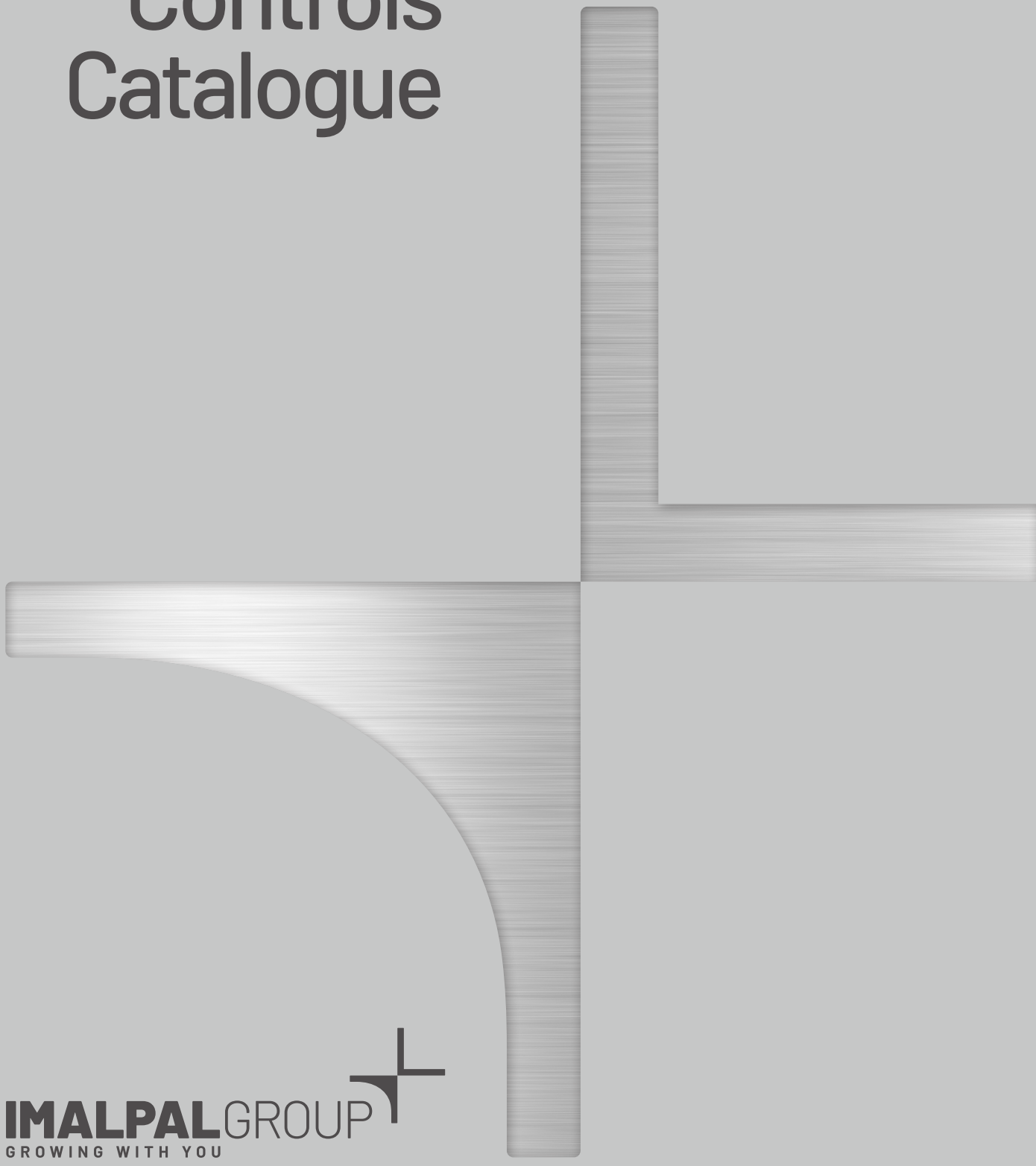
On-line Quality and Safety Controls Catalogue



IMALPAL GROUP
GROWING WITH YOU

On-line Quality and Safety Controls Catalogue

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Leading the way

IMALPALGROUP

Manufactures and supplies equipment and systems for the production and processing of PB/SPB, MDF/HDF, OSB/LSB/FOSB panels, insulation boards, pellets, pallet blocks and pressed wood-based products in general.

In addition to the supply of complete, brand new and fully refurbished production lines, IMAL is a leading manufacturer of glue dosing and blending systems as well as suppliers of the most innovative on-line and laboratory quality control devices and its products are found in virtually all the production plants around the world. Its target each year is to optimize the production process with the most up-to-date and advanced technology.

On-line Quality and Safety Controls

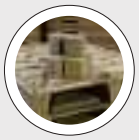
Systems and equipment renowned worldwide for their top-quality construction and design, advanced software, process control and continual innovations to improve product quality and cut production costs.

Imal, Modena

On-Line Quality Controls

WOOD BASED PANELS

	page number	PB/SPB	MDF/HDF	OSB/LSB/FOSB	INSULATION BOARDS	PLYWOOD
FBC200	**6**	•	•	•		•
LBC100	**8**	•	•	•		•
BL100 - BC200	**10**	•	•	•		•
TM200	**12**	•	•	•		•
LASERTHICK 100	**14**	•	•	•		•
DYNAXSCALE	**16**	•	•	•		
CDP800	**18**		•			
ISO40X	**20**	•	•	•		
FDM100	**22**	•	•	•		
UM400	**24**	•	•	•		
UM700	**26**	•	•	•		
UM900	**28**	•	•	•		
MMW200	**30**	•	•			
PSD400	**32**	•	•	•		

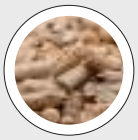


PRESSED WOOD PACKAGING

PALLET BLOCKS

PRESSED PALLETS

STRINGERS & BEAMS



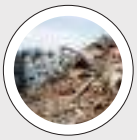
PELLETS & ENERGY

WOOD PELLETS AND BLACK PELLETS

GREEN FUELS AND BIOMASS

THERMAL AND ELECTRIC ENERGY

DRYING



WOOD RECYCLING AND WASTE TREATMENT

WOOD RECYCLING

SLUDGE RECYCLING

PLASTIC RECYCLING

CUSTOMIZED SOLUTIONS FOR RECYCLING

FULL BLISTER CLASSIFIER

FBC200

WITH 100% CONTROL OF THE MEASURED PANEL

BEST IN CLASS FOR:

WOOD BASED PANELS:
PB/SPB
OSB/LSB/FOSB
MDF/HDF
PLYWOOD

The FBC200 has been designed to detect unglued, delaminated, blown or low density areas, bubbles, cracks and other flaws inside any type of board (PB, MDF, OSB or Plywood). Unlike earlier systems that had a limited number of measuring channels and as a result were only able to guarantee a maximum board coverage of 30%, this system is able to detect defects over the whole board. It is possible to grade the quality of the production in progress and to adjust product parameter to avoid rejects and maximize customer satisfaction.

The system is composed of a sturdy beam, installed around the conveyor, complete with the electrical and pneumatic plant. It is possible to slide the bottom part of the system out to perform maintenance or repair without the need to stop production. The full bond/blister classifier (FBC) measuring sensors are mounted on the top and bottom beams on the board outfeed side. Since the sensors do not come into direct contact with the board, typical problems related to material wear are eliminated. In addition, when the system is installed at press outfeed, a pressurization unit is normally supplied which is mounted on the top of the beam to prevent the sensors from being damaged by the vapours released by the upper surface of the board.

The automatic calibration and dirt accumulation control ensure an efficient and highly reliable measuring control system.

The operator interface for setting up the plant parameters and those for the single productions is simple and straightforward to use and the formulas may be stored and retrieved at a later date. The display can be customised by choosing from the numerous high resolution 3D colour graphs available.

Numerical indications are also given. The parameters are stored in an SQL database and can be used to display and/or print reports on the desired productions, based on user determined choice criteria (date of production, shift, production name).

In addition to being user friendly and extremely intuitive to consent a prompt and immediate interpretation of the data collected, the software also provides detailed diagnostic screen pages to enable maintenance operators or Imal engineers carrying out remote assistance, to perform a full diagnosis of the equipment. A powerful microcontroller is mounted inside the receiver to transmit the data for the signal measured, to the CPU via Data Bus. The system may be network connected with TCP/IP protocols, for Siemens S7 and Allen-Bradley ControlLogix.

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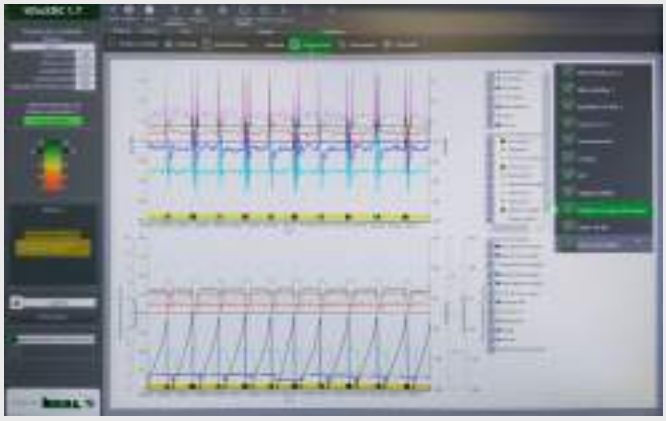
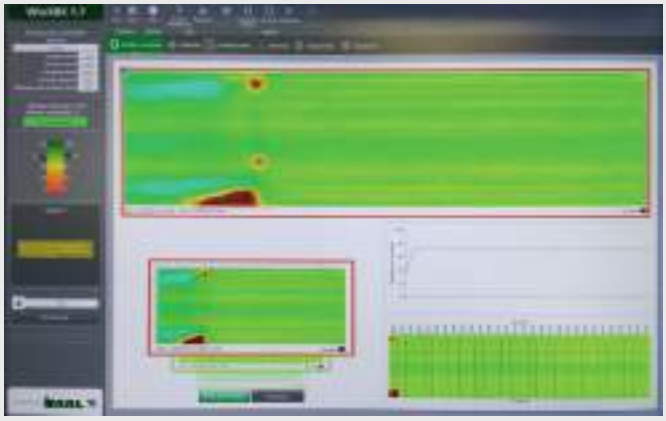
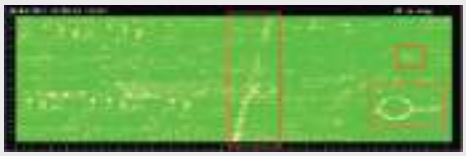
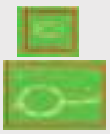
The elevated scanning accuracy over the whole board ensures that all kinds of defects are analysed and not just blisters, blows, delaminated areas.

