

5th Biennial PELICE 2016

Developments in Online Quality Control

**IMAL
PAL**
GROUP

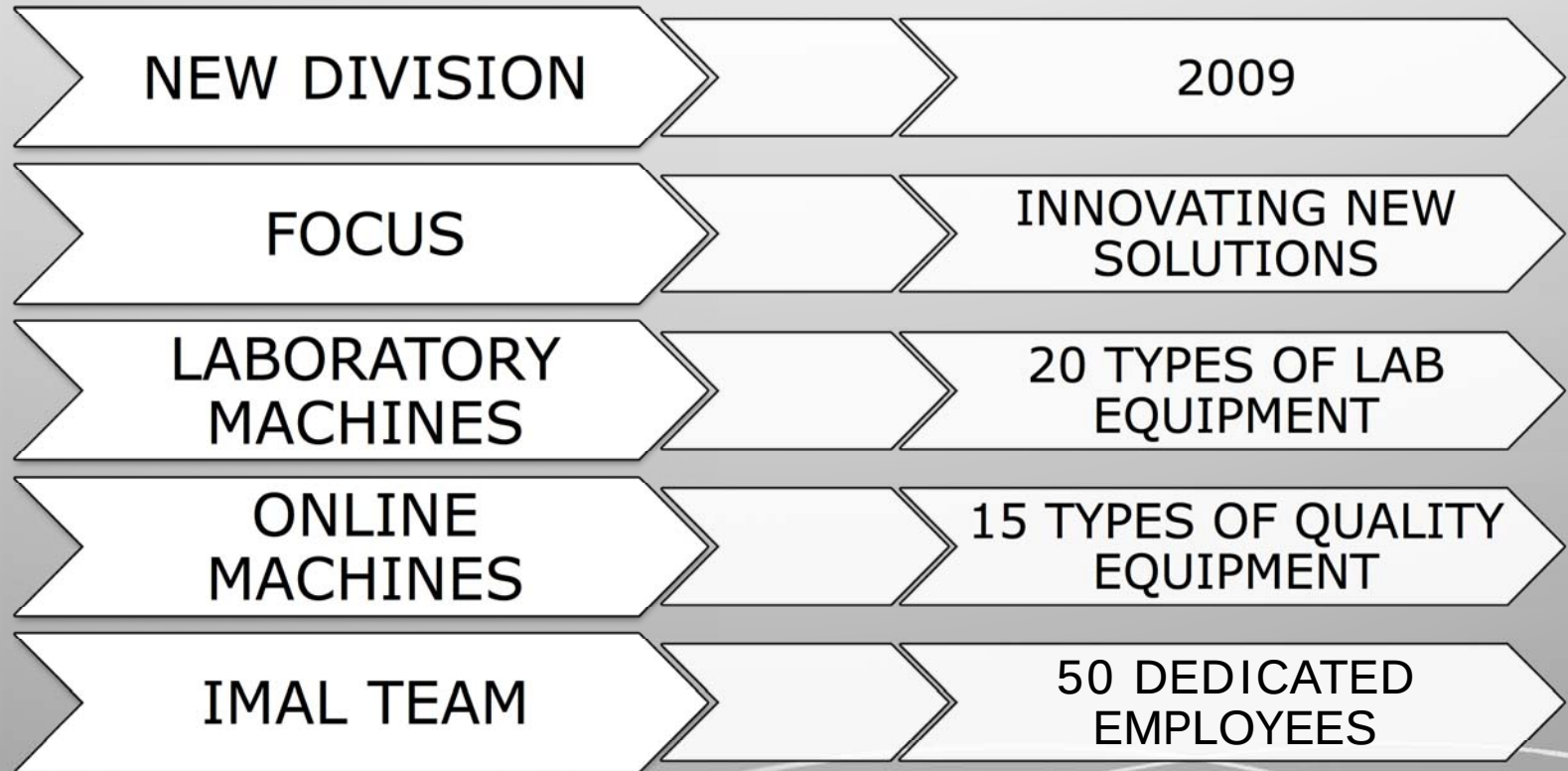
IMAL

PAL

GLOBUS

IMAL ON-LINE & LABORATORY

DIVISION



ON-LINE & LABORATORY IMAL

DIVISION

REFERENCE

1960 QUALITY
EQUIPMENT INSTALLED

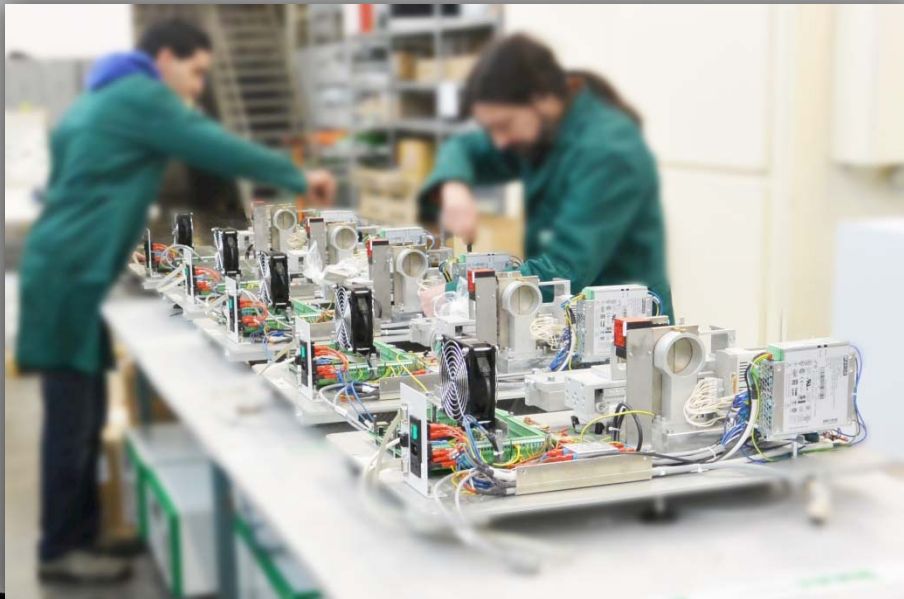
REFERENCE

1320 LABORATORY
EQUIPMENT INSTALLED

REFERENCE

+ 38% LAST 2 YEARS

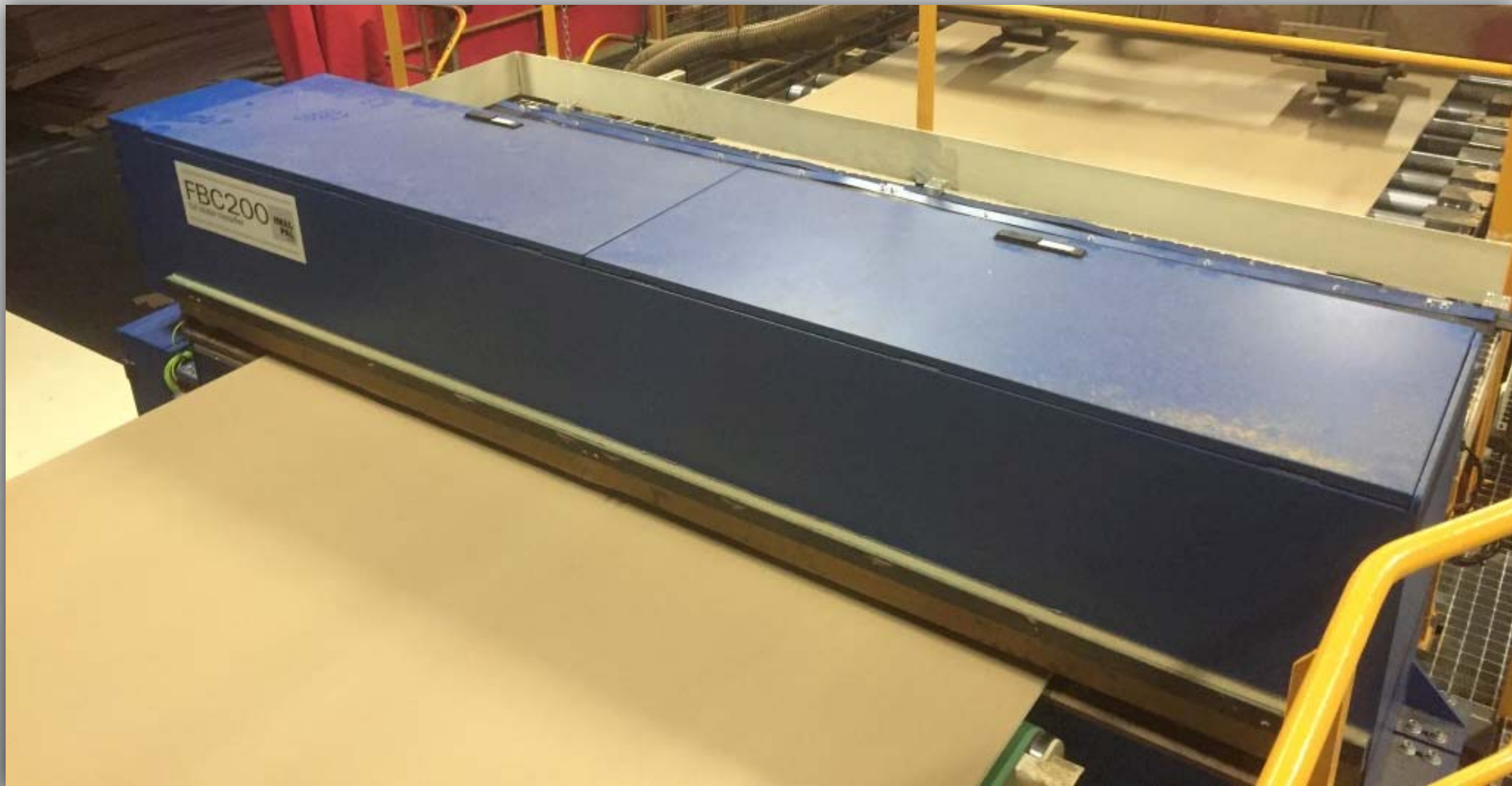
ON-LINE & LABORATORY IMAL DIVISION



ON-LINE & LABORATORY IMAL



FBC200 *full blister classifier*



FBC200 *full blister classifier*



Main features

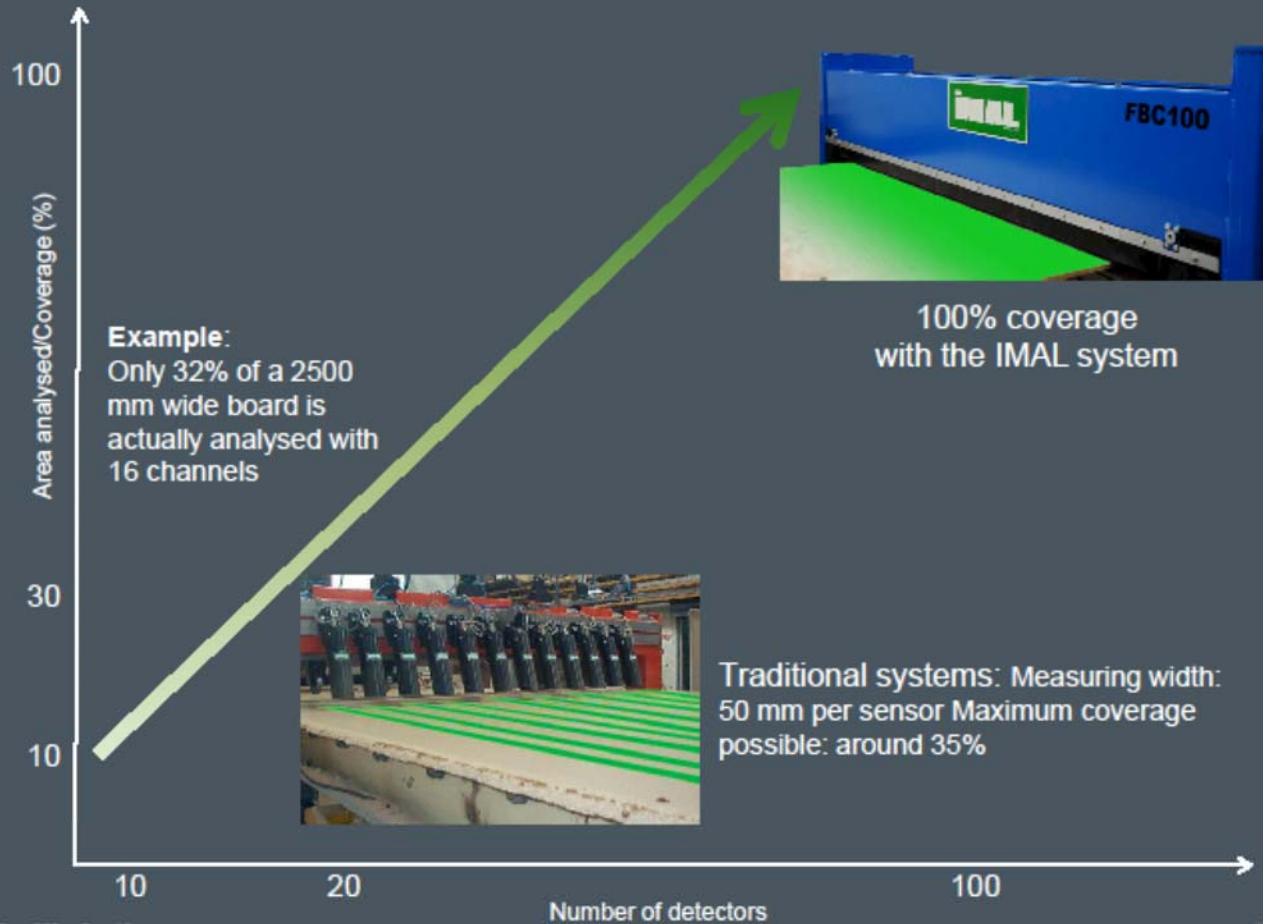
The FBC100 has been designed to identify unglued areas, delaminated areas, blisters, low density areas and other flaws inside any kind of wood-based panel (PB, MDF, OSB, plywood). Since it is possible to assess the quality of the production that is currently being run, it is extremely useful for adjusting production parameters to improve quality and minimize the number of rejected boards.

Unlike traditional systems that mount a limited number of detector channels and which, as a result, are only able to cover 35% of the total surface area of the board, this system permits the analysis of the entire surface.

