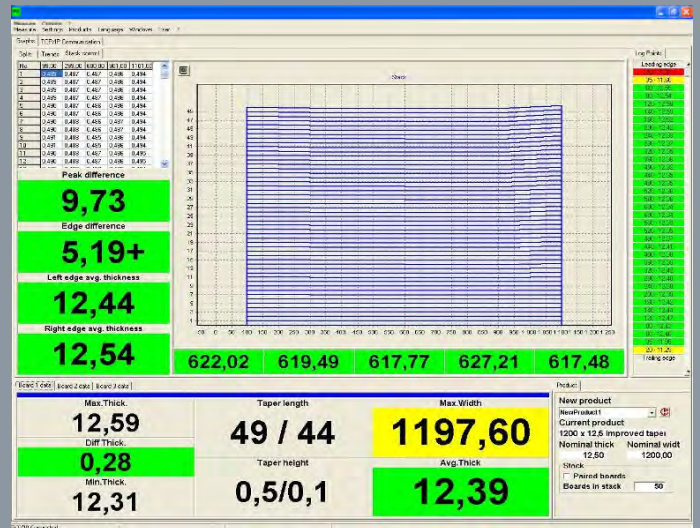
Operators software showing dimensional profiles



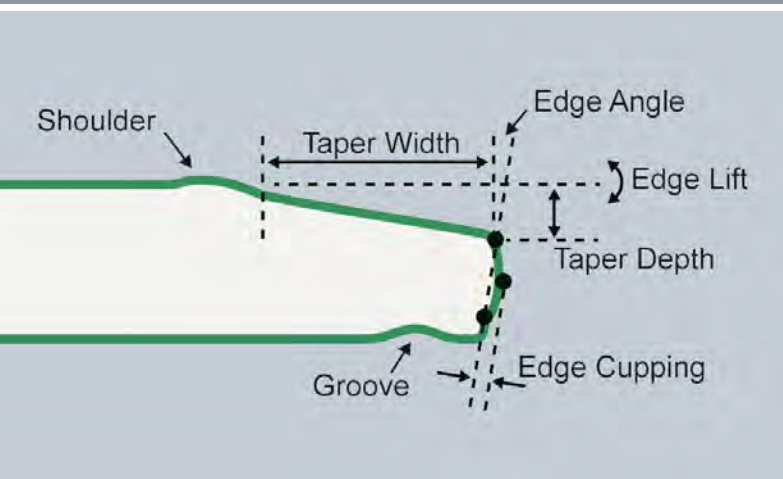
Trending diagrams for important parameters



Database for product recipes

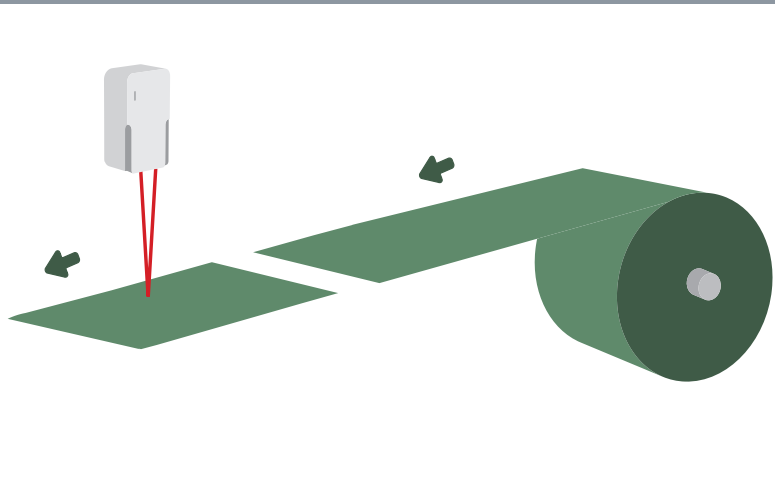


Stack control



What the system measures

The GMS1100 not only measures thickness, width and edge profiles. Taper depth/height and length are measured and calculated according to both European, American or customer specific standards. Shoulders and grooves will be found and edge lifts will be calculated. All types of edge profiles, straight or curved, will be displayed with edge angles and edge cupping/bow calculated. All profiles are displayed and compared against tolerance limits set in the products database. Numeric values selectable mm/inch. Forming plate bolts pattern will be marked out in thickness graph.



System options

- Doppler length gauges at knife and/or after dryer for improved length measurement and board shrinkage calculation
- An additional width measurement can be added to the system at delivery, or retrofitted
- Head control/slurry height measurement gauge
- Additional operators licenses. Up to 10 licenses possible to display measurements in multiple plant locations
- Level 2 communication such as OPC and PLC
- Service contracts with annual visits and special benefits

LIMAB GMS1100™

Gypsum board dimensional tolerances control

The GMS1100 can be said to be an “industry standard” system since it has been installed in most of the gypsum board production plants around the world. The in-line control of gypsum board dimensions is a useful tool for improvement of both the product quality and the production process, enabling waste and energy reduction.

The GMS1100 uses the latest laser technology, with state-of-the-art sensors developed by LIMAB specifically for the gypsum industry. Both high speed single point and 2D sensors are used. We have also designed laser sensor mounting stands, to fit into most gypsum board production lines. These stands are mechanically and temperature stable, which together with the high precision sensors provides true board profiles.

GMS1100 continuously measures the board thickness profiles across the board, including the taper profiles, taper width and height on both board sides, grooves and shoulders are also presented, the board width, the complete edge profiles with the edge angles calculated.