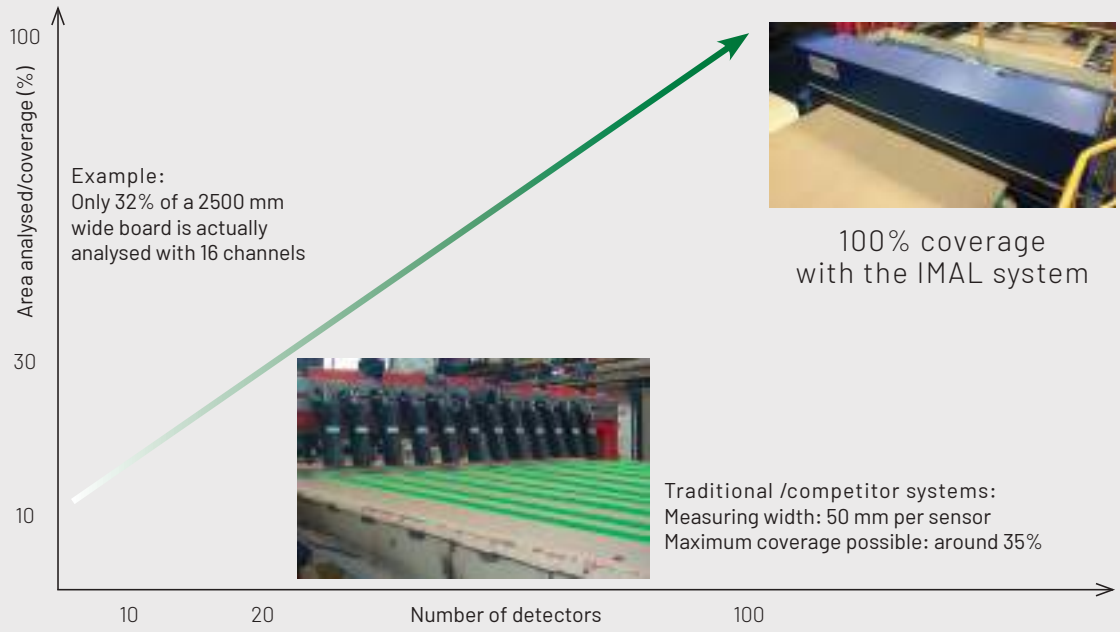




The steel belt joint and repairs produce different pressures and cure to the board which the FBC200 is able to identify.







MAIN FEATURES

• Sturdy mechanical assembly of the structure and sensors • Easy to use • Clear and comprehensive software • Operator is warned of an approaching blistered board, with the consequent optimization of process parameters, reduction of board defects and rejects • Easy installation in on line processes and/or after saws • Lower part can slide out for maintenance operations.

TECHNICAL DATA	
BOARD COVERAGE	100 %
BLISTER RESOLUTION	25 mm
MAX THICKNESS	50 mm
MAX BOARD SPEED	210 m/min
MAX BOARD TEMPERATURE	180 °C
MAX READ OUT WID	up to 4000 mm
NUMBER OF CHANNELS	48 min - 156 max

LIGHT BLISTER CLASSIFIER

LBC100

WITH 100% CONTROL OF THE MEASURED PANEL

BEST IN CLASS FOR:

WOOD BASED PANELS:
PB/SPB
OSB/LSB/FOSB
MDF/HDF
PLYWOOD

The LBC100 has been designed to detect unglued, delaminated, blown or low density areas, bubbles, cracks and other flaws inside any type of board (PB, MDF, OSB and Plywood).

Unlike earlier systems that had a limited number of measuring channels and i.e. 12,14 or 16 channels etc, and hence covering a minimum percentage of the board, the LBC100 can mount as many as 54 channels with a 75 mm resolution. It is possible to grade the quality of the production in progress and to adjust the product parameter to avoid rejects and maximize customer satisfaction.

The system is composed of a sturdy beam, installed around the conveyor, complete with the electrical and pneumatic plant. It may be installed in combination with the TM200 thickness gauging system on the same beam. The full bond/blister classifier LBC measuring sensors are mounted on the top and bottom beams on the board outfeed side. Since the sensors do not come into direct contact with the board, typical problems related to material wear are eliminated. In addition, when the system is installed at press outfeed, a pressurization unit is normally supplied which is mounted on the top of the beam to prevent the sensors from being damaged by the vapours released by the upper surface of the board.

The automatic calibration and dirt accumulation control ensure an efficient and highly reliable measuring control system. It is possible to slide the bottom part of the system out to perform maintenance or repair without the need to stop production.

The operator interface for setting up the plant parameters and those for the single productions is simple and straightforward to use and the formulas may be stored and retrieved at a later date.

The display can be customised by choosing from the numerous high resolution 3D colour graphs available.

Numerical indications are also given. The parameters are stored in an SQL database and can be used to display and/or print reports on the desired productions, based on user determined choice criteria (date of production, shift, production name). In addition to being user friendly and extremely intuitive to consent a prompt and immediate interpretation of the data collected, the software also provides detailed diagnostic screen pages to enable maintenance operators or Imal engineers carrying out remote assistance, to perform a full diagnosis of the equipment.

A powerful microcontroller is mounted inside the receiver to transmit the data for the signal measured, to the CPU via Data Bus. The system may be network connected with TCP/IP protocols, for Siemens S7 and Allen-Bradley ControlLogix.

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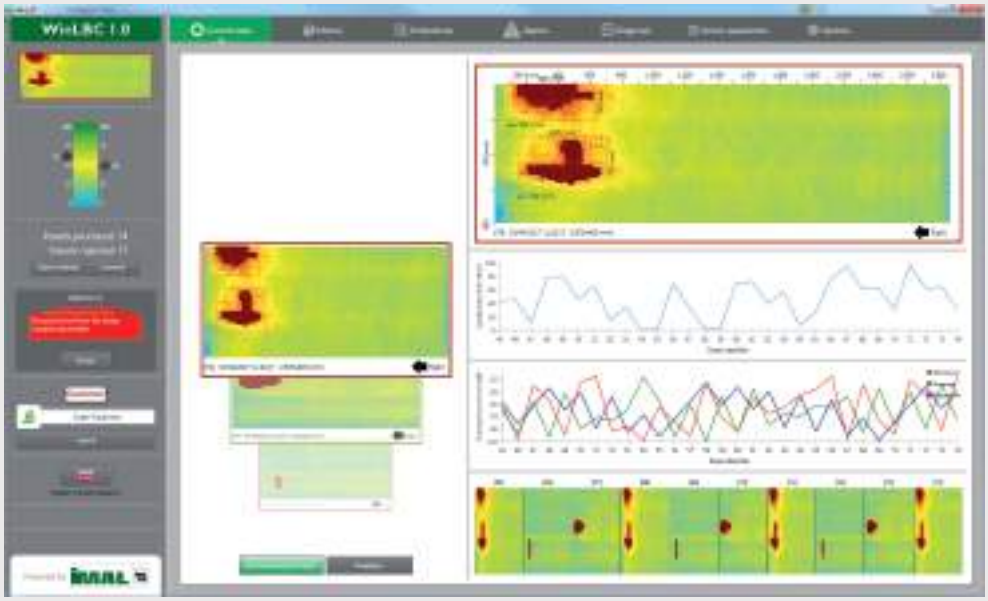
The elevated scanning accuracy over the whole board ensures that all kinds of defects are analysed and not just blisters, blows, delaminated areas.



MAIN FEATURES

• Sturdy mechanical assembly of the structure and sensors • Easy to use • Clear and comprehensive software • Operator is warned of an approaching blistered board, with the consequent optimization of process parameters, reduction of board defects and rejects • Easy installation in on line processes and/or after saws • Lower part can slide out for maintenance operations.

TECHNICAL DATA	
NUMBER OF CHANNELS	18 min - 54 max
DISTANCE BETWEEN EACH CHANNEL	75 mm (fixed)
MAX THICKNESS	50 mm
MAX BOARD SPEED	210 m/min
MAX BOARD TEMPERATURE	180 °C
READ OUT AVAILABLE	1350 to 4050 mm

BLISTER CLASSIFIER

BL100 - BC200

BLISTER AND DELAMINATION DETECTION SYSTEM


BL100


BC200

The IMAL BLISTER systems BL100 and BC200 have been designed for the on-line detection of flaws or imperfections which may occur in wood-based panels (particleboard, OSB, MDF, Plywood and LVL) such as unglued areas, blistered or blown areas, bubbles, cracks, etc. Each system consists of a sturdy tubular steel beam; the fully detachable structure installs around the board roller conveyor at press or sander outlet and comes complete with the electrical and pneumatic plant. An electrical box, housing the microprocessor, is mounted on the side of the assembly, whereas the PC, monitor and printer are normally located in the control room. The particular functioning principle of the system (ultrasonic impulses) avoids any direct contact with the board as well as eliminating all the usual problems related to material wear. The BL100 version is generally used on lines where maximum board thickness does not exceed 50 mm and densities are over 500 kg/m3. The BC200 version on the other hand is preferable for thicker boards (up to 120 mm) or for low density boards. Furthermore, the system is able to provide an indication of board quality on a 256 colour scale.

MAIN FEATURES

• Sturdy mechanical assembly of the structure and of the sensors in particular • A correct measurement is made without contact with the board • Diagnostics and control of the system's operating status • Fast measuring speed • An efficient pneumatic system ensures that the transmitters are kept clean, reducing maintenance • Incorporated database to store the measurement reports, for statistical analysis and graph printouts • Numerous graphs available such as: blister position on board, production trend blisters, opening trend, board quality trends • Network linking possible with TCP/IP protocol, for Siemens S7 and Allen-Bradley ControlLogix

BEST IN CLASS FOR:

WOOD BASED PANELS:
PB/SPB
OSB/LSB/FOSB
MDF/HDF
PLYWOOD
LVL

ADVANTAGES

• Repeatability, reliability, comprehensive and accurate measurement • Improved production quality • On-line visualization of the production process • Quick and easy to install • Little maintenance required • It can be mounted on the same beam used to support the IMAL thickness gauge.

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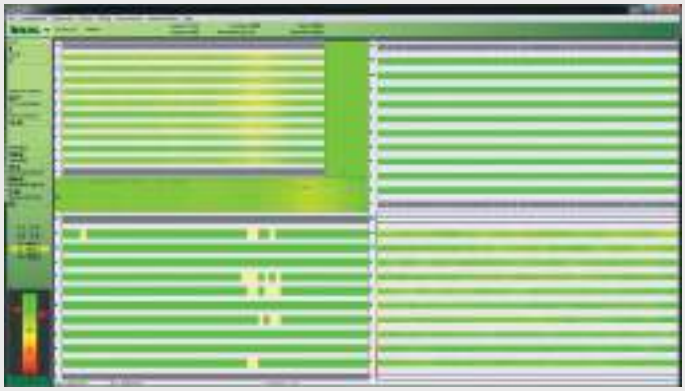

TECHNICAL DATA	
MAX BOARD THICKNESS	50 mm (120 mm optional)
MAX LINE SPEED	210 m/min (can be accelerated during the measurement)
CHANNEL WIDTH	35 mm
MIN CHANNEL SPACING	(Centerline to centerline) 100 mm
NUMBER OF SENSORS	2 ÷ 32
MAX BOARD TEMPERATURE	130 °C
MAX OPERATING TEMPERATURE	50 °C
CLEANING SYSTEM	Automatic after each board, with compressed air

OUTPUT ALARMS FOR	
BLISTER LENGTH	From 10 mm up to the full length of the board (programmable)
BLISTER WIDTH	Min in relation to the distance between sensors
SINGLE BLISTER	Total surface (programmable)
PERCENTAGE	Of defective area on the full board (programmable)

These alarms are either available immediately or at the end of the board, and may be paralleled for global alarms, automatic reject or used on each channel for markers, automatic controls etc.

TM200 & TM200-LEV

TM200

TO MEASURE BOARD THICKNESS AND WEIGHT IN REAL TIME

The TM200 system has been designed for the on-line measurement of thickness, weight and density (when used in conjunction with the weighing scale).
The TM200 system consists of a sturdy tubular steel beam; the fully detachable structure installs around the board roller conveyor at press or sander outfeed, and comes complete with the electrical and pneumatic plant.
An electric box housing the micro processor is mounted on the side of the structure, whereas the PC, monitor and printer are normally located in the control room.