Technical data

Thickness range	1 ÷ 50 mm
Blister resolution	25 mm
Analysis coverage	100%
Maximum board speed	4 m/sec
Maximum board temperature	150 °C
Equipment widths available	From 4 to 12 feet

FBC100 full bond/blister classifier

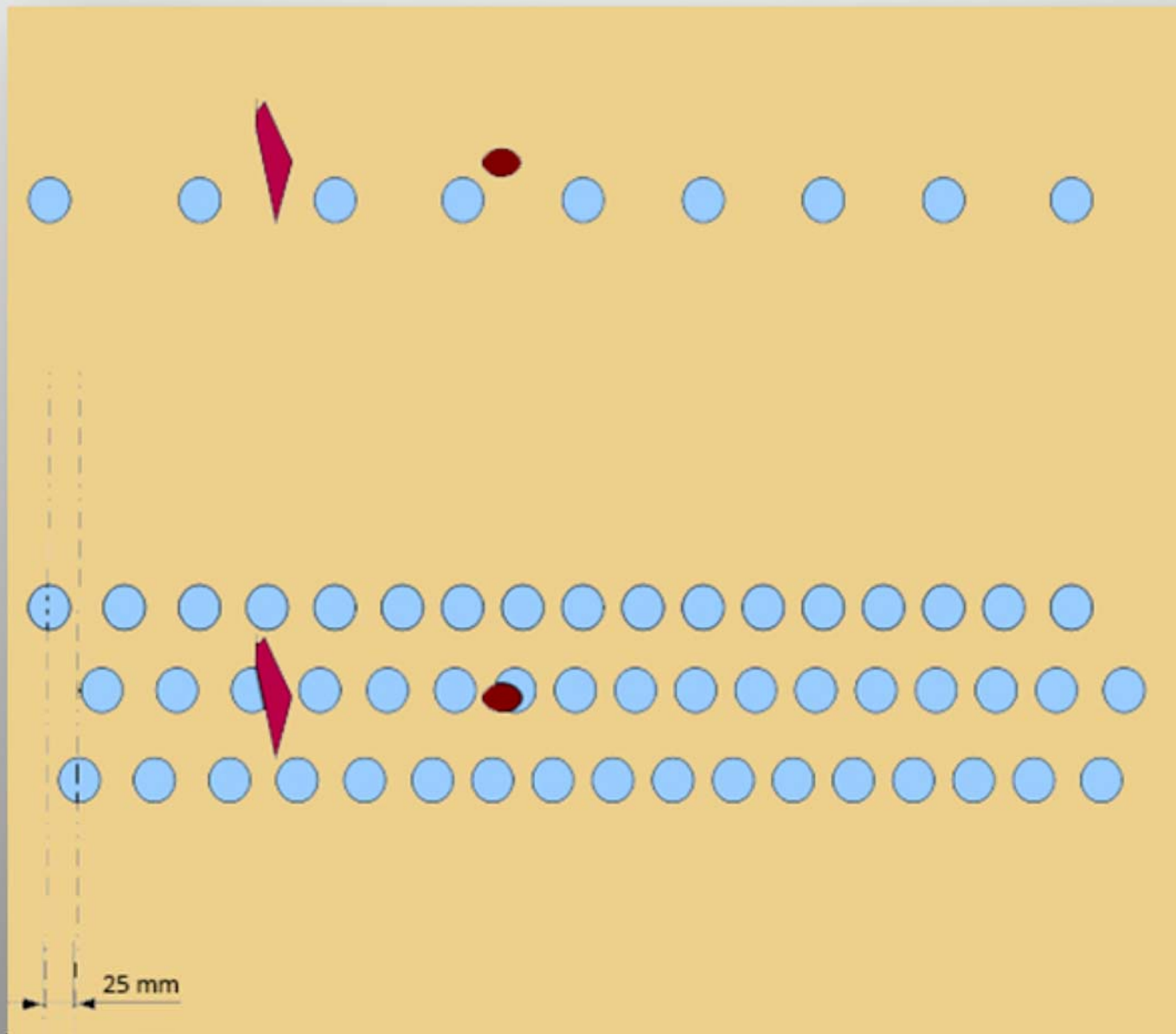


FBC200 *full blister classifier*

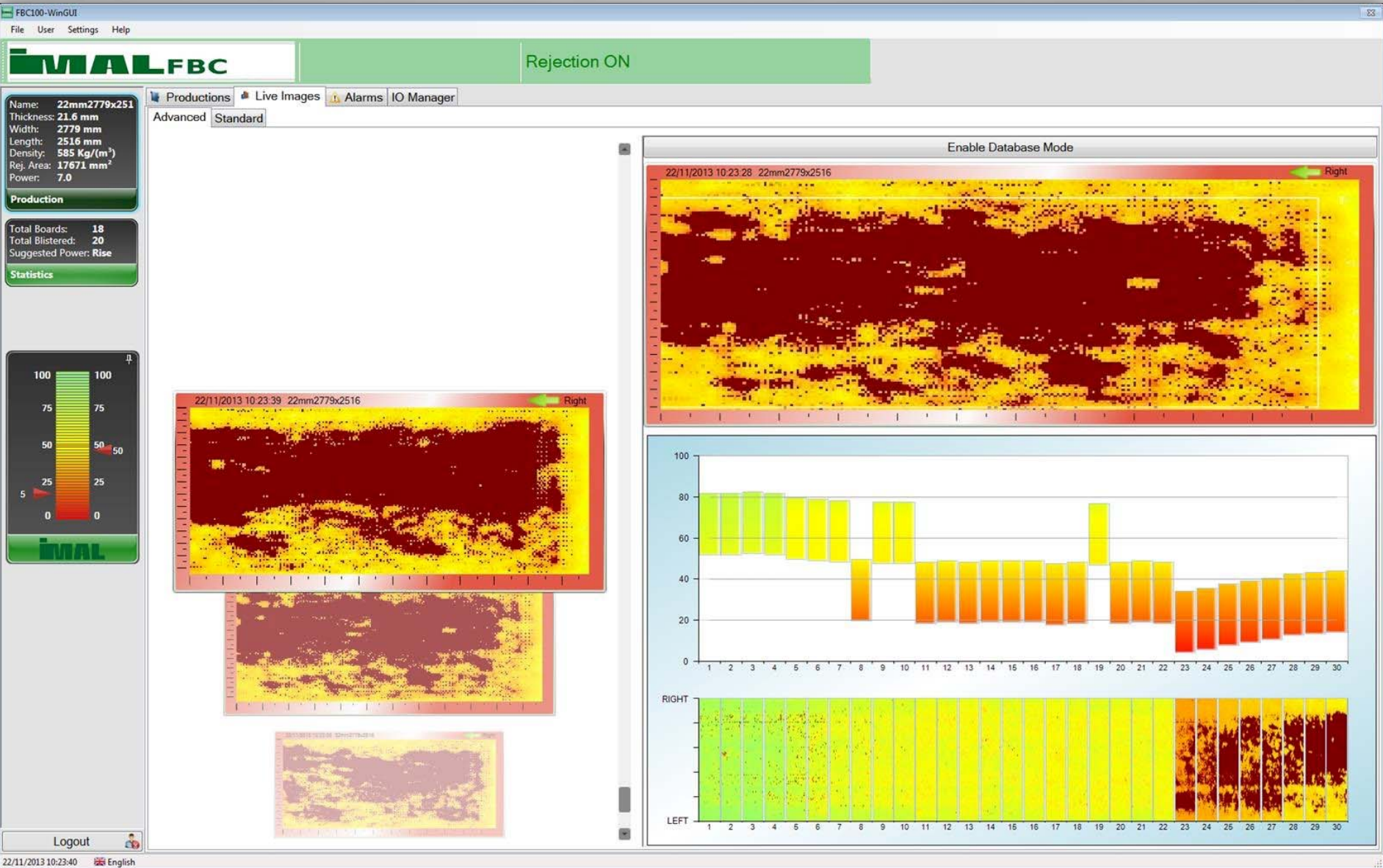
cross-talking



FBC200 *full blister classifier*



FBC200 *full blister classifier*



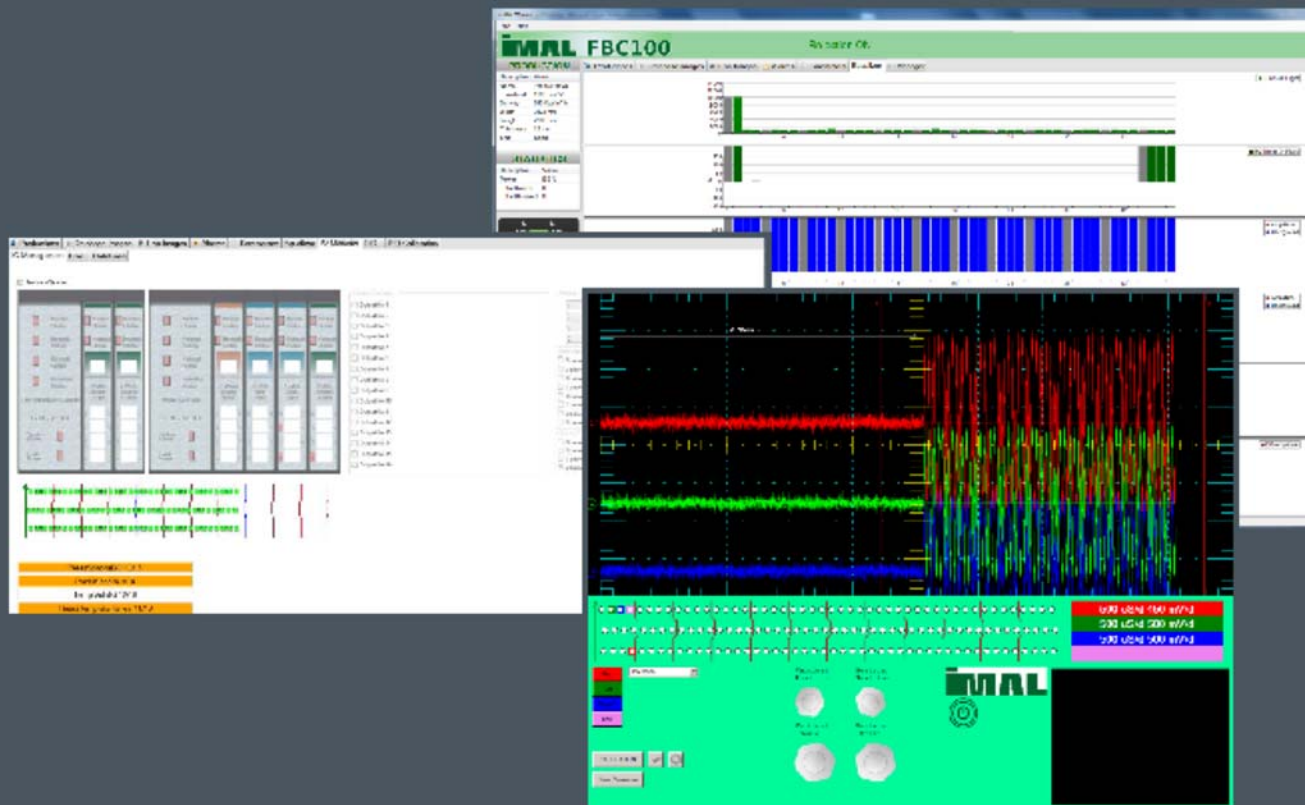


FBC200 *full blister classifier*



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

Software: diagnostics



Powerful diagnostic tools for an advanced monitoring of the status of the equipment.

FBC100 full bond/blister classifier



Built-in non-stop auto-cleaning system to ensure stable transmitter efficiency during the analysis.

Maintenance (if required) may be carried out during production with the slide out frame

Advantages

- Analysis conducted over 100% of the surface
- Smallest detectable defect equivalent to 1 square inch
- Defects as small as 2 square inches may always be rejected
- Reject may be programmed by size
- No manual calibration required
- High graphic resolution with an ample colour range for an accurate view of the board
- Real time monitoring
- Views reflect the exact shape, size and location of the defects on the board
- Maintenance (if required) may be carried out without interrupting production
- Powerful SQL database for storing all the boards produced
- Clear indication of board quality
- Useful indication for production quality trend
- Possibility of controlling the unit remotely
- Ample communication possibilities with the line PLCs

UM900

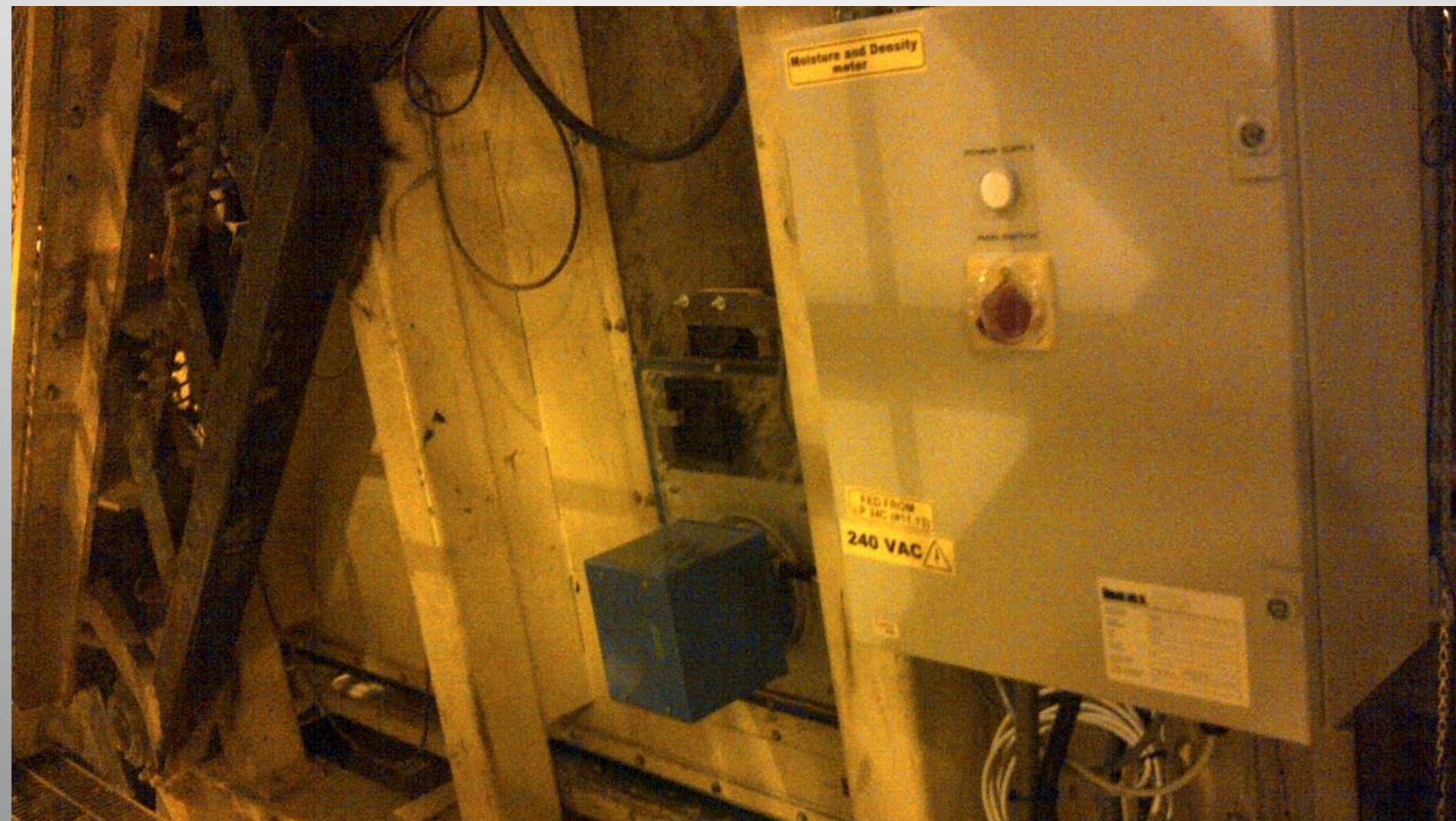


UM900

TECHNICAL DATA

MOISTURE MEASURING RANGE	Up to 90% on the basis of the range selected
DENSITY MEASURING RANGE	25 ÷ 400 kg/m ³
MEASURING PRECISION	0.2%
OPERATING TEMPERATURE RANGE	0 ÷ +50 °C may be increased if controlled by thermostat
TEMPERATURE OF THE MATERIAL	0 ÷ +70 °C
MAX DIMENSIONS OF SENSOR HEAD	300 x 200 x 200 mm
ANALOGUE INPUT/OUTPUT SIGNALS	2 x 4 - 20 mA
DIGITAL INPUT/OUTPUT SIGNALS	2 x RS232 serial port
MEASURING TIME	< 1 sec