The easy to use Windows based software has an extensive set of functions, continuously developed and improved under the 15+ years since the first GMS1100 system was presented. Measurements are displayed in real time, both numerical and graphical, including trend graphs. The system will instantly alarm, on screen and with digital signals, when out of tolerance conditions occur. The system has an easily editable product library, which also can be shared by our Surface Inspection System FalconEye. All relevant board data can be printed on request and logged as text files or in SQL databases.

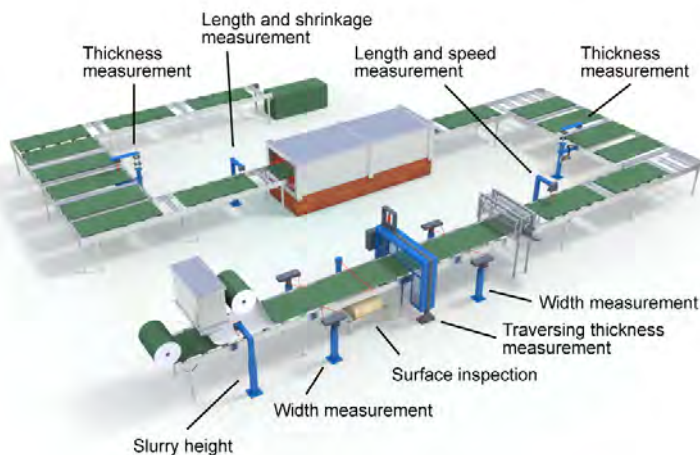
GMS1100 can be integrated with other process machinery equipment eg. Doppler length measurement gauges. It can also be used for communication and presentation of data, to or from the GMS1100, with various interfaces and protocols, like TCP/IP and OPC. VPN-connection for remote service and software upgrades is prepared for.



Thickness profile measurement

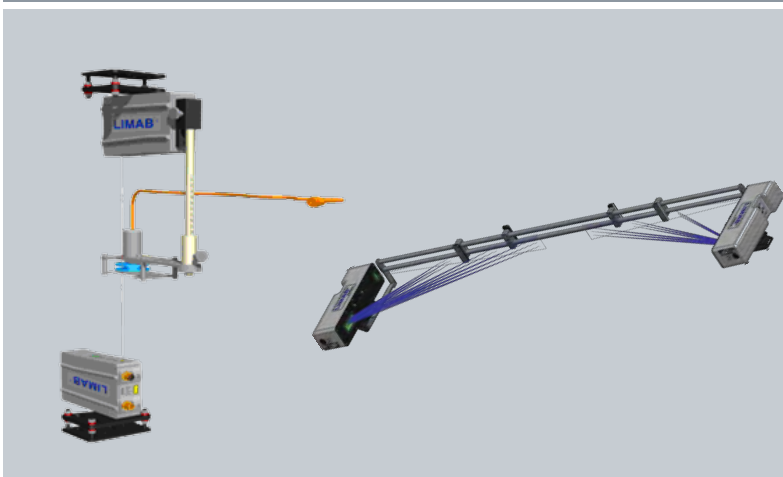


Width and edge profile measurement



Typical system installation layout

The thickness gauges are installed at the transfer table. If there is not enough physical space there for the installation frame an alternative solution is to instead use a traversing thickness frame before the knife, after the wet belt. The width gauges are installed outside the conveyor, typically just before the knife. It is also possible to include an additional width measurement in the system closer to the mixer for earlier out of tolerance indications. Additional terminals can be located at multiple plant locations connected to the factory network such as the wet-end transfer area, at the mixer, in laboratory or office.



Calibration tools

All measurement systems need calibration to give maximum accuracy. Included in the GMS1100 delivery are calibration units, for both thickness and width calibration. Together with the system calibration software they make calibration quick and easy. The system sensors and mounting stands are very temperature stable so calibrations need not to be done more frequently than during the normal maintenance operations.

Technical specifications

GMS1100™

Board thickness 1-30mm (0,2-1,2")
Board width 400-1500mm (23-60")
Board length 1000-6000mm (40-240")
Line speed ≤250m/min (800'/min)
Ambient temperature 0-40°C (32-104°F)

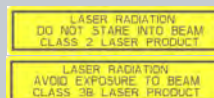
Thickness measurement:
Resolution 0,01mm
Taper width, typical ±3mm
Taper depth/height ±0,5mm
Accuracy ±0,1mm
Sampling rate 4000Hz

Width and edge profile measurement:
Resolution edge profile 0,1mm
Repeatability ±0,1mm at 2σ
Angle resolution 0,1°
Sampling rate (full edge profiles) 200-2000Hz
Edge profile resolution 265 points/profile

PC (subject to new technology upgrades):
Type Industrial PC
Interfaces Ethernet TCP/IP
VPN-connection (remote diagnostics/
software upgrades)
Optional: OPC, Digital I/O for alarms

PC console (other housing solutions possible)
Size 600x500x1070mm (24"x20"x42")
Protection class IP54

Laser Class 2 and 3B according to EN 60825-1:2014
and 21 CFR 1040.10 and 1040.11 except for deviations
pursuant to Laser Notice No. 50, dated June 24, 2007



We reserve the right to introduce modifications without prior notice



LIMAB has since its foundation in 1979 been dedicated to the design and manufacture of non-contact in-process measurement and inspection systems. Today LIMAB supply all of the major gypsum companies world-wide with inspection systems and have installations in more than 200 gypsum sites. We have in house design, production, service and sales with regional offices in key markets. LIMAB provide innovative solutions for on-line dimensional measurement and surface inspection.



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