MAIN FEATURES

• Measurement is not influenced by vibration or board undulation • Board thickness measured non stop • Reliable, complete and accurate measurements with good repeatability • The board is not damaged in any way by the measurement • Fast moving system to ensure accurate measurement even with high-speed cycles • Incorporated database to store the measurement reports, for statistical analysis and graph printouts • Numerous graphs available such as: boards produced, pressings effected, average thickness, weight and density, for error search and forming line control etc.... • Network linking possible with TCP/IP for Siemens S5/S7, Allen-Bradley ControlLogix • Normally installed after single opening, multi-opening or continuous presses.

BEST IN CLASS FOR:

WOOD BASED PANELS:
PB/SPB
OSB/LSB/FOSB
MDF/HDF
PLYWOOD
LVL

ADVANTAGES

• Extremely accurate measuring ability • Quick and easy to install • Simple to use • Little routine maintenance needed • Self-calibrating system for thickness and weighing scale (when present).

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The TM200 – LEV version is also available for installation on the sanding line. This version differs from the standard version in that the system is able to control measuring points distributed over several beams (up to 4 beams for a total of 48 measuring points), with the measurements conveniently displayed on the same monitor.

TECHNICAL DATA	
LONGITUDINAL MEASURING POINTS (WIN-LEV)	From 1 to 4
TRANSVERSAL MEASURING POINTS	From 1 to 12
MAX MEASURABLE THICKNESS	50 mm (80 ÷ 120 optional)
MIN RESOLUTION	1/100 mm
MAX ERROR	2/100 mm
MAX LINE SPEED	210 m/min
MAX TEMPERATURE OF THE BOARD BEING MEASURED	180 °C
MAX OPERATING TEMPERATURE OF CUBICLE	40 °C

NO CONTACT THICKNESS METER

LASERTHICK 100

TO MEASURE BOARD THICKNESS AND WEIGHT REAL TIME

BEST IN CLASS FOR:

WOOD BASED PANELS:
PB/SPB
OSB/LSB/FOSB
MDF/HDF
PLYWOOD
LVL

LASERTHICK 100 is particularly useful for measuring board thickness in a continuous work process where, due to the very nature of the process, a contact system would not be suitable (low density boards or surfaces which are particularly delicate). The system consists of one or more steel or aluminium beams. The fully detachable structure installs around the board roller/belt conveyor, and comes complete with the electrical and pneumatic plant. An electric box housing the microprocessor is mounted on the side of the structure, whereas the PC, monitor and printer are normally located in the control room. The system is equipped with the necessary hardware for reading board weight taken by a weighing scale, and hence it is possible to display weight as well as thickness, and so calculate board density, matching all the data to the same board which are then displayed graphically.

MAIN FEATURES

• Measurement is not influenced by vibration or board undulation if the sensors are mounted on the top and bottom of the beam (TMLD, differential measurement) • Sensors can be mounted on the top of the beam only (TML option) if the board travels along a belt or if there are no particular problems with vibration • Board thickness measured non-stop • Reliable, complete and accurate measurements with good repeatability • Blowers/sprayers to keep the sensors clean • Side measuring heads can be disabled when producing narrow boards • Electronic weight transducers for the weighing scale easily and rapidly installed on the existing conveyor • Incorporated database to store the measurement reports, for statistical analysis and graph printouts • Numerous 3D and 2D graphs available such as: boards produced, pressings effected, average thickness, weight and density, for error search and forming line control etc.... • Network linking possible with TCP/IP for Siemens S5/S7, Allen-Bradley ControlLogix • Normally installed after single opening, multi-opening or continuous presses.

ADVANTAGES

• Extremely accurate measuring ability • Quick and easy to install • Simple to use • Low maintenance • Auto-tuning thickness calibration system using a set of sample weights designed by IMAL or on the basis of customer requirements • Self-calibrating system for weighing scale (when present).

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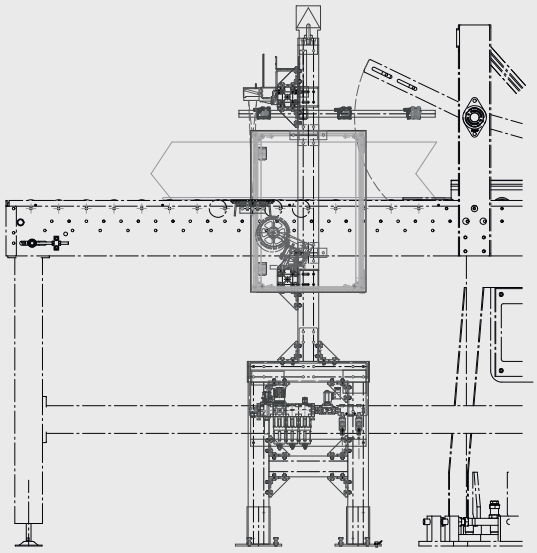
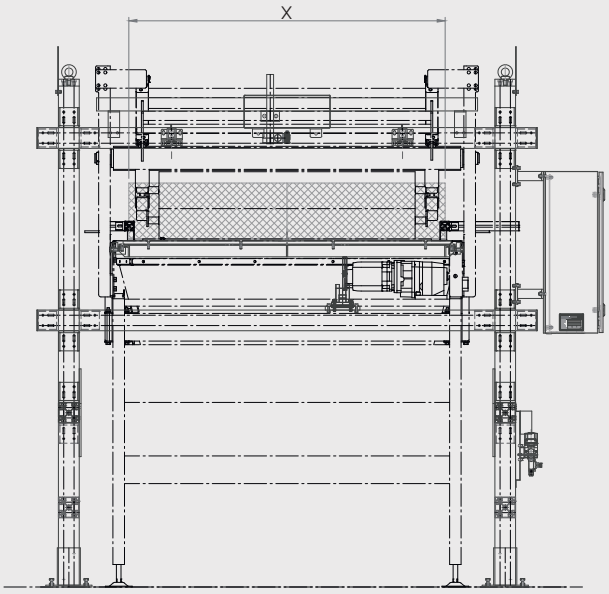
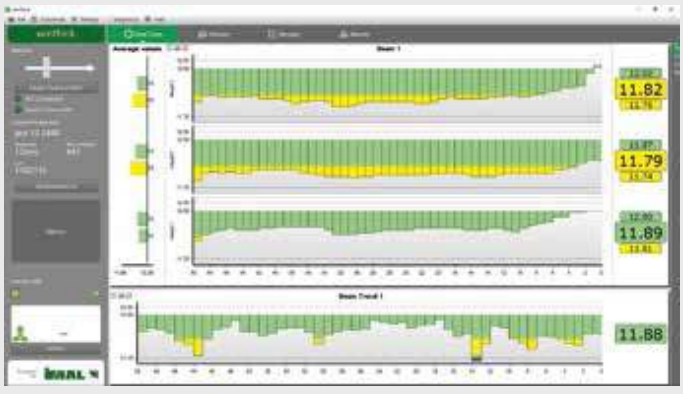


⇐ WORKING LINE





TECHNICAL DATA	
TRANSVERSAL MEASURING POINTS	From 1 to 9
MAX MEASURABLE THICKNESS	up to 2500 mm
MIN RESOLUTION	approx. ±1/10 mm (depending on the range)
MAX LINE SPEED	300 m/min
MAX OPERATING TEMPERATURE OF CUBICLE	50 °C

X-RAY WEIGHT PER AREA ANALYSER

DYNAXSCALE

NO CONTACT ONLINE WEIGHT MEASUREMENT

BEST IN CLASS FOR:

WOOD BASED PANELS:
PB/SPB
OSB/LSB/FOSB
MDF/HDF

The system permits a continuous and reliable measurement of the weight per area (kg/m2) of the board, even at high speeds. The unit is equipped with "n" number of X-ray tubes, designed to ensure that the emission characteristics are suitable for these particular measuring requirements, combined with solid crystal receivers (the "state-of-the-art" in terms of X-ray receivers).
Both devices have been designed to achieve elevated sensitivity with regard to variations in density and good measuring accuracy, without neglecting the prime objective which is that of guaranteeing that they are safe to use.
The X-rays emitted by the transmitters are collimated to prevent any potential scattering (which would generate noise and consequently impact negatively on the measurement) and to minimize X-ray emission in the area surrounding the unit. The receivers are also equipped with collimators, again aimed at limiting the noise due to scattering and hence achieve better measuring accuracy.
The measurements are conducted without any contact with the material that is being analysed. The machine is supplied on the basis of customer specifications depending on the type of board produced, the weight to be measured, and board size. It is possible, via software, to make a full diagnosis of the unit and manage the alarms. When used in conjunction with the thickness gauge, in addition to the weight per area (kg/m2), each measuring point is shown as well as board weight (kg) and average density (kg/m3).

MAIN FEATURES

• No contact with the board • Elevated sensitivity and good measuring repeatability • Greater intrinsic safety with respect to radioactive sources • X-ray beam collimation system to reduce radiation emission • System can be customised to customer specifications • Cooling and drying systems to stabilize the signals.

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TECHNICAL DATA	
MAX BOARD WIDTH	4000 mm
MAX BOARD THICKNESS	45 mm
MAX PRODUCTION SPEED	3000 mm/s
MEASURING RANGE	2 - 40 kg/m^2
ACCURACY	± 0.5%
MAX NUMBER OF MEASURING POINTS	7

ON-LINE DENSITY PROFILE METER

CDP800

NO CONTACT DENSITY PROFILE OF THE PRODUCT - PATENTED

BEST IN CLASS FOR:

WOOD BASED PANELS:
MDF/HDF

The unit has been designed to perform the on-line density profile analysis on wood based panels while the production process is in progress. The system exploits the theory adopted in X-ray operated systems to conduct a non-destructive test on the board produced. Both the transmitter and X-ray receiver are mounted below the board to prevent them from being affected by any potential overheating and to ensure that transmitter and receiver are perfectly aligned, preventing issues related to thermal dilation.

MAIN FEATURES

• Compact, easy to position and suitable for installation on all types of lines • Collimated and suitably screened X-ray beam • Designed to minimize scattered radiation • Extremely safe to use thanks to the application of advanced technology • Non-invasive measurement • Accurate board density profile analysis • On-line measurement and graphic illustration of the density profile • 2D and 3D visualization with the possibility to compare graphs • Maintenance may be carried out on line without interrupting production • Production may be changed without the need to change any of the machine parameters • Incorporated database for statistical analysis and storing the density profiles • Test results swiftly compared with other laboratory testing equipment • The device is calibrated automatically, no operation required for calibration • The system may be network connected with TCP/IP protocols, for Siemens S7 and Allen-Bradley ControlLogix.

ADVANTAGES

• Real time monitoring of production quality and press performance • Density profile measured on line after multi-opening press line for the first time ever • Extremely economical and accurate mobile analyser • Special algorithm used, patented application • Reduced start up times • Optimising of the amount of material used in the production process • No isotopes: no radiogenic emission without power supply • The entire device is installed below the board • Fine-tuned and workshop calibrated prior to shipment.