UM900



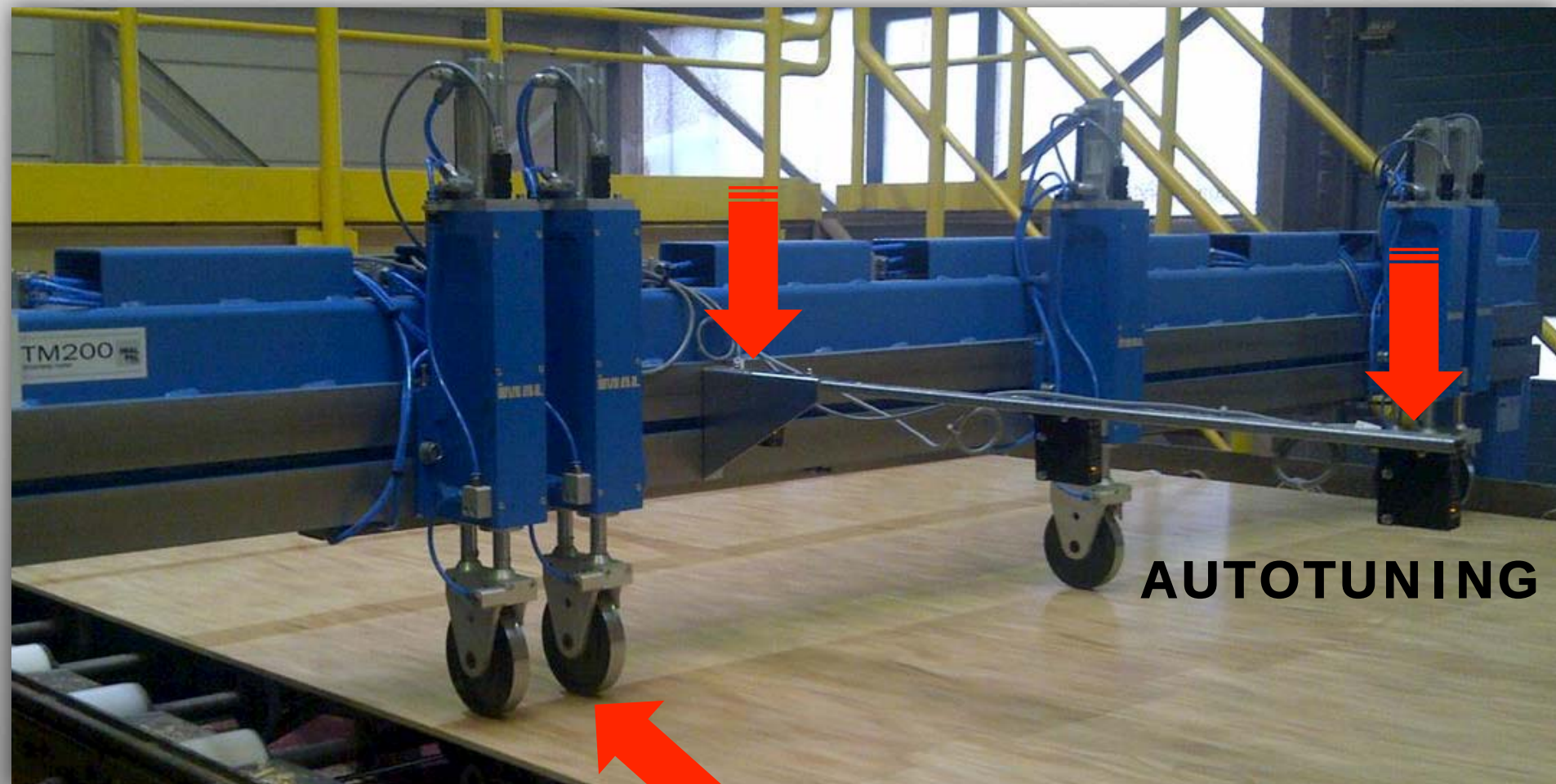
UM900



WINTHICK



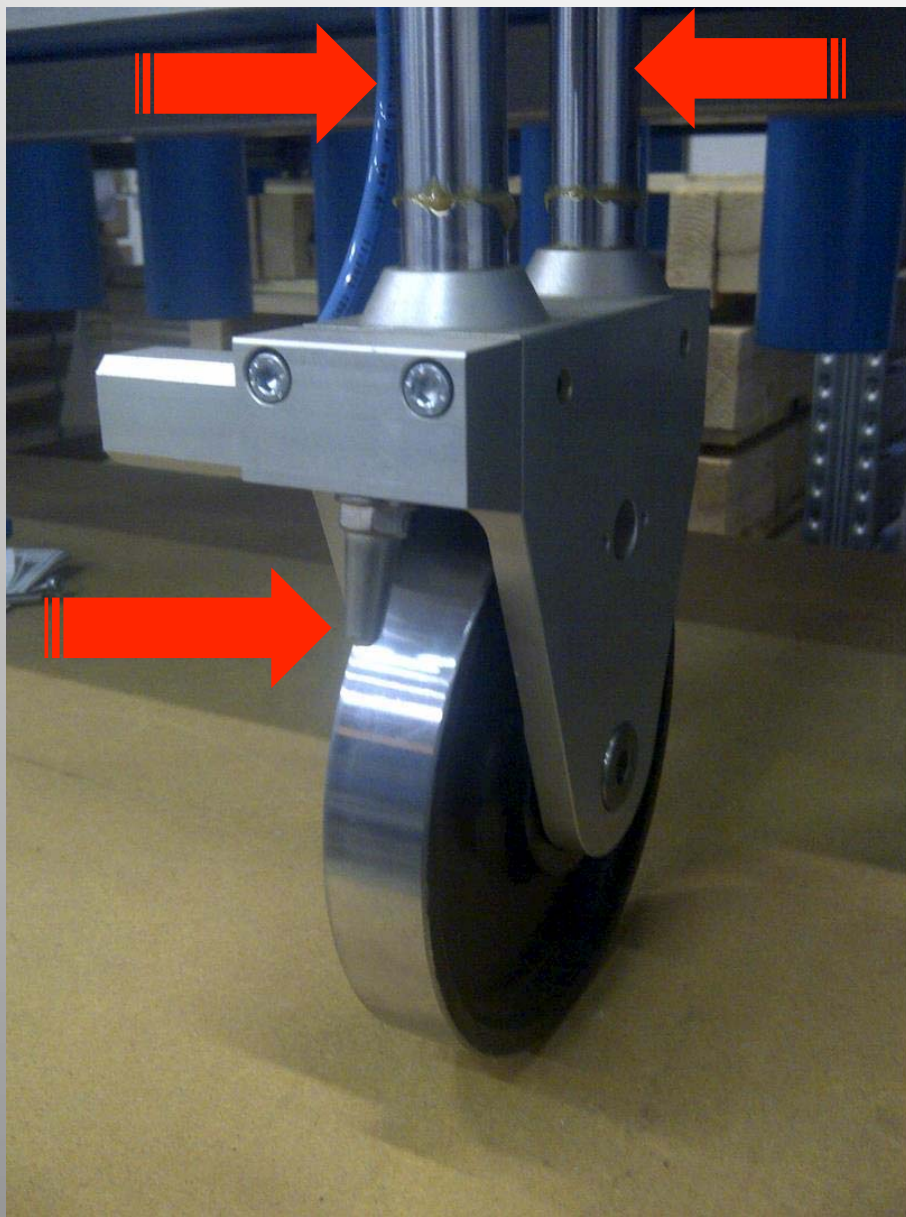
WINTHICK



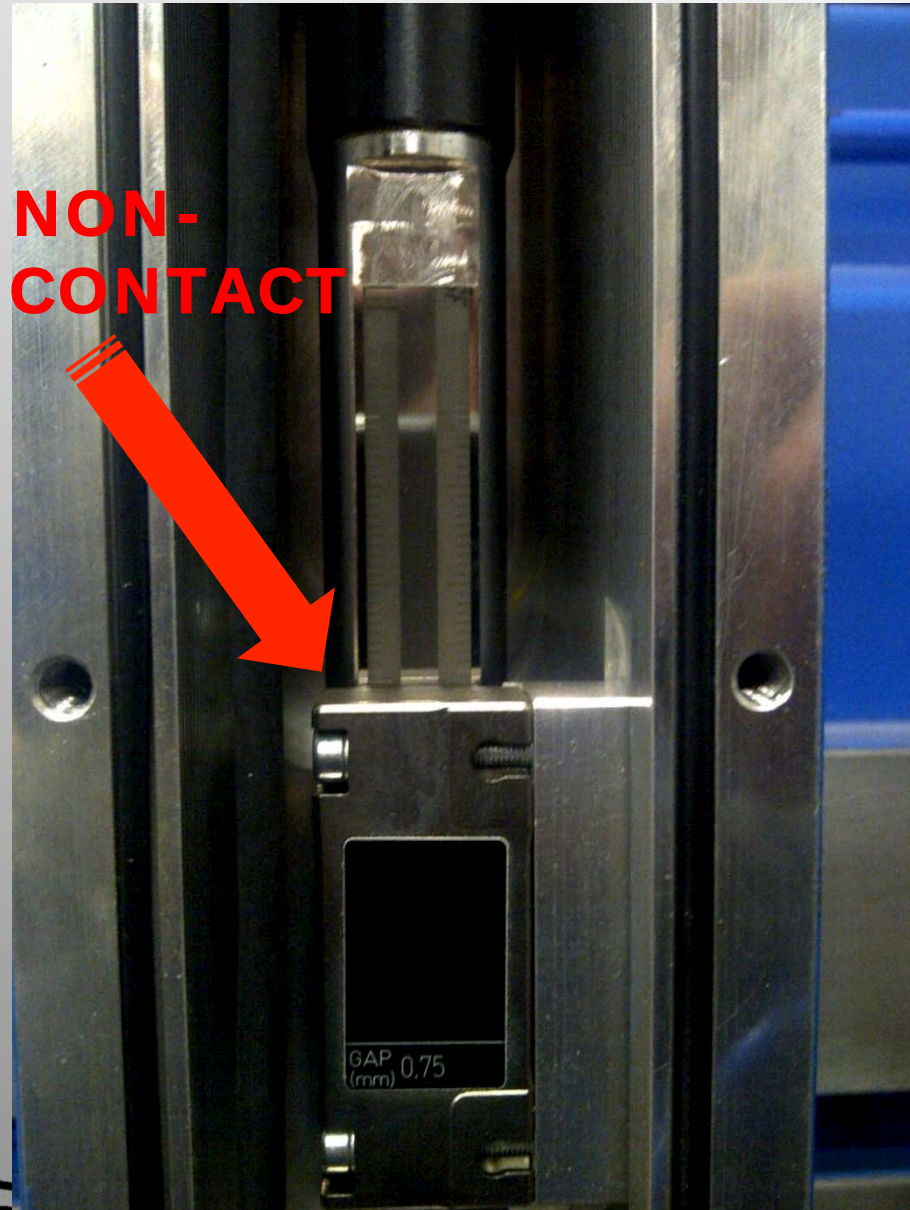
AUTOTUNING

110MM

WINTHICK



WINTHICK



Technical Information :

Thickness Range : 50mm – 80mm – 120mm

Max error: 0.02mm

Autozero procedure : max 0.5s

Working frequency : 100Khz (*standard 30khz*)

Max Temp. : 95°C (*standard 45°C*)

3 years warranty Measuring sensors

WINTHICK

SyncMaster 940N™

WinBlick (c) 2007 Imal s.r.l.