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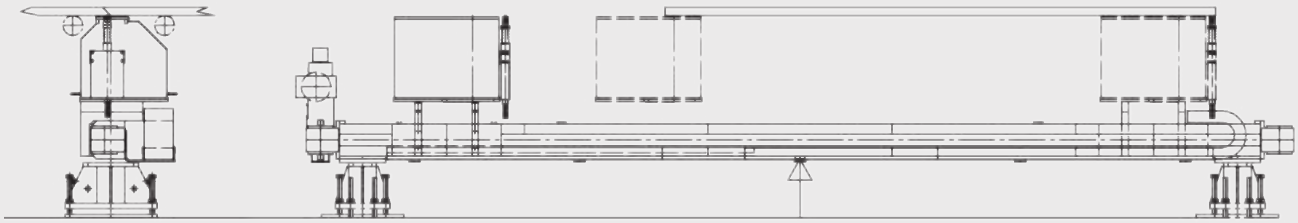
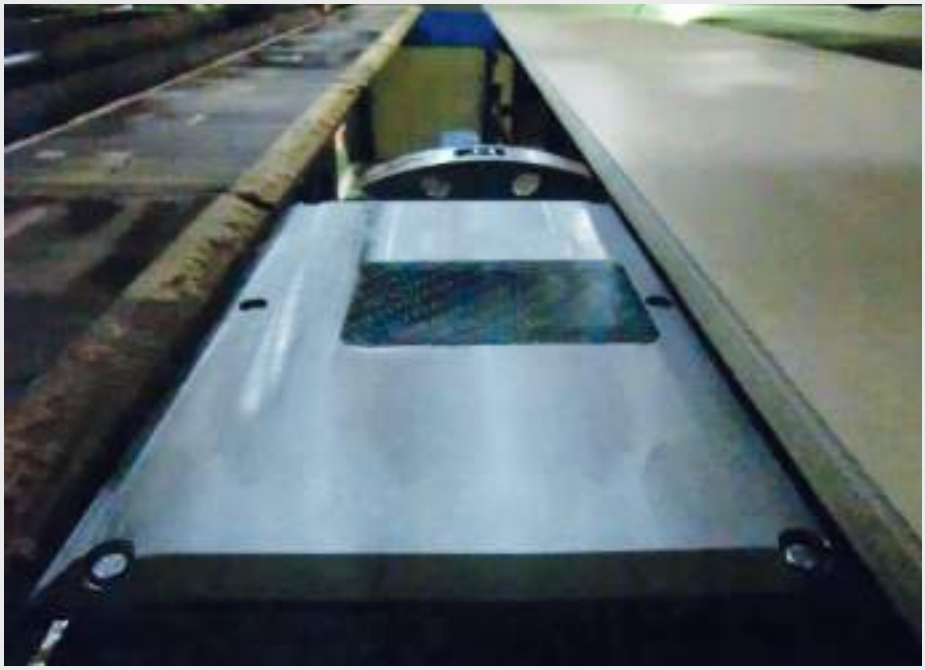


Dimensions will vary on the basis of customer requirements.



TECHNICAL DATA	
THICKNESS	3 ÷ 60 mm
MEASURABLE DENSITY	400 ÷ 2000 Kg/m^3
MAX MEASURING SPEED (RELASE TO THICKNESS)	0.25 mm/sec
GRAPH RESOLUTION	1/100 mm
MAX BOARD WIDTH	4000 mm

ON-LINE X-RAY MAT DENSITY GAUGE

ISO40X

RADIOMETRIC GAUGE FOR THE TRANSVERSAL SURFACE DENSITY MEASUREMENT

The system performs an accurate on-line surface density analysis (weight per surface unit) along the cross section of the mat being examined. It is also possible to measure lengthways, selecting a point on the mat where the scanner can be positioned automatically.
The analysis is conducted without any contact with the material by exploiting the X-ray control theory and the use of non destructive testing techniques. The solid state crystal receiver, the "state-of-the-art" in terms of X-ray receivers, consents rapid measurement data acquisition and consequently a much faster mat scanning speed with respect to standard systems.

MAIN FEATURES

• Well collimated and suitably screened X-ray beam • Engineering aimed at minimizing scattered radiation. • Elevated sensitivity and measuring repeatability • No contact with the mat • Device controlled by remote PC • Average profile of the last "x" scans • Graph printing management • Alarm management • Deviation ranges (++/-- and +/-) shown on graph for instantaneous values (and on the averages graph) as the mat is being scanned, in relation to the average value of the last scan made • Calibration system for reading belt density • The system may be network connected with TCP/IP protocols, for Siemens S7 and Allen-Bradley ControlLogix • System may be customized to suit customer requirements • Suitable for any kind of wood based panel.

BEST IN CLASS FOR:

WOOD BASED PANELS:
PB/SPB
OSB/LSB/FOSB
MDF/HDF

ADVANTAGES

• The device is not equipped with radioactive isotopes: no radiogenic emission without power supply • Real time monitoring of production quality • Low maintenance costs. • Extremely fast scanning speed thanks to the solid state crystal receiver.

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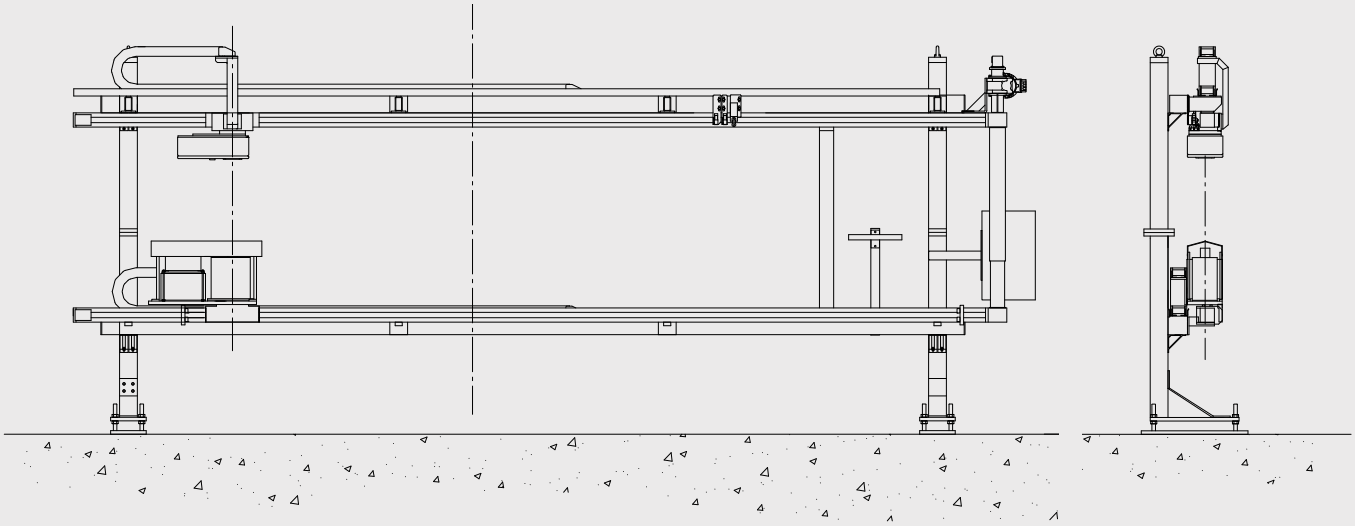
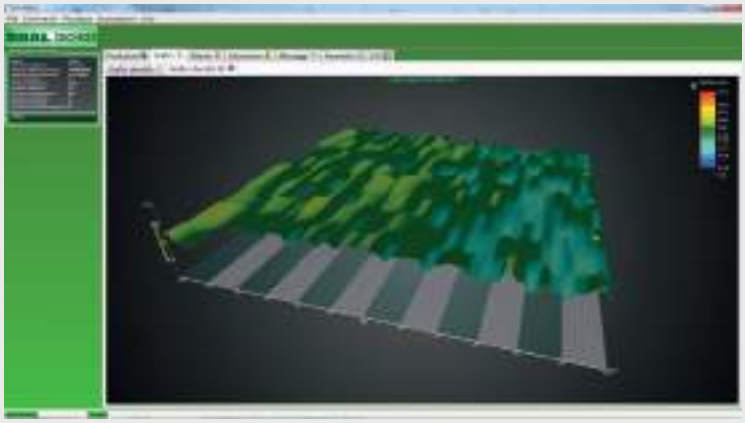


Dimensions will vary on the basis of customer requirements.



SURFACE DENSITY PROFILE GRAPH

The bar graph shows the surface density profile along the transversal section of the line; each bar corresponds to the average value of the measurements taken at a minimum distance of 5 cm. This graph is continually updated as the board moves forward.

It is also possible to see the average graph which gives the average of the last "x" scans, where "x" is a programmable parameter.

TECHNICAL DATA	
MAT WIDTH	as required (4 m maximum)
MAT HEIGHT	800 mm maximum
MEASURING RANGE	0 ÷ 40000 g/m^2
ACCURACY	±0.5%
PRODUCTION SPEED	up to 2500 m/s
OPERATING TEMPERATURE RANGE	5 °C ÷ 45 °C

X-RAY FIBRE DENSITY METER

FDM100

TO MEASURE THE WEIGHT PER SURFACE UNIT FOR FORMING MACHINES

The system, which has been especially designed for installation on the forming machine, enables the weight per surface unit to be read and regulated continually in order to keep mat weight constant.
It replaces the more dangerous isotope systems, and reduces and simplifies installation and maintenance procedures.
The measuring system consists of an X-ray transmitter and receiver, located respectively above and below the forming bin belt and mounted on a C-shaped support to facilitate maintenance.

ADVANTAGES

• X-ray operated: the device is not equipped with radioactive isotopes: no radiogenic emission without power supply • On-line weight per area control and automatic former regulation.

BEST IN CLASS FOR:

WOOD BASED PANELS:
PB/SPB
OSB/LSB/FOSB
MDF/HDF

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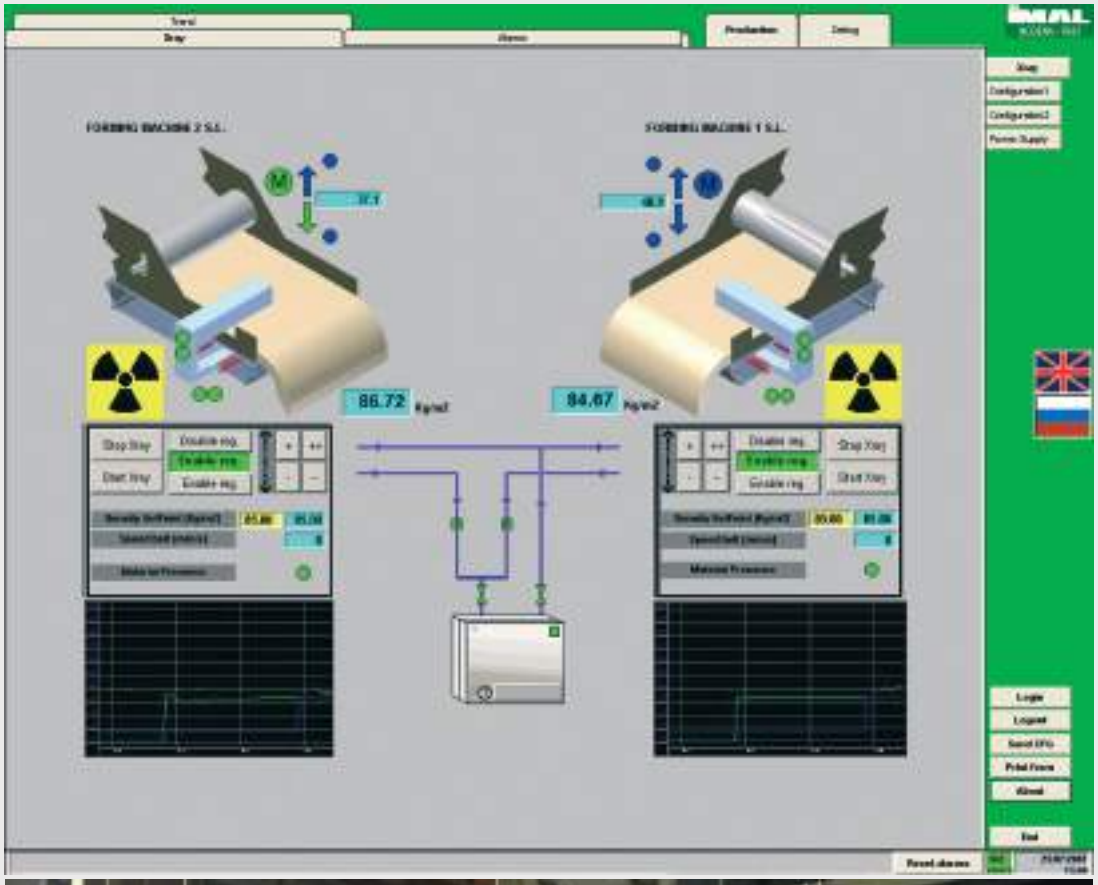