File Configuration Production DataBase Debug Communication Print Graphic Help

IMAL PRODUCTION: 78SMF

Thickness: 8.5
Length: 4189

Width: 2540
Sensitivity [%]: 55.0

Weight: 74.2
Density: 820.0

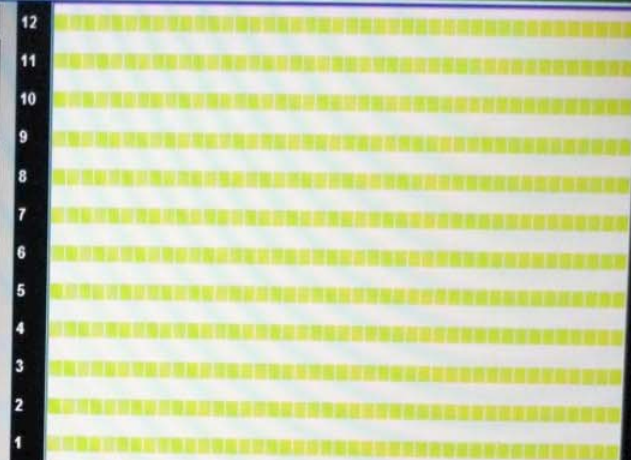
Lot:
2
Shift:
2

Total Boards:
11270
Blister Boards:
69
Avg.Thick.[mm]:
8.5

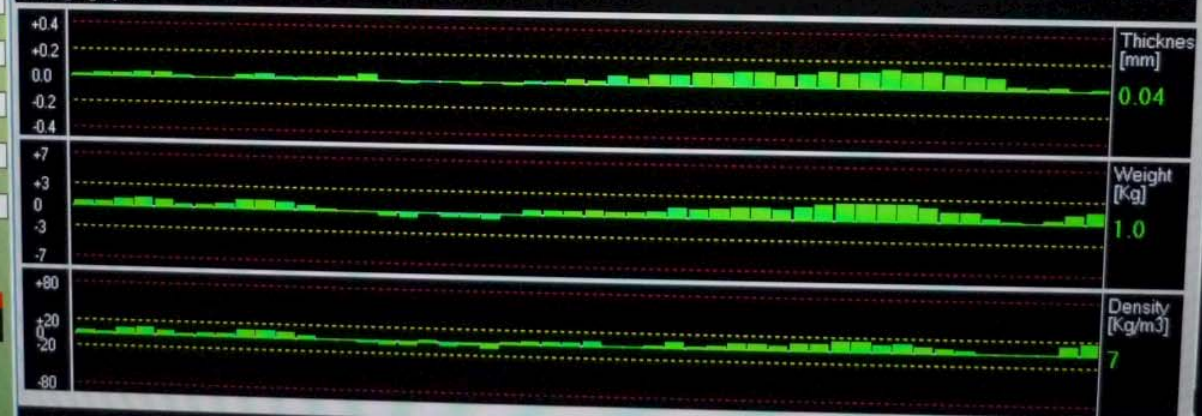
Weight[Kg]:
74.6
Tare [Kg]:
3.7
Density: [Kg/m3]
823.0
Density: [Kg/m2]
7.01
Stop Time:
34

F1 F2
F3 F4
F5 → MENU 1
F6 → MENU 2
F7 → MENU 3

Thickness graphic 1



Average graphic



Blister: SYSTEM OK

Thick: SYSTEM OK

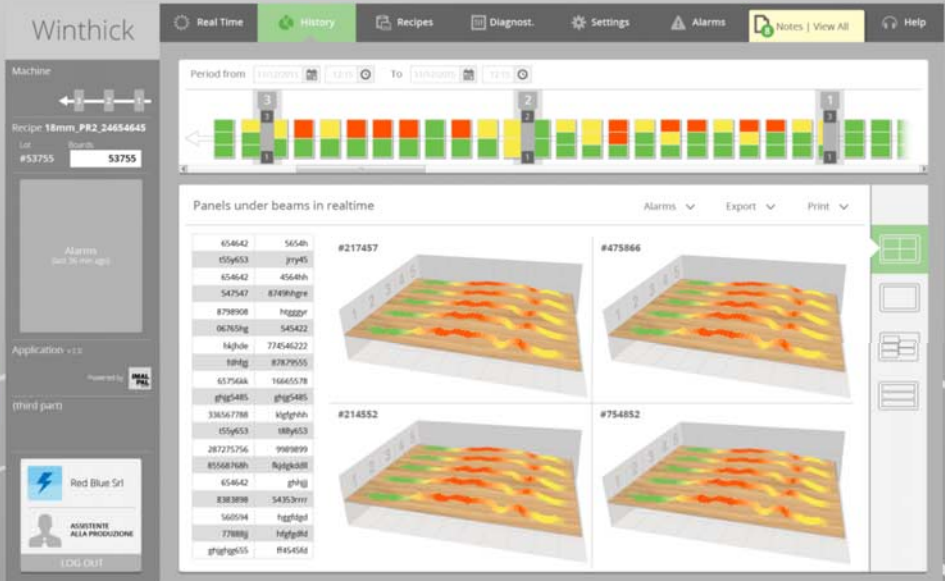
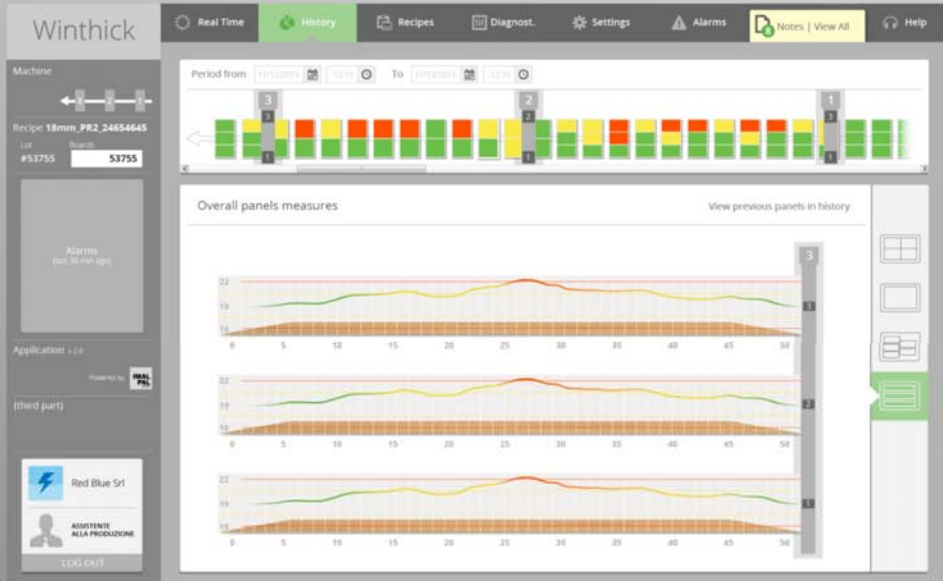
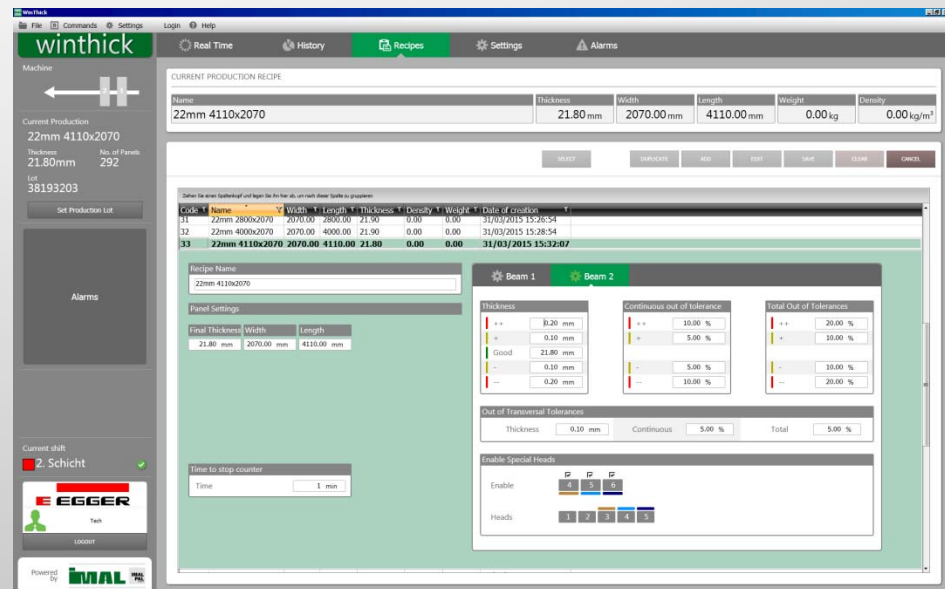
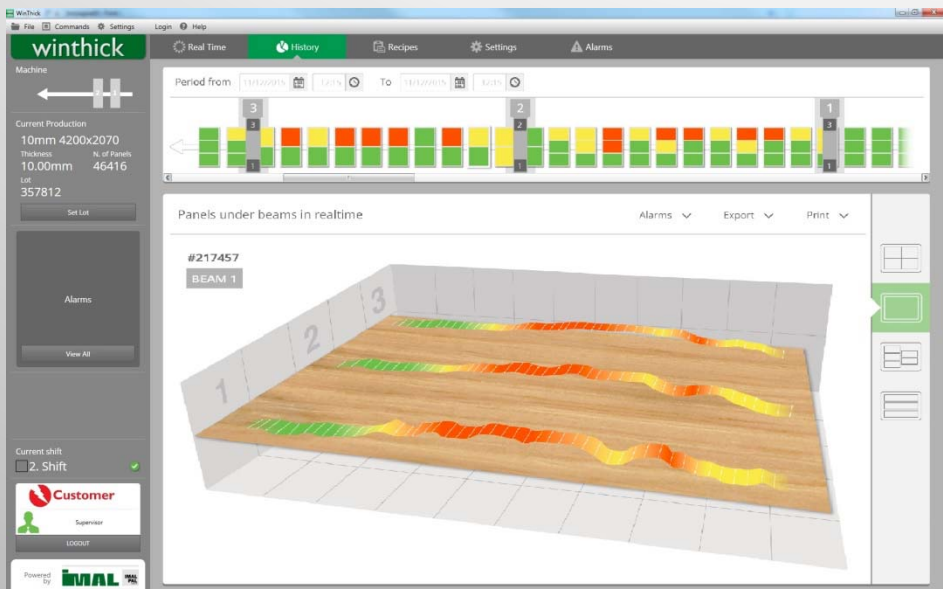
2008-11-5 14:36 PLC S7 K0