TECHNICAL DATA	
WEIGHT PER AREA	0 ÷ 45 kg/m^2
MEASURING ACCURACY	+ 1%
MEASUREMENT SPEED	Up to 3 m/s

ON-LINE MOISTURE METER

UM400

TO MEASURE THE AMOUNT OF MOISTURE CONTAINED IN THE MATERIAL

The UM400 microprocessing instrument has been designed to determine on-line the percentage of moisture present in the wood. The material is dried by the heat of an infrared lamp. The method used is unaffected by any side effects which may be caused by colour, density, chemical properties or absorption, all of which may produce unreliable results with other methods. A pneumatic arm extracts the material from the production line and places it in a thermostatic chamber containing a precision weighing scale, where the moisture test will be carried out. When the final weight is reached the moisture content is calculated and displayed. The procedure is performed automatically and does not require an operator.

MAIN FEATURES

• User friendly software • Simple and clear graphics • Incorporated database to store the measurements and effect statistical analysis • Easy to install • May be interfaced with other computers and network linked to PLC.

ADVANTAGES

• Real time measurement of the moisture content • No risk of human error with the measurements • Elevated measuring precision • Simple to use • No maintenance • Able to manage up to 8 UM400s at the same time with just 1 PC • May be installed anywhere in the plant.

BEST IN CLASS FOR:

WOOD BASED PANELS:
PB/SPB
OSB/LSB/FOSB
MDF/HDF

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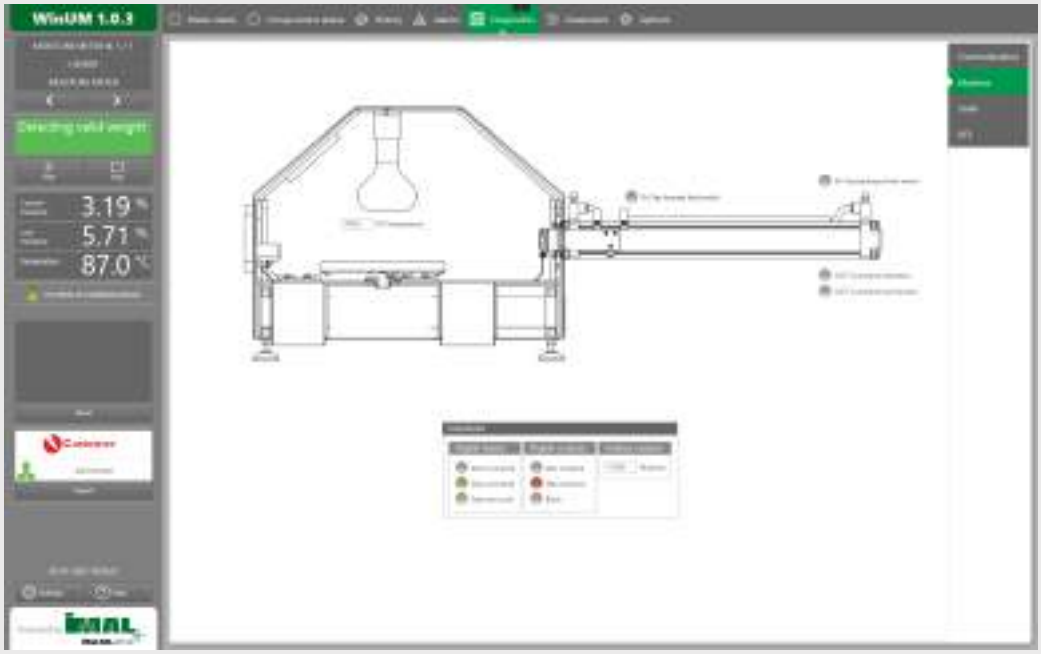

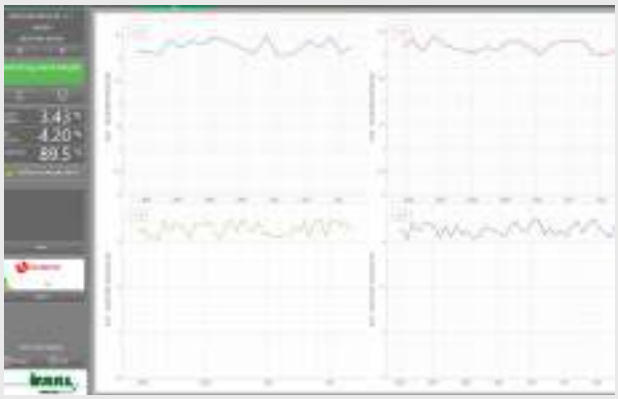

WORKING PRINCIPLE

2 function modes: • **Automatic P control:** the measuring cycle ends when weight variation over a time unit (programmable in seconds) falls below or is equal to the P which has been set (programmable in 1/100 g)

• **Manual timer control:** the operator sets the time for the measuring cycle in minutes, and at the end of the cycle, the final weight and moisture content are displayed and stored and/or printed.

TECHNICAL DATA	
FULL SCALE	0 ÷ 200% ATRO
ACCURACY	0.1%
RESOLUTION	0.01%
CHAMBER OPERATING TEMPERATURE RANGE	+30 ÷ 250 °C (programmable)

ON-LINE INFRARED MOISTURE METER

UM700

TO MEASURE THE AMOUNT OF MOISTURE CONTAINED IN A VARIETY OF PRODUCTS

The UM700 is an infrared photometric analyser which uses fixed near infrared wavelengths to measure the amount of moisture contained in a variety of products. The system is based on the capacity of the materials to absorb certain wavelengths of infrared radiation. Material temperature readout may be added as an option.

The UM700 is a "stand-alone" sensor for the on-line monitoring of moisture content. Optional wall-mountable or hand-held operator interfaces are available for setup, calibration and maintenance. In applications where material needs to be collected from a downward flow, for example from inside a chute, a material collecting system may be supplied. It is possible to add a second cooling kit if temperatures are very high in the installation area or, on the contrary, a heated cover for areas where temperatures are low.

MAIN FEATURES

• Unaffected by light or material height • No contact analysis • No auxiliary signal processors needed for signal processing • Dual analog output • Versatile interface through RS 485 communication • On-line moisture monitoring possible with analogue signal to remote PC • Pre-set factory calibration • Easy to install.

ADVANTAGES

• The on-line monitoring of the moisture content may be used to perceive variations in the production process • The data saved may be used to provide an historical moisture trend.

BEST IN CLASS FOR:

WOOD BASED PANELS:
PB/SPB
OSB/LSB/FOSB
MDF/HDF

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TECHNICAL DATA	
MOISTURE RANGE	Min. 0.1% - Max. 95%
TEMPERATURE RANGE (OPTIONAL)	Min. 5°C - Max. 100°C
ACCURACY	± 0.5% of calibrated range
REPEATABILITY	± 0.5% of calibrated range
STABILITY	Requires 1 calibration a year
MAX OPERATING AMBIENT TEMPERATURE WITH COOLER KIT	55 °C
SENSOR DISTANCE FROM SAMPLE SURFACE	From 150 to 350 mm
AREA SAMPLED	75 cm^2 standard
POWER	90/260 V - 50/60 Hz
OUTPUT	4 ÷ 20 mA - optional 0 - 10 V
DIMENSIONS	406 x 152 x 178 mm (L x W x D)
WEIGHT	10.8 kg
PROTECTION	IP65 CEI EN 60529

ON-LINE MICROWAVE MOISTURE METER

UM900

TO MEASURE MOISTURE CONTENT

The UM900 microwave moisture meter owes its creation to the constant research and investigation into the development of new techniques to achieve accurate detection and monitoring of the parameters involved in the production process.
The UM900 is able to conduct the on-line measurement of the moisture content, density and temperature of the material analysed.

MAIN FEATURES

• Charts and graphs updated real time with programmable alarm levels for an optimal control of the process • Performs a vectorial moisture measurement irrespective of density, temperature, formula used, etc. • Configuration of analogue and digital outputs • Automatic stabilizing of the temperature inside to ensure elevated measuring precision • Calibration stable over time • May be used for any kind of wood • Quicker to calibrate thanks to a simple calibration procedure • Easy to install.

ADVANTAGES

• The on-line monitoring of the moisture content may be used to perceive variations in the production process • The data saved may be used to provide an historical moisture trend.

BEST IN CLASS FOR:

WOOD BASED PANELS:
PB/SPB
OSB/LSB/FOSB
MDF/HDF

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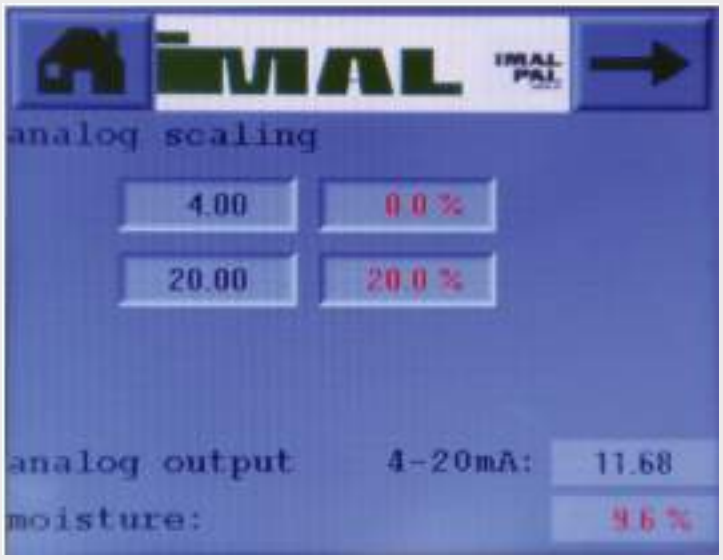


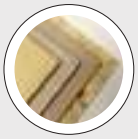
TECHNICAL DATA	
MOISTURE MEASURING RANGE	Min. 0.1% - Max. 95%
MEASURING PRECISION	0.2%
OPERATING TEMPERATURE RANGE	0 ÷ +50 °C may be increased if controlled by thermostat
ANALOGUE INPUT/OUTPUT SIGNALS	4 - 20 mA
MEASURING TIME	< 1 sec

MMW200 MILLIMETRE WAVE GAUGE

MMW200

TO MEASURE WEIGHT PER AREA, MOISTURE CONTENT AND THICKNESS OF THE MAT

BEST IN CLASS FOR:



WOOD BASED PANELS:
PB/SPB
MDF/HDF

The system performs a rapid and continuous measurement of the weight per area, moisture content and thickness along the transversal section of the mat. It is normally installed just after the pre-press to monitor the formed mat. The analysis takes place without any contact with the mat and is perfectly safe for operators to use, thanks to the Terahertz technology, the same technology applied in the airport body scanner systems.