SAMSUNG

WINTHICK



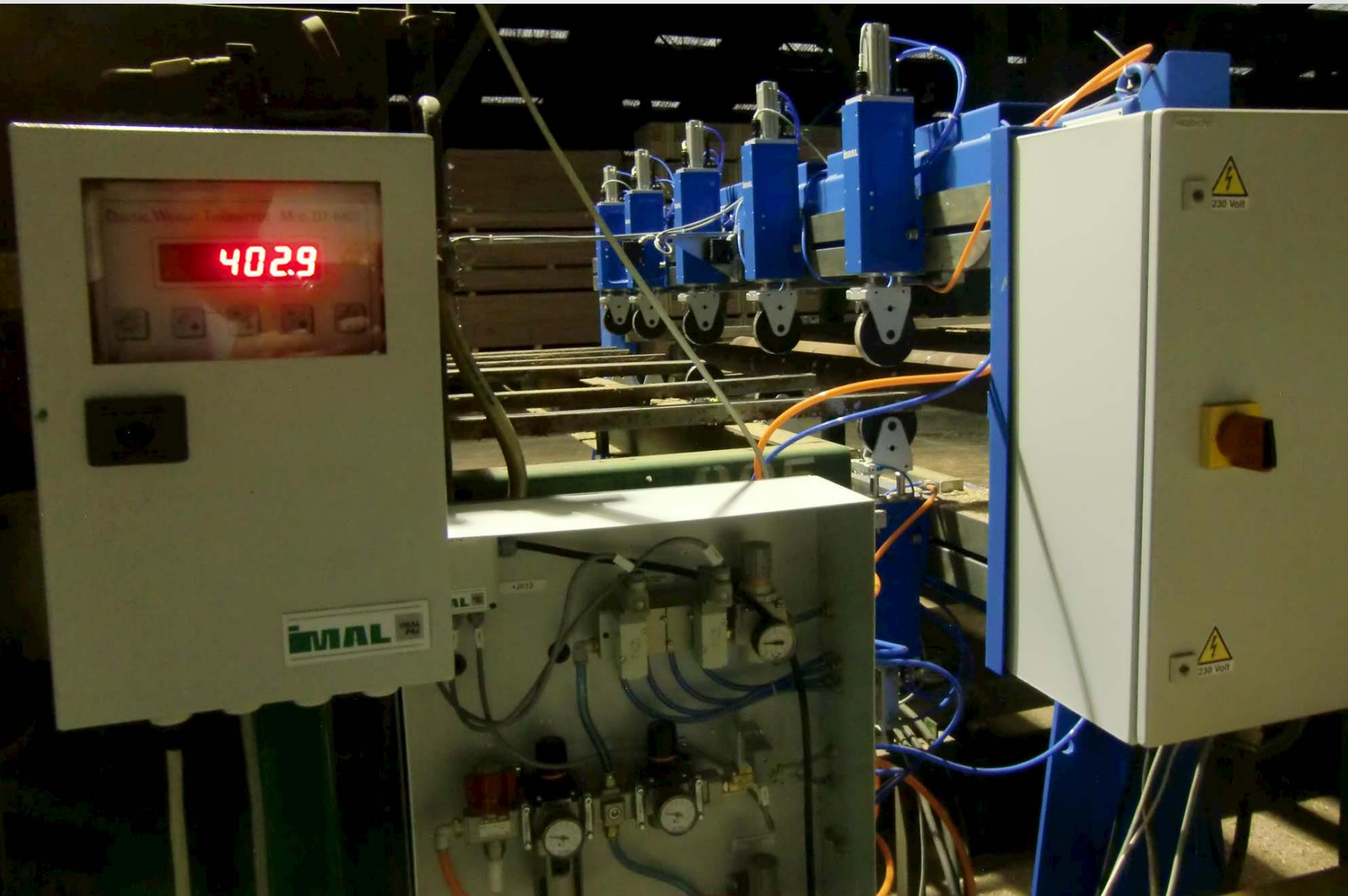
WINTHICK



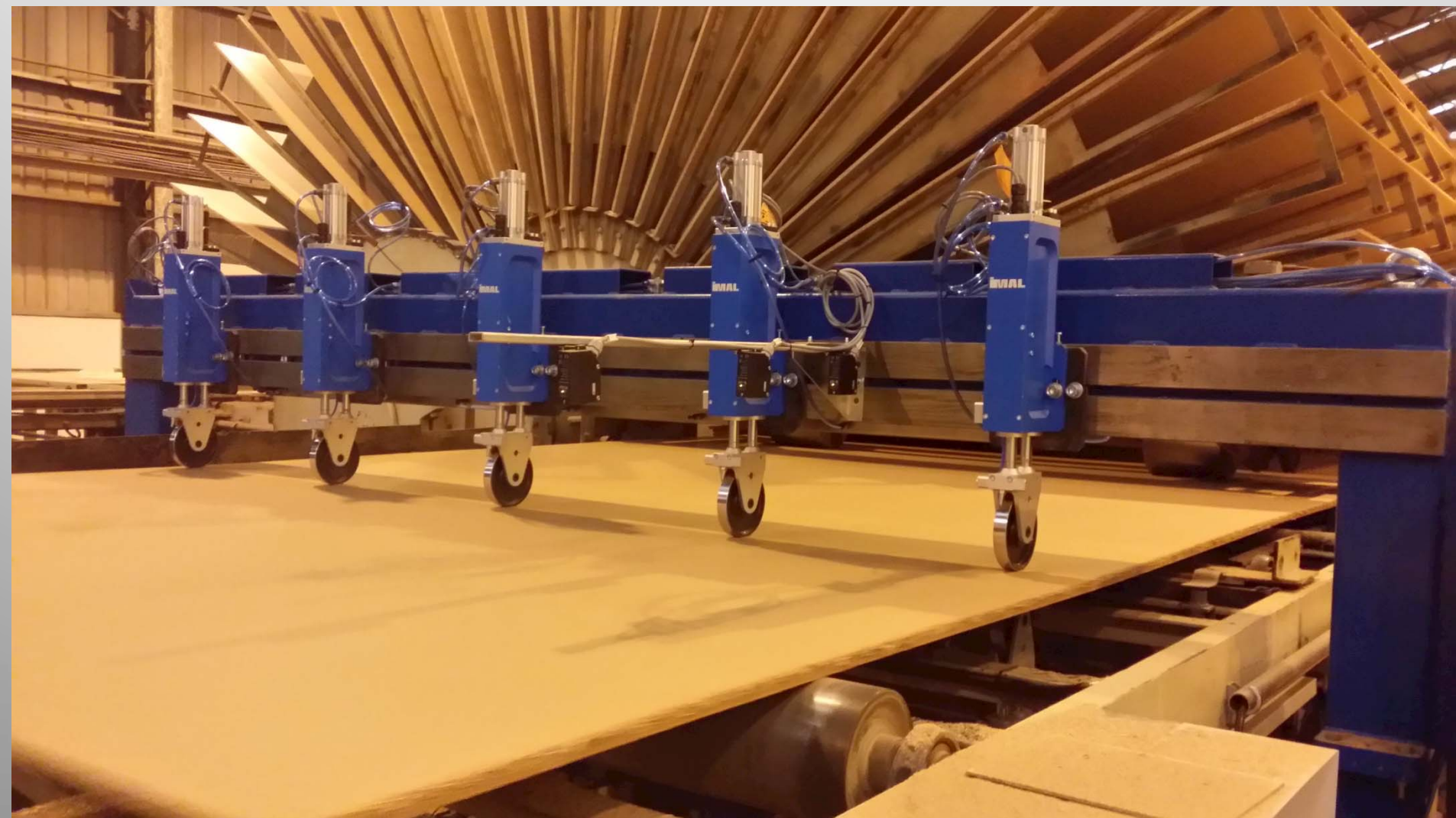
WINTHICK



WINTHICK

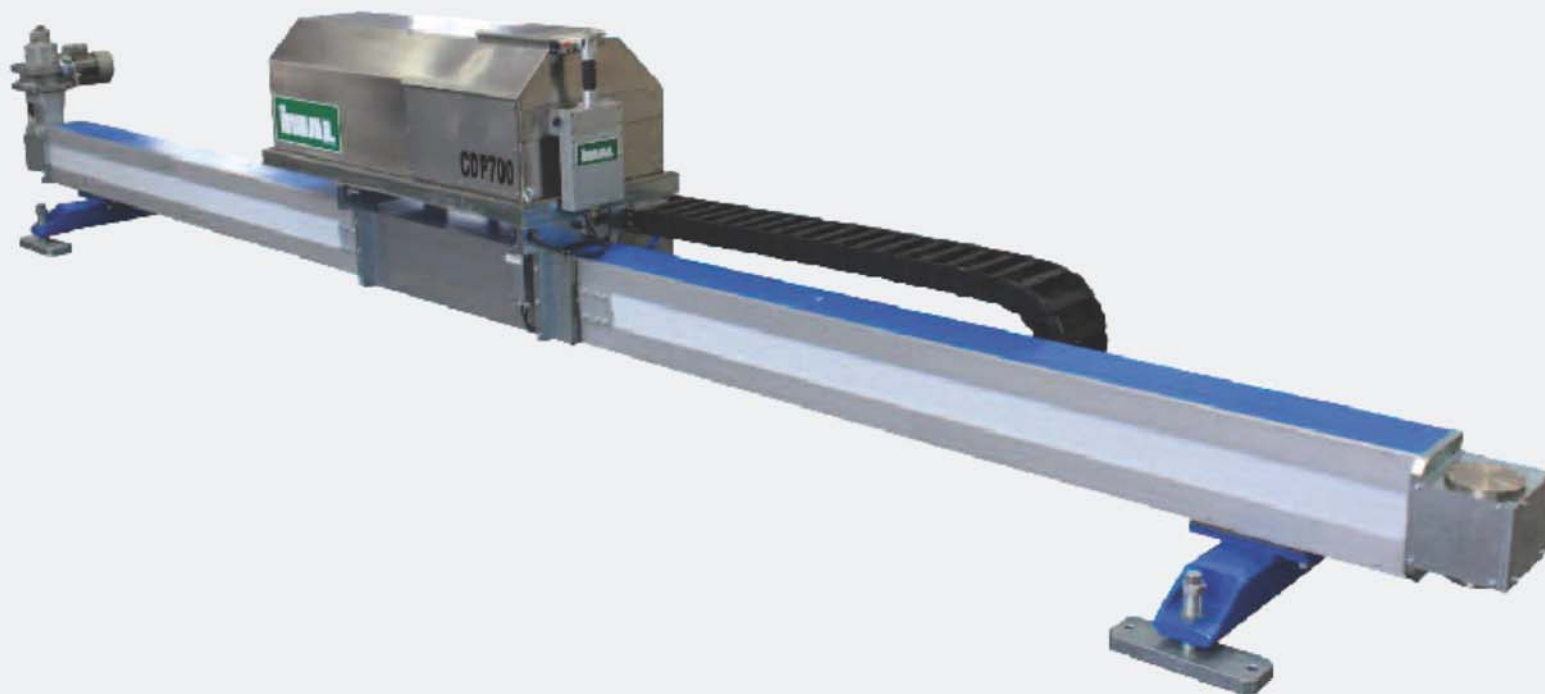


WINTHICK



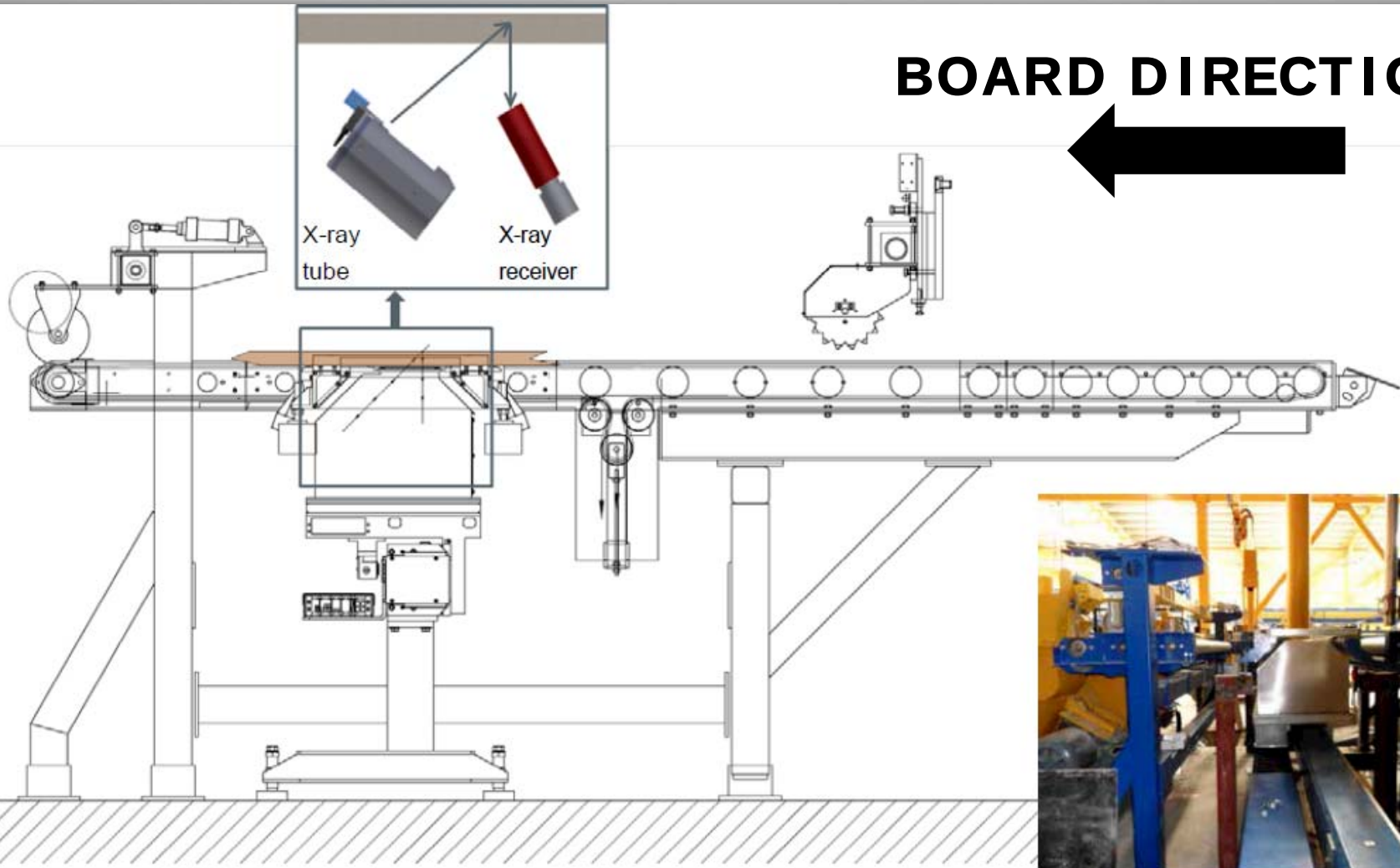


CDP700 on-line density profile meter



CDP700

BOARD DIRECTION



CDP700

Technical Data:

Thickness Range :	3 – 60mm
Density Range :	300 – 1500kg / m³
Resolution :	0.01mm
Max measuring speed :	0.25mm / s

CDP700



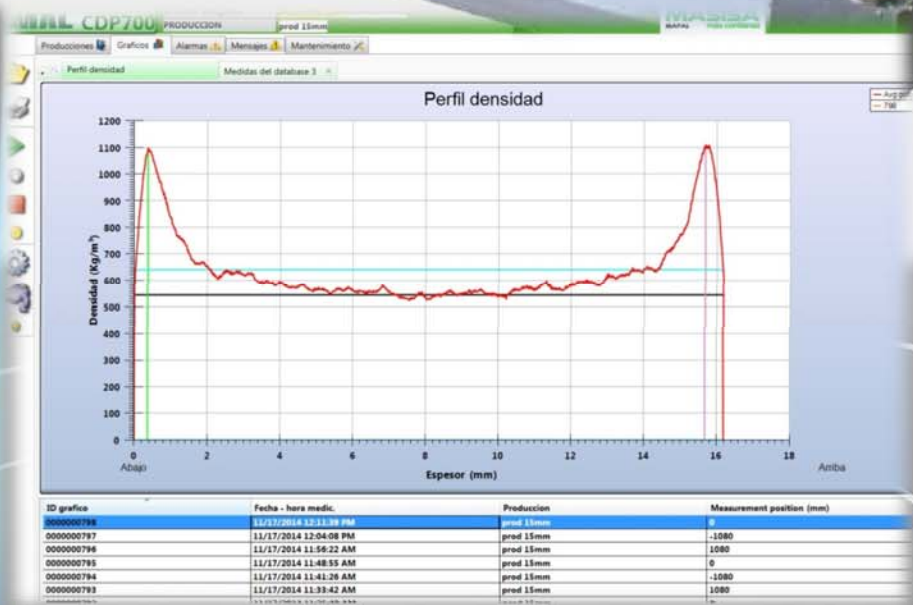
**BOARD VIBRATION DETECTOR
(1 / 1000MM RESOLUTION)**