The source consists of a SFHH (Safe For Human Health) millimetre wave emitter, operating on the same principle as a Level Probe Radar, but designed with emission characteristics that are suitable for online measurement requirements.

Thanks to the properties of the millimetre waves and the processing of a sophisticated algorithm, the unit can provide the measurement of the weight per area and thickness not only for the whole mat but for the single layers that form the mat as well.

The system may be connected up as a feedback to the IMAL MWR system which automatically lowers the bars ("skis") which keep the material pressed down upstream of the scalper in areas where weight distribution is lower so that the scalper removes a smaller quantity of material or none at all (the pre-pressed material passes below the level of the scalper without being levelled off).

Consequently, in the areas where there is too much material the bars rise so as not to compress the material, and the scalper can remove any excess material.

MAIN FEATURES

• No contact with the mat • No radioactive sources (full intrinsic safety) • Elevated sensitivity and good measuring repeatability • Possibility of analysing the inner layers individually

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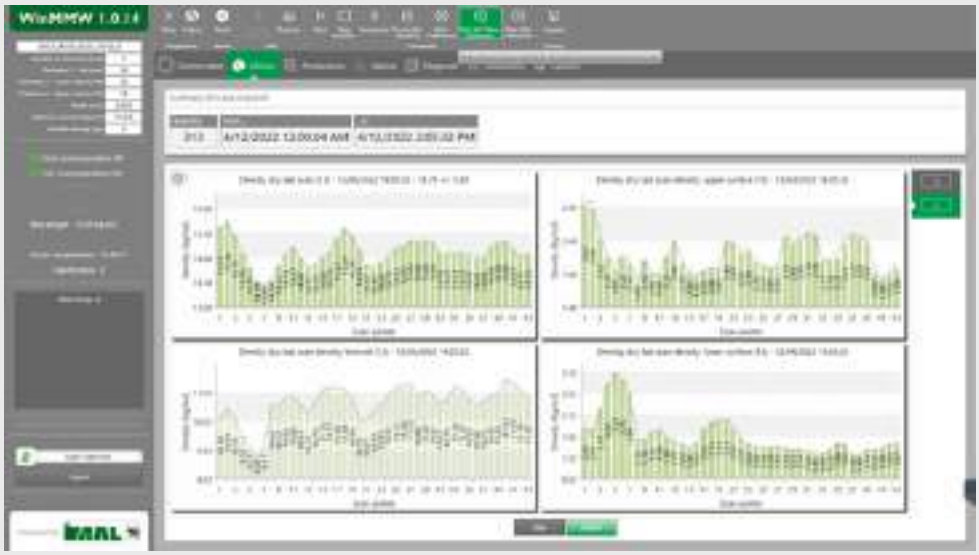

It is possible to set the following parameters in the regulation and control software:

- Properties of the mat being analysed (weight per area setpoint, thickness, moisture)
- Alarm management
- Limit ranges (++/-- e +/-) on the graphs for the instant values while the mat is being scanned
- Graphs with the average values of the last X scans
- Unit can be monitored from tablets and handheld devices via WiFi and Browser
- Possibility to produce reports and manage all the data in an easier and faster way, based on a modern SQL server database that is easily linked to your company data manager to enable all the necessary analyses now required by the market

TECHNICAL DATA	
MAT WIDTH	4000 mm
MAT HEIGHT	200 mm
PRODUCTION SPEED	2.000 mm/sec
MOISTURE RANGE	0 ÷ 15%

PRESS SECURITY DEVICE

PSD400

TO IDENTIFY IMPURITIES PRESENT IN THE WOOD FLOW

The PSD on-line Press Security Device, has been designed to meet the ever increasing need for panel manufacturers (particleboard, OSB and MDF) to identify in the formed mat, impurities such as tiny pebbles, stones, metal and other high density foreign bodies like plastic and lumps of glue from the wood. Real time detection and elimination of these impurities at pre-press outfeed, especially in the case of thin panels, will protect and safeguard press and steel belts. The device is also able to measure the density distributed over the entire width of the mat. This measurement is essential for correcting forming density distribution and consequently for optimizing production quality and reducing costs related to excess material at the same time.

Highly sensitive, accurate and reliable sensors, specially designed for the application, pick up the signal to produce a clear and well-defined image of the mat, which is then rapidly and accurately processed real time by special DSP devices to identify the particles of a different density to that of wood fibre, and to provide the means for the selective elimination of the particle detected.

BEST IN CLASS FOR:

WOOD BASED PANELS:
PB/SPB
OSB/LSB/FOSB
MDF/HDF

MAIN FEATURES

• Reliable and long lasting X-ray source • Collimated and suitably screened X-ray beam • Engineering aimed at minimizing scattered radiation • Impurities which may be detected: calcareous materials, silica, concrete and stone, pieces of brick, metal objects, glue lumps, high density materials in general • Compact size • Reject devices may be operated by the activation of a useful contact, whenever an impurity is detected • Each production has 16 reject classes available for differentiating density and area.

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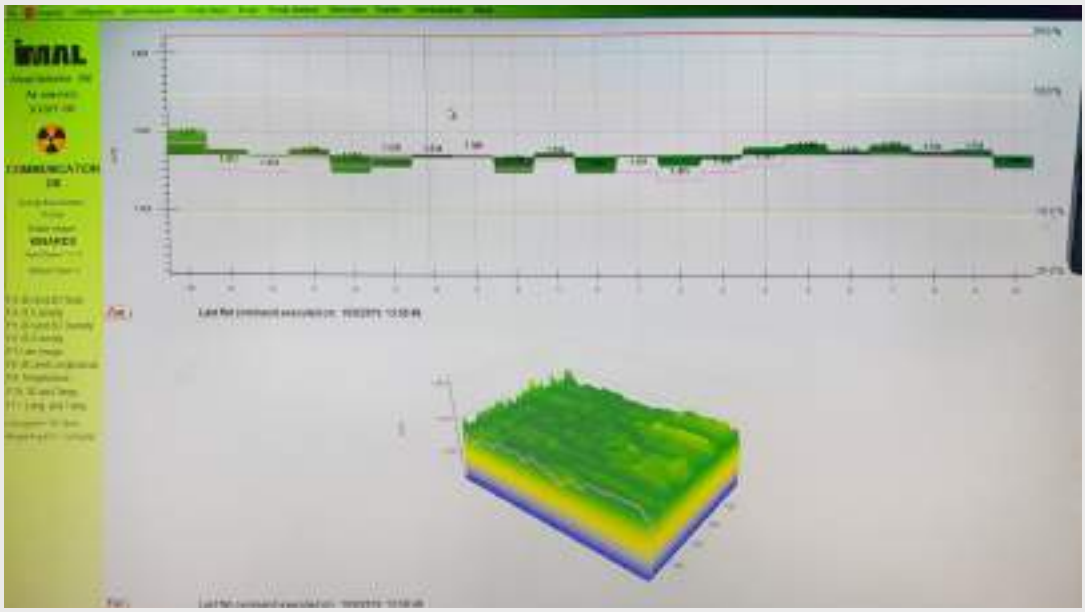
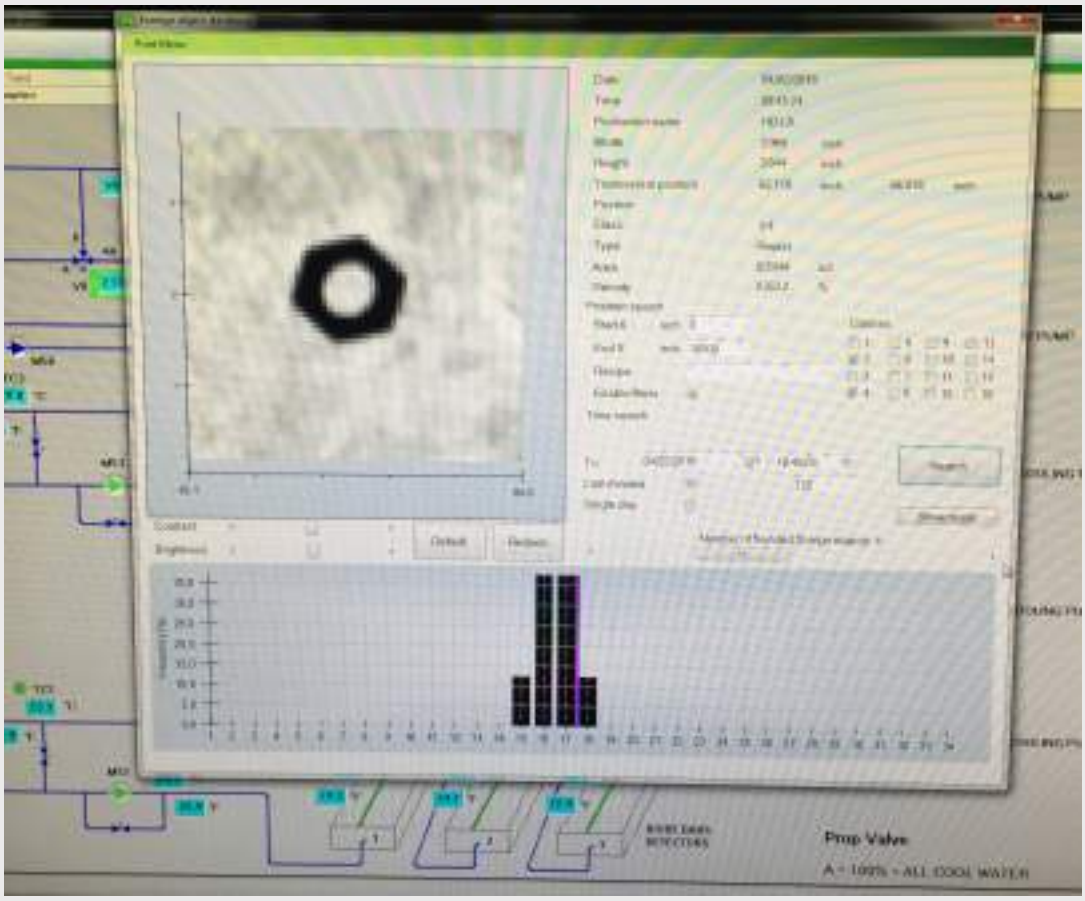




TECHNICAL DATA	
WIDTH OF MAT	Up to 3658 mm
MAX. MAT HEIGHT	500 mm
SPEED OF MATERIAL FLOW	Up to 3 m/s
RESOLUTION	0.4 mm
SMALLEST DETECTABLE FOREIGN PARTICLE	0.8 x 0.8 mm

On-Line Safety Controls

WOOD BASED PANELS

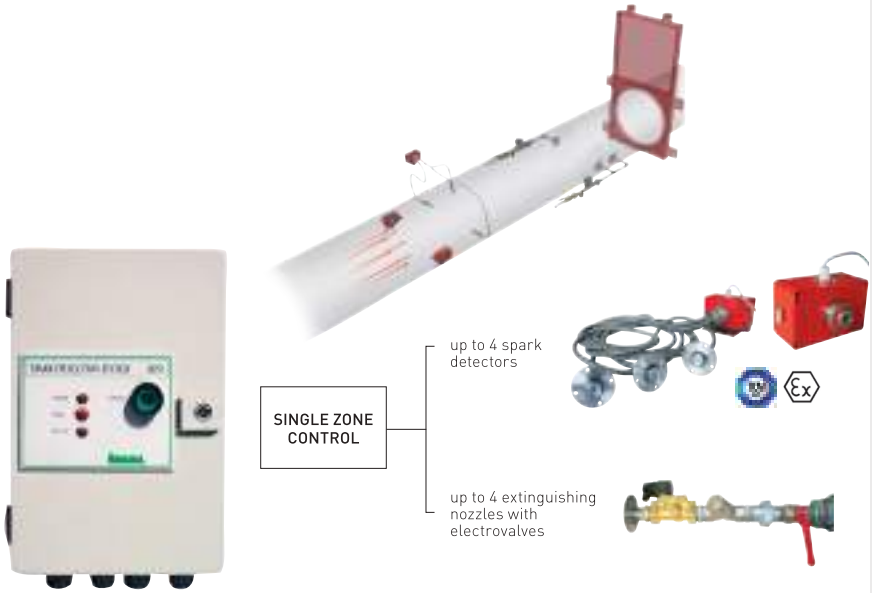
	page number	PB/SPB	MDF/HDF	OSB/LSB/FOSB	INSULATION BOARDS	PLYWOOD	
SDS-1	**36**	•	•	•			
SDS-4	**38**	•	•	•			
SDS-BUS	**40**	•	•	•			
APX300	**44**	•	•	•			

	PRESSED WOOD PACKAGING			PELLETS & ENERGY				WOOD RECYCLING AND WASTE TREATMENT			
	PALLET BLOCKS	PRESSED PALLETS	STRINGERS & BEAMS	WOOD PELLETS AND BLACK PELLETS	GREEN FUELS AND BIOMASS	THERMAL AND ELECTRIC ENERGY	DRYING	WOOD RECYCLING	SLUDGE RECYCLING	PLASTIC RECYCLING	CUSTOMIZED SOLUTIONS FOR RECYCLING

SPARK DETECTING AND EXTINGUISHING SYSTEM

SDS-1

IMMEDIATE SPARK DETECTION TO REDUCE FIRE RISKS



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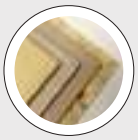


WOOD BASED PANELS:
PB/SPB
OSB/LSB/FOSB
MDF/HDF

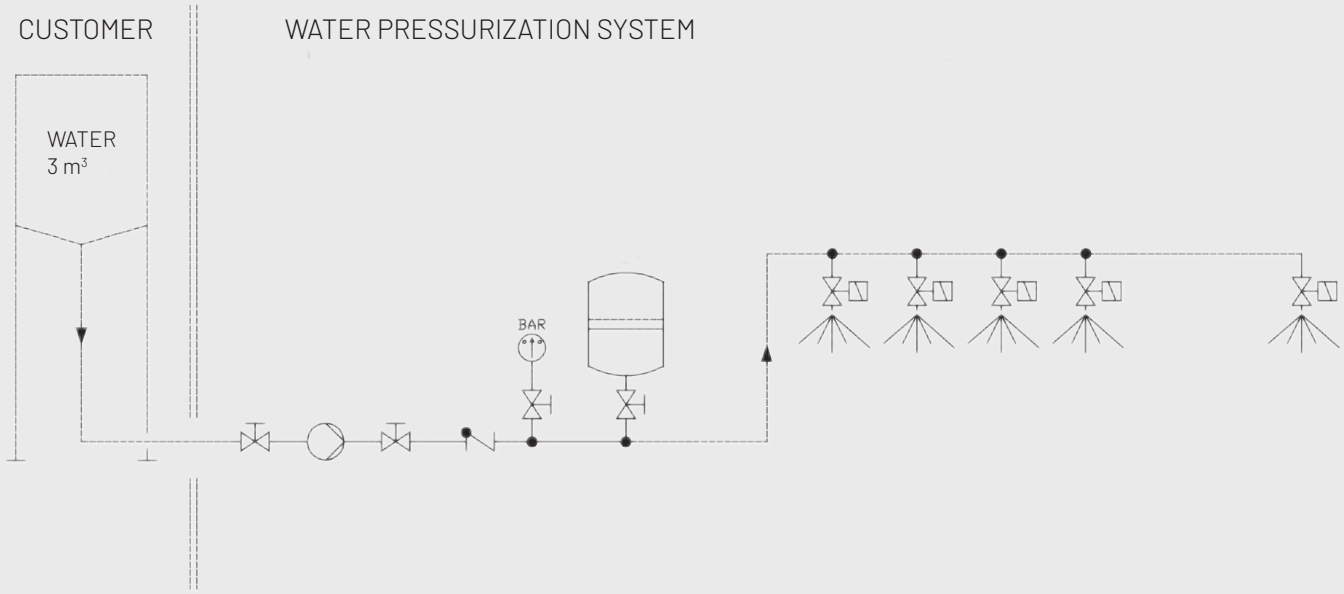
The SDS-1 series spark detection and extinguishing systems have been designed and constructed to achieve spark detection in real time in all those environments where there is risk of fire (conveyors, filters, silos, screens, etc.). The system is integrated with an efficient extinguishing system which utilizes water sprayed at high pressure, or it can activate the customer's existing fire extinguishing system with foam, dust, etc. and is equipped with controls to perform efficiently in any operative situation.

MAIN FEATURES

The SDS spark detectors **conform to the requirements of ATEX directive 2014/34/UE** for use as intended in potentially explosive atmospheres due to the presence of combustible dust (zones 20, 21 or 22) with **EU-type Examination Certificate.**

• Compliance with European Standards EN 60079-0; EN 60079-31; EN ISO 60079-36 • Extremely rapid system response • Emergency back-up power unit • Expandable system • Infrared detectors with special fibre optics to withstand temperatures of up to 290 °C • No calibration • Auto-testing function to test sensor efficiency • Constant electric control carried out on the extinguishing unit • Up to 4 spark detectors.

If the production plant does not have pressurized water (about 7 bar), IMAL may supply a pump and tank system in order to reach and maintain operating pressure during functioning.

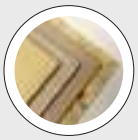


SPARK DETECTING AND EXTINGUISHING SYSTEM

SDS-4

IMMEDIATE SPARK DETECTION TO REDUCE FIRE RISKS

BEST IN CLASS FOR:



WOOD BASED PANELS:
PB/SPB
OSB/LSB/FOSB
MDF/HDF

The SDS series spark detection and extinguishing system has been designed and developed to achieve spark detection in real time in all those environments where there is risk of fire (conveyors, filters, silos, screens etc.). The system consists of an I/O module that receives signals from the sensors and controls the opening of the extinguishing valves.

The detectors are sensitive to infrared radiation and have been purposely studied for use in pneumatic conveying systems. Fibre optic sensors may be used in extremely hot environments, consenting the control of conveyors where temperatures can be as high as 290 °C. The sensor auto test ensures that each sensor is functioning properly.

It is possible to disable a single area without affecting the other extinguishing areas.

The extinguishing nozzles spray pressurized water into the conveyor, and are located downstream of the spark sensors, this allows each spark to be extinguished with a timed spray, thus reducing the amount of water required and minimizing damage to production. If the production plant does not have pressurized water (about 7 bar), IMAL may supply a pump and tank system in order to reach and maintain operating pressure during functioning.

MAIN FEATURES

The SDS spark detectors **conform to the requirements of ATEX directive 2014/34/UE** for use as intended in potentially explosive atmospheres due to the presence of combustible dust (zones 20, 21 or 22) with **EU-type Examination Certificate.**

• Compliance with European Standards EN 60079-0; EN 60079-31; EN ISO 60079-36 • Extremely rapid system response • Efficient functioning irrespective of temperature or light present in the ducts controlled • Easy to install and use • Set up configuration by computer • Self-test function to search for breakdowns or failures • Spark sensors do not require calibration.

AREA 1

up to 4 spark detectors

up to 4 extinguishing nozzles with electrovalves

AREA 2

up to 4 spark detectors

up to 4 extinguishing nozzles with electrovalves

AREA 3

up to 4 spark detectors

up to 4 extinguishing nozzles with electrovalves

AREA 4

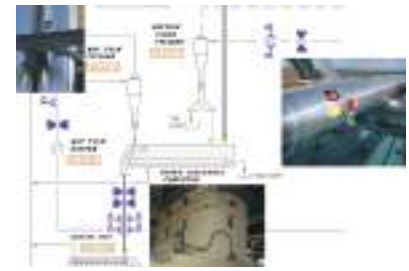
up to 4 spark detectors

up to 4 extinguishing nozzles with electrovalves

SPARK DETECTING AND EXTINGUISHING SYSTEM

SDS-BUS

IMMEDIATE SPARK DETECTION TO REDUCE FIRE RISKS



The SDS series spark detection and extinguishing systems have been designed and constructed to achieve spark detection in real time in all those environments where there is risk of fire (conveyors, filters, silos, screens, etc.).
The system is integrated with an efficient extinguishing system which utilizes water sprayed at high pressure, or it can activate the customer's existing fire extinguishing system with foam, dust, etc. and is equipped with controls to operate efficiently in any operative situation.

MAIN FEATURES

The SDS spark detection system **conforms to the requirements of ATEX directive 2014/34/UE** for use as intended in potentially explosive atmospheres due to the presence of combustible dust (zones 20, 21 or 22) with **EU-type Examination Certificate.**

• Compliance with European Standards EN 60079-0; EN 60079-31; EN ISO 60079-36 • Extremely rapid system response • Emergency back-up power unit • Modular and expandable system • Incorporated database to store alarms and record operations carried out on the system • Infrared detectors with special fibre optics to withstand temperatures of up to 290 °C • No calibration • Auto-testing function to test sensor efficiency • Possibility of linking up with any kind of PLC • Constant electric control carried out on the extinguishing unit • Global monitoring of all plant areas as well as instant individual monitoring of any one area via the graphic displays provided (PC/display panel) • System can run independently and efficiently without PC • Easy access to any area of the plant.