CDP700

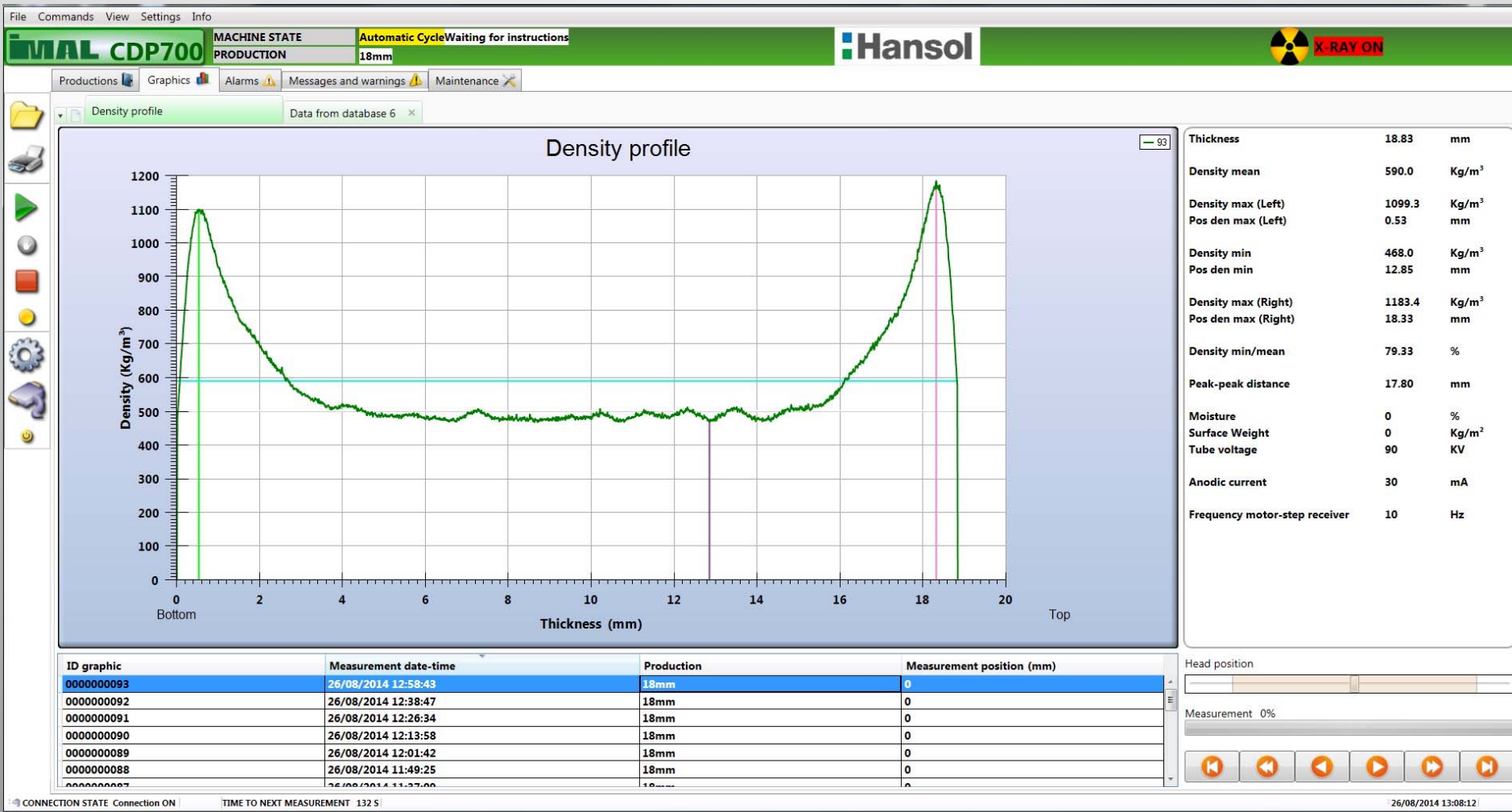


SLIDING SUCTION TABLE

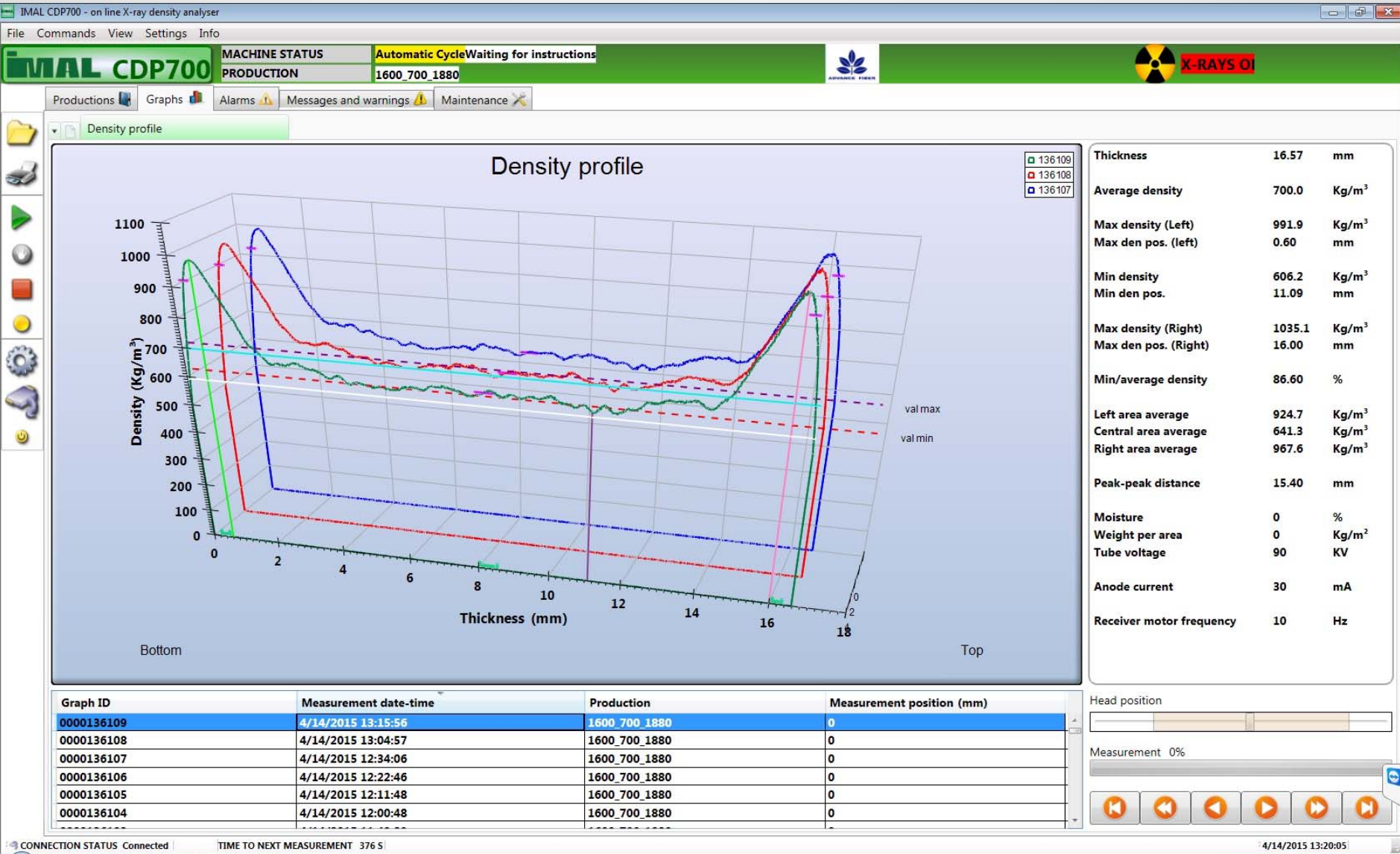
CDP700



CDP700



CDP700



CDP700



CDP700



CDP700 on-line density profile meter



Main features:

- 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.
- The great advantage of this unit, is that the transmitter and receiver are mounted below the panel. This feature is patent pending to which IMAL has exclusive property rights.
- The X-ray emitter-receiver group is positioned below the board travelling along the production line on a beam which is set across the conveying line. The signal passes through the board, and the receiver picks up the scattering of the signal.
- After analysing the signals from the receiver, and after appropriate mathematical processing, the software provides the on-line density profile graph of the board real time.



CDP700 on-line density profile meter

Advantages:

- Real time monitoring of production quality and press performance
- Special algorithm used, patented application
- Optimizing 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
- Density profiler can be installed after saw (optional)
- Compact size and rapid to install
- Maintenance can be carried out on line without interrupting production

CDP700 on-line density profile meter



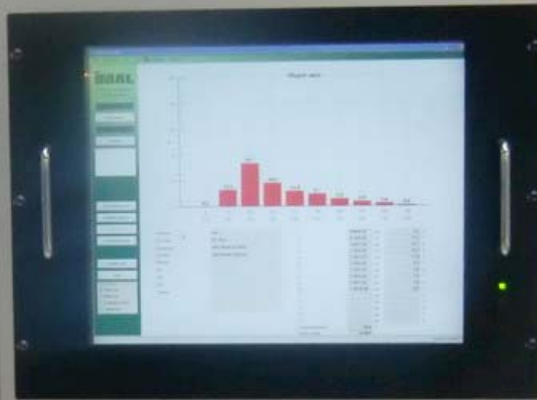
Benefits:

- Better measurement repeatability
- Greater measuring accuracy
- For each production, multiple automatic positioning for measurement selected on the basis of board width
- Network linking possible with TCP/IP for Siemens, Allen-Bradley
- Visualization of ideal graph selectable for each production (target graph)
- Electrical cubicle may be located as far as 60 m away from the unit
- Chiller unit may be located as far as 30 m away
- Quick to put into operation
- Simple mechanical installation
- Production may be changed without the need to change any machine parameters
- Density profiles displayed in 3D
- Multiple comparisons (2D and 3D)