BEST IN CLASS FOR:

WOOD BASED PANELS:
PB/SPB
OSB/LSB/FOSB
MDF/HDF

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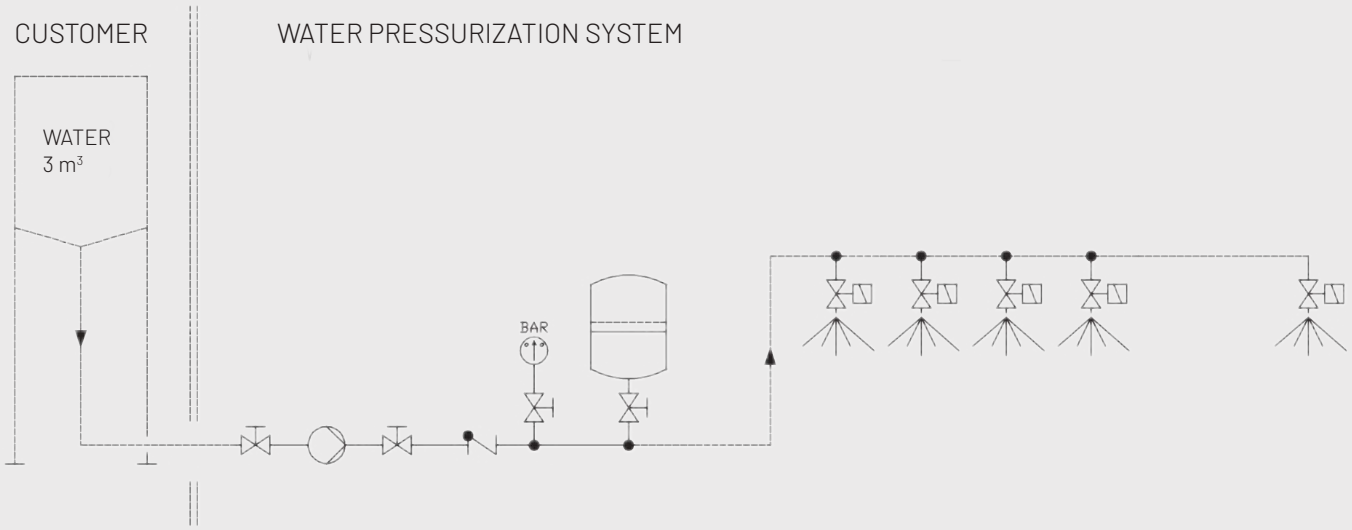
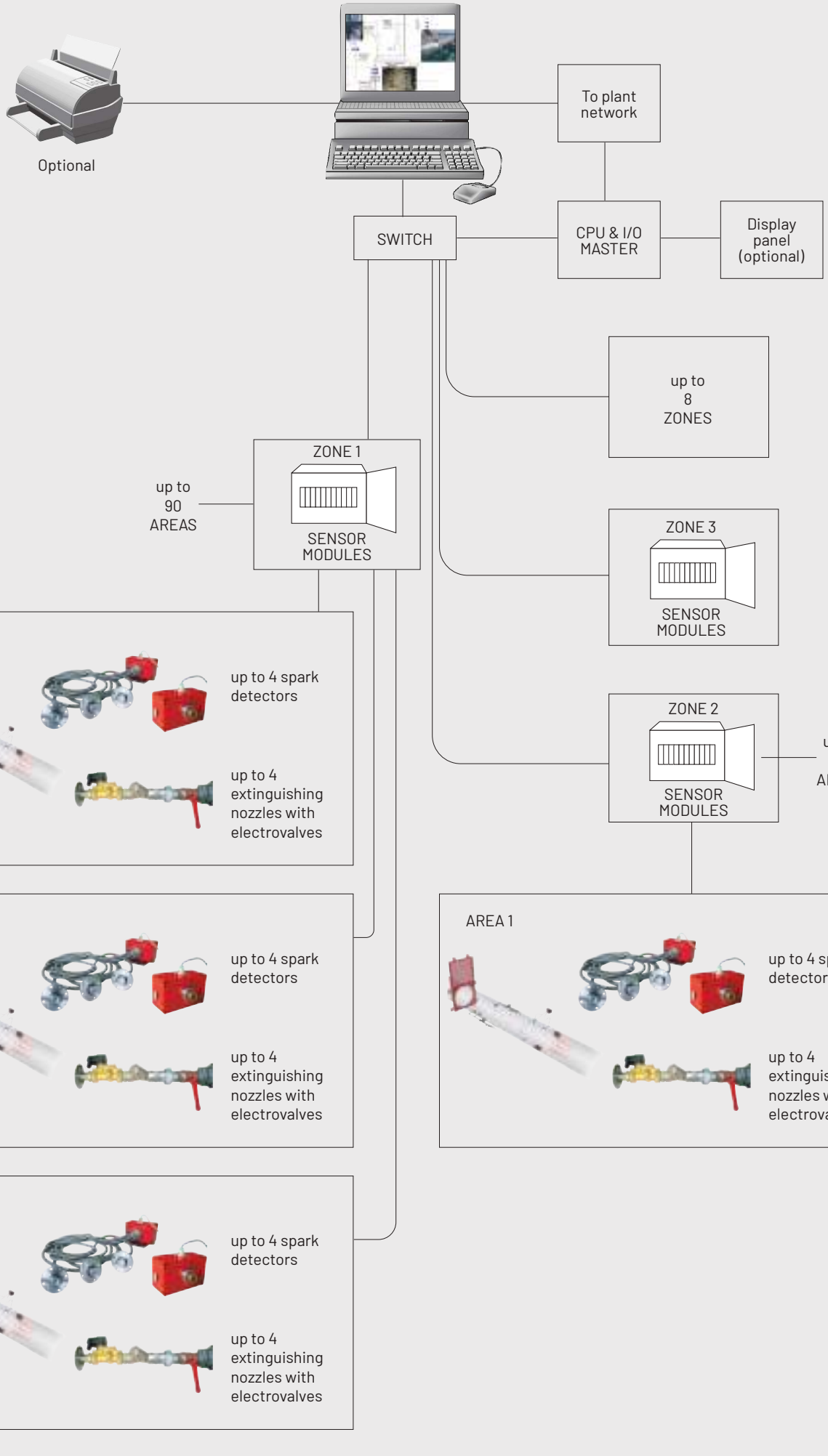
If the production plant does not have pressurized water (about 7 bar), IMAL may supply a pump and tank system in order to reach and maintain operating pressure during functioning.




Optional
To plant network
SWITCH
CPU & I/O MASTER
Display panel (optional)
up to 8 ZONES
ZONE 1
up to 90 AREAS
SENSOR MODULES
ZONE 3
SENSOR MODULES
ZONE 2
up to 90 AREAS
SENSOR MODULES
AREA 1
up to 4 spark detectors
up to 4 extinguishing nozzles with electrovalves
AREA 2
up to 4 spark detectors
up to 4 extinguishing nozzles with electrovalves
AREA 3
up to 4 spark detectors
up to 4 extinguishing nozzles with electrovalves
AREA 1
up to 4 spark detectors
up to 4 extinguishing nozzles with electrovalves

S80D

INFRARED DETECTORS

This detector is suitable for operation where temperatures do not exceed 80 °C. Standard applications for this detector include pneumatic conveyors, screw feeders, belt conveyors etc.

TECHNICAL DATA	
POWER SUPPLY	24 VDC
QUIESCENT SUPPLY CURRENT	20 mA
FULL LOAD SUPPLY CURRENT	100 mA
SENSOR TEMPERATURE OPERATING RANGE	-10 ÷ +80 °C
SENSITIVITY SPECTRUM	0.8 ÷ 3 µm
REVERSE POLARITY SUPPLY PROTECTION	yes
SHORT CIRCUIT OUTPUT PROTECTION	yes
CASE MATERIAL	AISI12 DIN1725
CASE PROTECTION	IP65 CEI EN 60529
DIMENSIONS	80 x 125 x 57 mm

S80F

OPTICAL FIBRE INFRARED DETECTORS

This detector is suitable for operation where temperatures can be as high as 290 °C. Standard applications for this type of detector include dryers and conveyors where extremely hot material is transported.

TECHNICAL DATA	
POWER SUPPLY	24 VDC
QUIESCENT SUPPLY CURRENT	20 mA
FULL LOAD SUPPLY CURRENT	100 mA
SENSOR TEMPERATURE OPERATING RANGE	-10 ÷ +80 °C
OPTICAL FIBRE MAX OPERATING RANGE	290 °C
SENSITIVITY SPECTRUM	0.7 ÷ 1.3 µm
REVERSE POLARITY SUPPLY PROTECTION	yes
SHORT CIRCUIT OUTPUT PROTECTION	yes
CASE MATERIAL	AISI12 DIN1725
CASE PROTECTION	IP65 CEI EN 60529
DIMENSIONS	80 x 125 x 57 mm

SSR1

EXTINGUISHING UNIT

Each extinguishing unit consists of: • No. 1 manual ball valve • No. 1 filter • Spraying nozzles with electrovalves.

The nozzles spray pressurized water directly into the conveyor and are mounted downstream of the spark detectors. This enables each spark to be extinguished with a timed spray, thus reducing the quantity of water required and, at the same time, minimizing any potential damage to production.

CYCLONE ANTI-PLUGGING SYSTEM

APX300

X-RAY OPERATED UNIT WHICH, UNLIKE INFRARED UNITS, IS NOT INFLUENCED BY DUST BUILD UP

The APX300 system has been designed to prevent cyclone plugging which is one of the major causes of production downtimes.
The APX300 plugging detection device consists of a set of appliances, a generator and X-ray detector, which are positioned on opposite sides of the system controlled. The signal emitted by the generator travels across the gap to the receiver which in turn picks up and processes the signal.

MAIN FEATURES

• Highly efficient performance • Versatile and suitable for a wide range of applications (silos, chutes, piping, conveying systems, etc.) • System immune to factors such as dirt, humidity, temperature, noise, vibration, etc • No risk whatsoever of contamination from radioactive sources • Transmitter and receiver do not come into contact with the material • Both NC and NO alarm contacts available: silo plugging alarm may be managed by any kind of logic control system • Future expansion possible.

ADVANTAGES

• X-ray operated: the device is not equipped with radioactive isotopes: no radiogenic emission without power supply • No production downtimes because of cyclone plugging • No expensive or complicated cyclone cleaning operations required • No risk of material being discharged into the environment with a consequent reduction in pollution.

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WOOD BASED PANELS:
PB/SPB
OSB/LSB/FOSB
MDF/HDF

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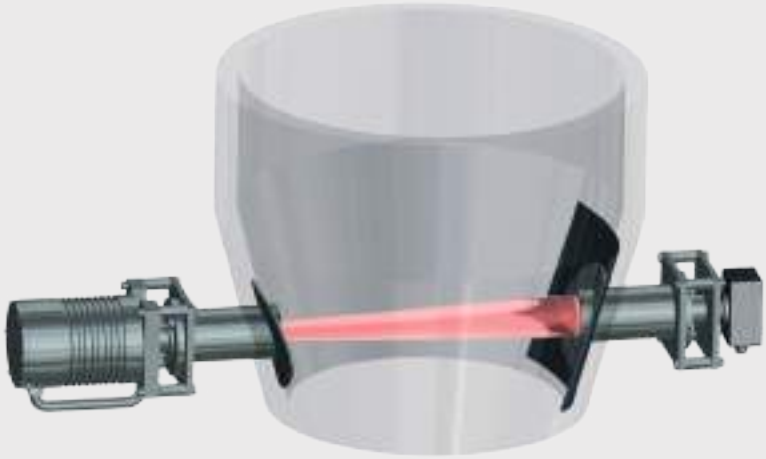

TECHNICAL DATA		
	TRANSMITTER	RECEIVER
SUPPLY VOLTAGE	24 VDC	24 VDC
SUPPLY CURRENT	1 A	100 mA
OPERATING TEMPERATURE RANGE	-10 ÷ +60 °C	-10 ÷ +60 °C
TX/RX DISTANCE IN AIR	up to 5 m	up to 5 m
ELECTRICAL PROTECTIONS	Reverse supply - Fuse 2A	Reverse supply
OUTPUT	not provided for	0 ÷ 10 V*
TERMINAL BOARD CONNECTION	2 fixes poles	6 removable poles
EXTERNAL DIMENSIONS	320 x 170 x 150 mm	200 x 150 x 97 mm

*Free contact selectable threshold

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