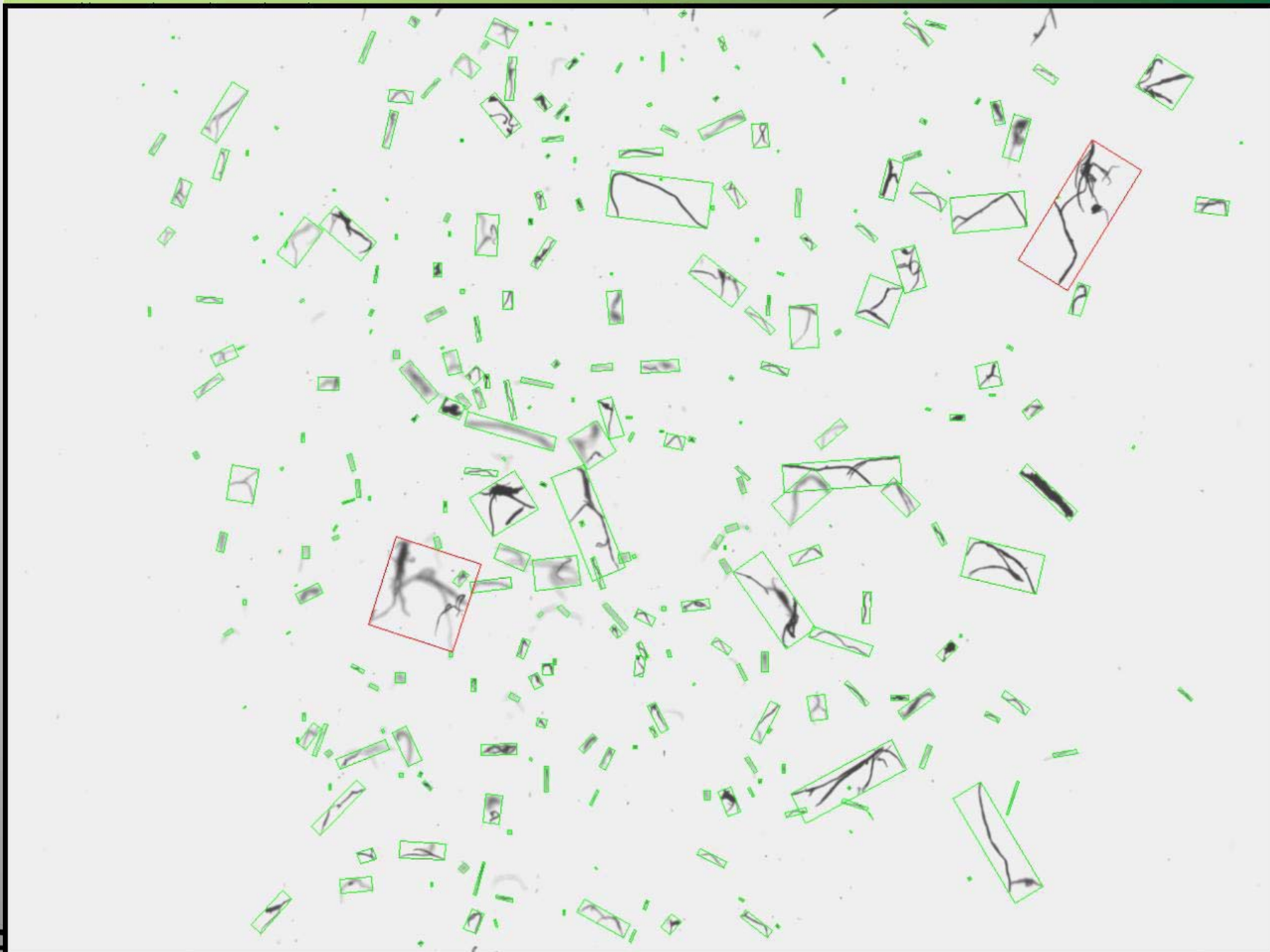
FiberCam 100

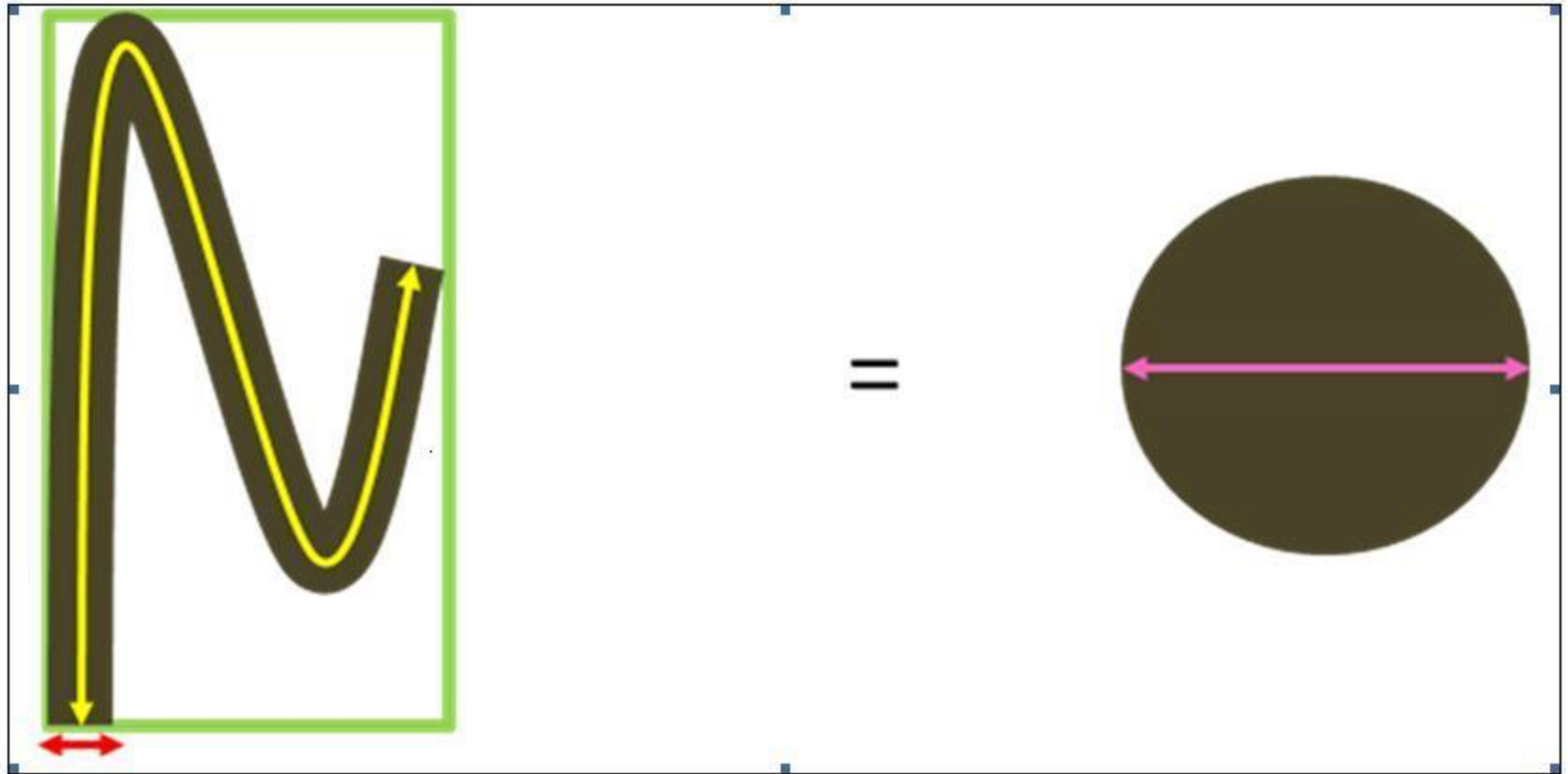
IMAL











real length **major axis**



real width **minor axis**



equivalent sphere diameter



Server Connected
I/O Port OK

Start Camera

Stop Camera

Clear offset

Nature

Start Measurement

Stop Measurement

Save Results

Load Measurement

Suction cycle

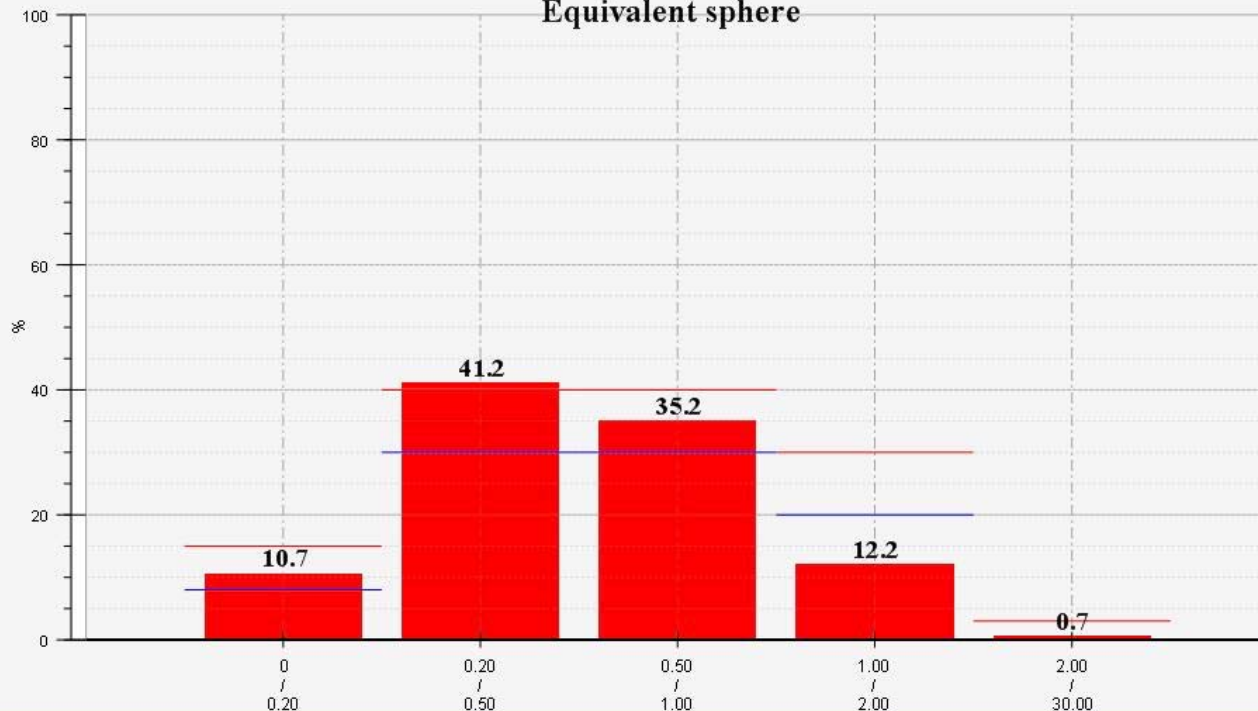
Snap

Result type

- ☐ Major axis
☐ Minor axis
☒ Equivalent sphere
☐ Slenderness

Hide Database

Equivalent sphere



Production

Test name

Material date

Test date

Operator

Line

Type

Shift

Comment

PG Bison 16mm

8

2014-10-29 11:43:24

2014-10-29 11:50:39

Spider

1

100% EUC

2

Bottom Screw speed 90 amps 265

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

Evaluated percentual

Particles number

0.00/0.20

0.20/0.50

0.50/1.00

1.00/2.00

2.00/30.00

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

10.7 %

41.2 %

35.2 %

12.2 %

0.7 %

%

%

%

%

%

%

%

%

%

%

99.8 %

865232



Server Connected
I/O Port OK

Start Camera

Stop Camera

Clear offset

Nature

Start Measurement

Stop Measurement

Save Results

Load Measurement

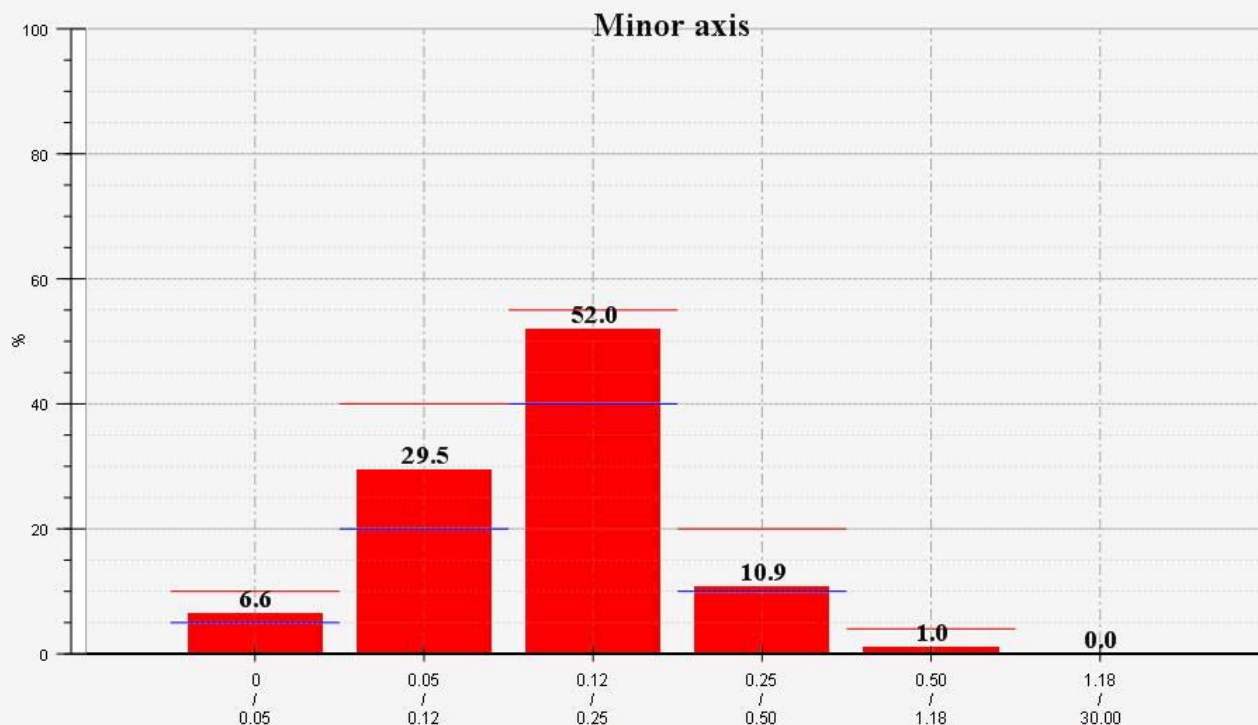
Suction cycle

Snap

Result type

- ☐ Major axis
☒ Minor axis
☐ Equivalent sphere
☐ Slenderness

Hide Database



Production

Test name

Material date

Test date

Operator

Line

Type

Shift

Comment

PG Bison 16mm

8

2014-10-29 11:43:24

2014-10-29 11:50:39

Spider

1

100% EUC

2

Bottom Screw speed 90 amps 265

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

Evaluated percentual

Particles number

0.00/0.05

0.05/0.12

0.12/0.25

0.25/0.50

0.50/1.18

1.18/30.00

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

mm

6.6 %

29.5 %

52.0 %

10.9 %

1.0 %

0.0 %

%

%

%

%

%

%

%

%

%

99.8 %

865232



Server Connected
I/O Port OK

Start Camera

Stop Camera

Clear offset

Nature

Start Measurement

Stop Measurement

Save Results

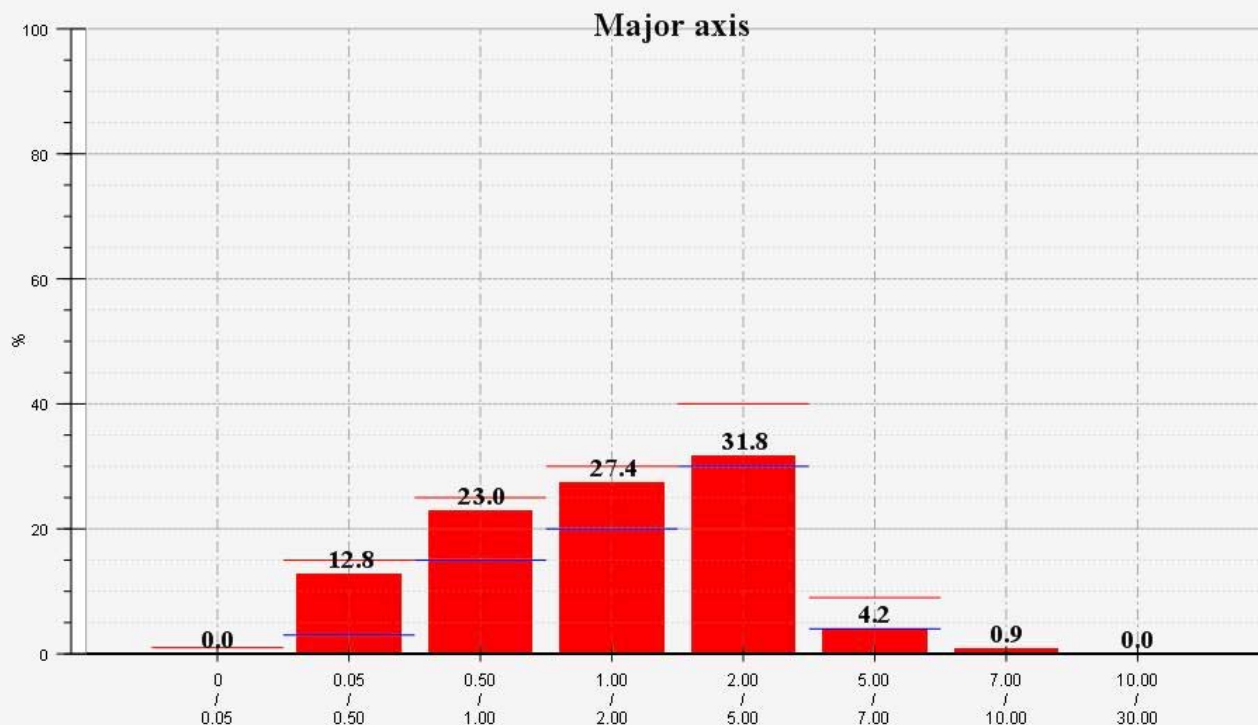
Load Measurement

Suction cycle

Snap

Result type

- ☒ Major axis
☐ Minor axis
☐ Equivalent sphere
☐ Slenderness



Production
Test name
Material date
Test date
Operator
Line
Type
Shift
Comment

PG Bison 16mm

8

2014-10-29 11:43:24

2014-10-29 11:43:24

Spider

1

100% EUC

2

Bottom Screw speed 90 amps 265

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

Evaluated percentual

Particles number

0.00/0.05 mm

0.05/0.50 mm

0.50/1.00 mm

1.00/2.00 mm

2.00/5.00 mm

5.00/7.00 mm

7.00/10.00 mm

10.00/30.00 mm

mm

mm

mm

mm

mm

mm

mm

0.0 %

12.8 %

23.0 %

27.4 %

31.8 %

4.2 %

0.9 %

0.0 %

%

%

%

%

%

%

%

99.8 %

865232

IMAL

Server Connected
I/O Port OK

Start Camera

Stop Camera

Clear offset

Nature

Start Measurement

Stop Measurement

Save Results

Load Measurement

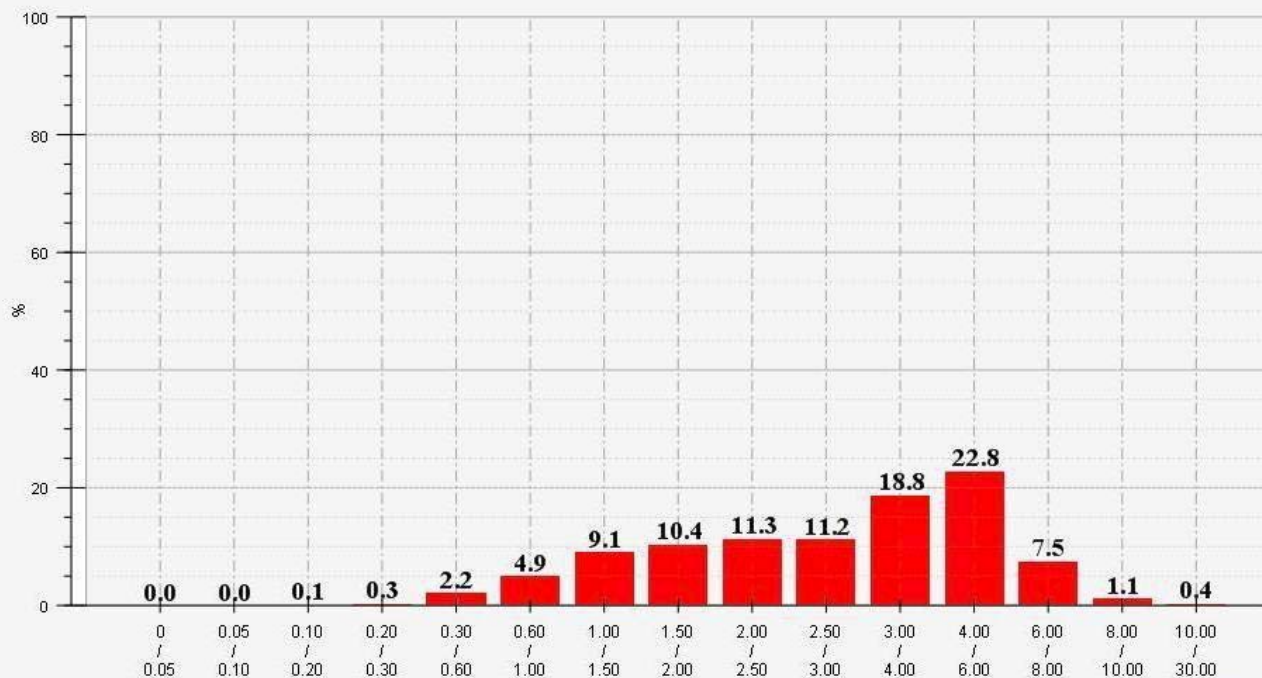
Suction cycle

Snap

Result type

☒ Major axis☐ Minor axis☐ Equivalent sphere

Major axis



Production

test

1

0.00/0.05

mm

0.0 %

Test name

Fiber 1

2

0.05/0.10

mm

0.0 %

Material date

2010-04-01 15:02:39

3

0.10/0.20

mm

0.1 %

Test date

2010-04-01 15:08:21

4

0.20/0.30

mm

0.3 %

Operator

5

0.30/0.60

mm

2.2 %

Line

6

0.60/1.00

mm

4.9 %

Type

7

1.00/1.50

mm

9.1 %

Shift

8

1.50/2.00

mm

10.4 %

Comment

9

2.00/2.50

mm

11.3 %

10

2.50/3.00

mm

18.8 %

11

3.00/4.00

mm

22.8 %

12

4.00/6.00

mm

7.5 %

13

6.00/8.00

mm

1.1 %

14

8.00/10.00

mm

0.4 %

15

10.00/30.00

mm

0.4 %

IMAL

Server Connected
I/O Port OK

Start Camera

Stop Camera

Clear offset

Nature

Start Measurement

Stop Measurement

Save Results

Load Measurement

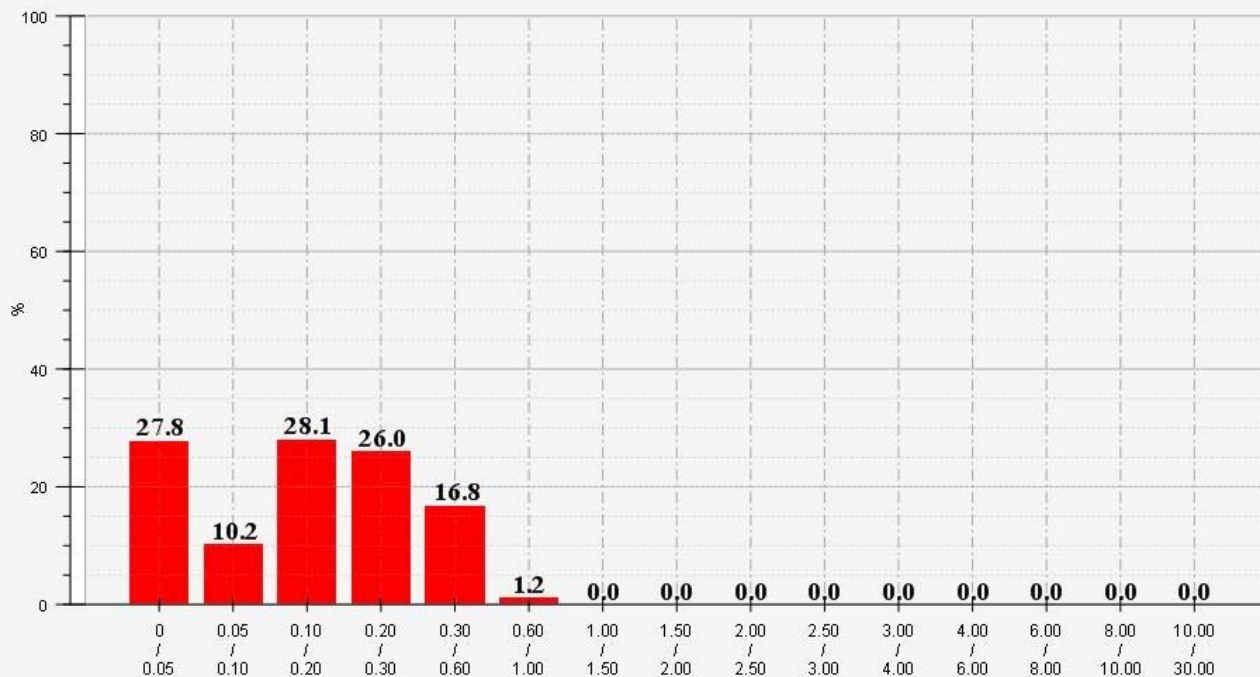
Suction cycle

Snap

Result type

☐ Major axis☒ Minor axis☐ Equivalent sphere

Minor axis



Production

test

1

0.00/0.05

mm

27.8 %

Test name

Fiber 1

2

0.05/0.10

mm

10.2 %

Material date

2010-04-01 15:02:39

3

0.10/0.20

mm

28.1 %

Test date

2010-04-01 15:08:21

4

0.20/0.30

mm

26.0 %

Operator

5

0.30/0.60

mm

16.8 %

Line

6

0.60/1.00

mm

1.2 %

Type

7

1.00/1.50

mm

0.0 %

Shift

8

1.50/2.00

mm

0.0 %

Comment

9

2.00/2.50

mm

0.0 %

10

2.50/3.00

mm

0.0 %

11

3.00/4.00

mm

0.0 %

12

4.00/6.00

mm

0.0 %

13

6.00/8.00

mm

0.0 %

14

8.00/10.00

mm

0.0 %

15

10.00/30.00

mm

0.0 %



Server Connected
I/O Port OK

Start Camera

Stop Camera

Clear offset

Nature

Start Measurement

Stop Measurement

Save Results

Load Measurement

Suction cycle

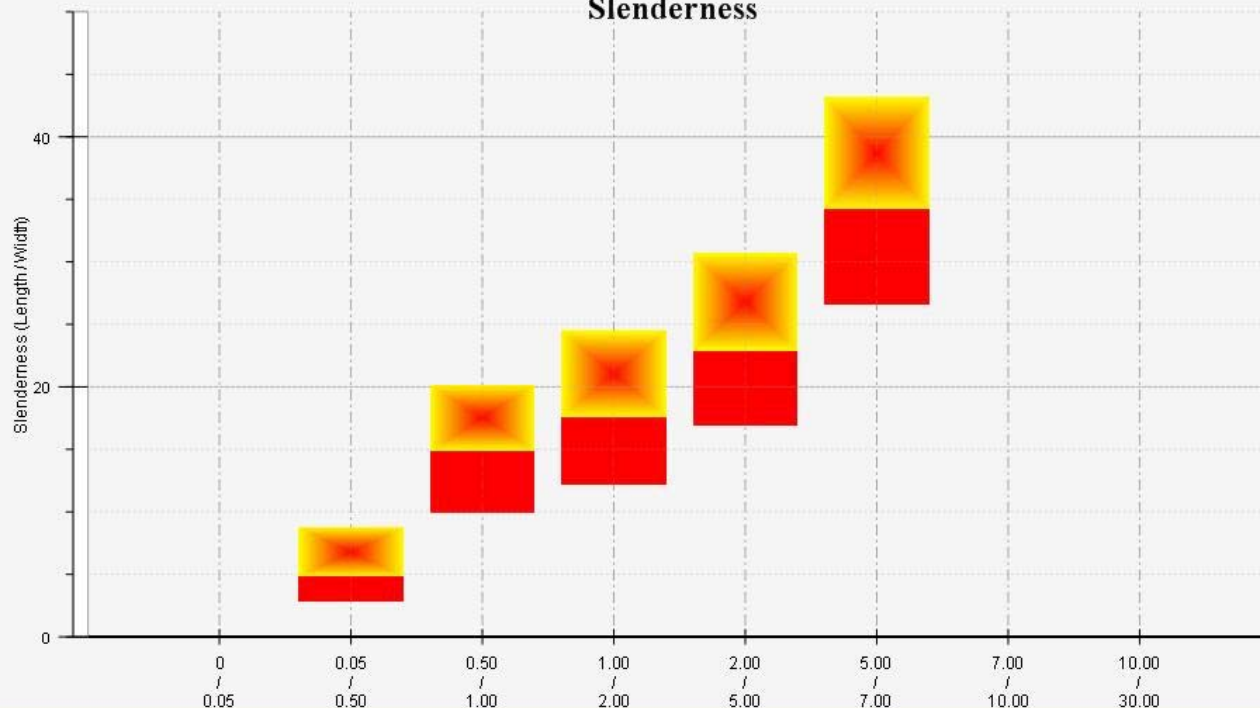
Snap

Result type

- ☐ Major axis
☐ Minor axis
☐ Equivalent sphere
☒ Slenderness

Hide Database

Slenderness



Production

PG Bison 16mm

1

Test name

8

2

Material date

2014-10-29 11:43:24

3

Test date

2014-10-29 11:50:39

4

Operator

Spider

5

Line

1

6

Type

100% EUC

7

Shift

2

8

Comment

Bottom Screw speed 90 amps 265

9

10

11

12

13

14

15

Evaluated percentual

99.8

%

Particles number

865232

0.00/0.05

mm

#0

0.05/0.50

mm

3/5/9 #577744

0.50/1.00

mm

10/15/20 #219764

1.00/2.00

mm

12/18/25 #54888

2.00/5.00

mm

17/23/31 #12966

5.00/7.00

mm

27/34/43 #463

7.00/10.00

mm

#27

10.00/30.00

mm

#0

mm

mm

mm

mm

mm

mm

mm

mm



Server Problems
I/O Port Problems

Start Camera

Stop Camera

Clear offset

Nature

Start Measurement

Stop Measurement

Save Results

Load Measurement

Suction cycle

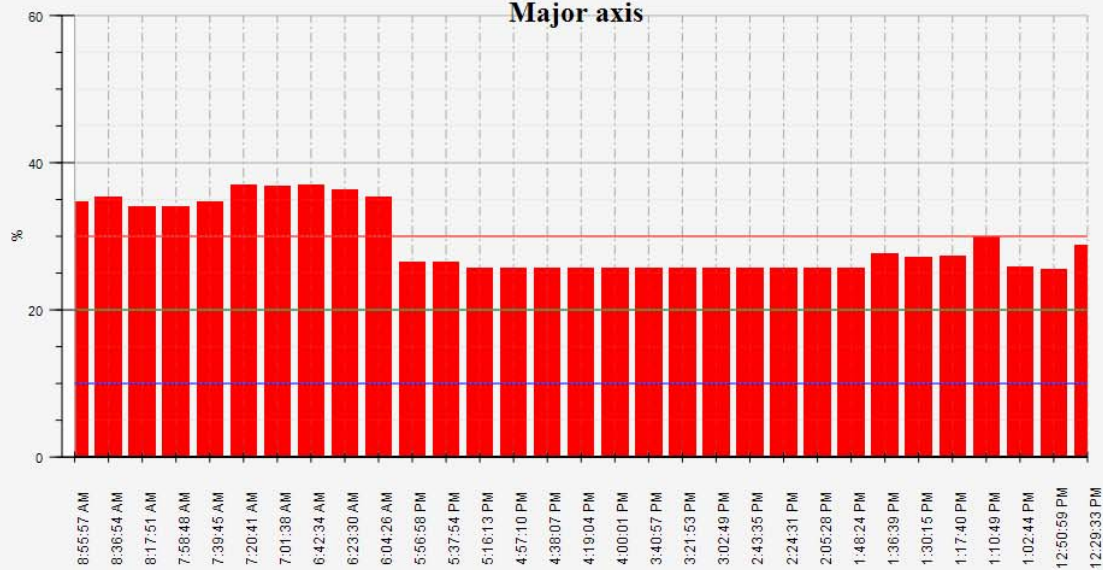
Snap

Result type

☒ Major axis☐ Minor axis☐ Equivalent sphere☐ Slenderness

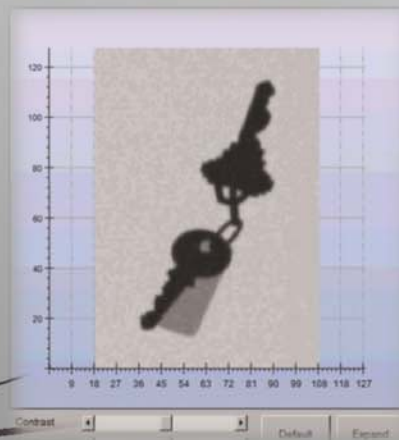
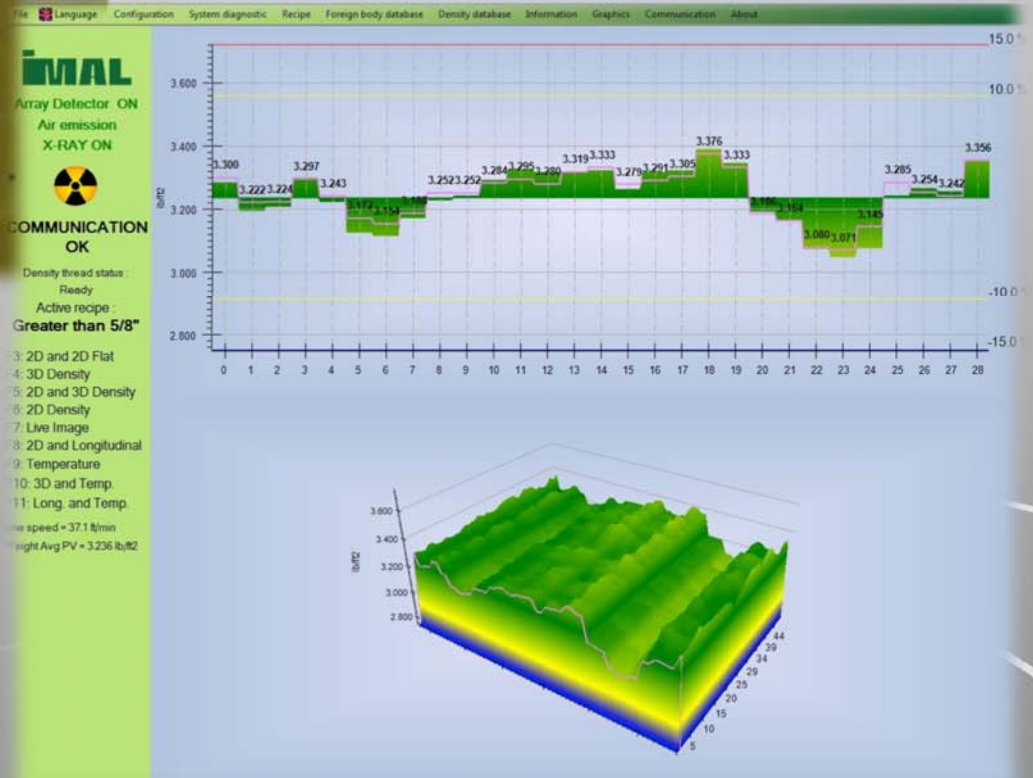
Hide Database

Major axis



☐	1	0.00/0.05	mm
☐	2	0.05/0.25	mm
☒	3	0.25/0.75	mm
☐	4	0.75/1.25	mm
☐	5	1.25/2.00	mm
☐	6	2.00/3.00	mm
☐	7	3.00/5.00	mm
☐	8	5.00/8.00	mm
☐	9	8.00/10.00	mm
☐	10	10.00/30.00	mm
☐	11	30.00/0.00	mm
☐	12	0.00/0.00	mm
☐	13	0.00/0.00	mm
☐	14	0.00/0.00	mm
☐	15	0.00/0.00	mm

PSD PRESS SECURITY DEVICE



ISO30X

le Commandi Visualizza Impostazioni Info

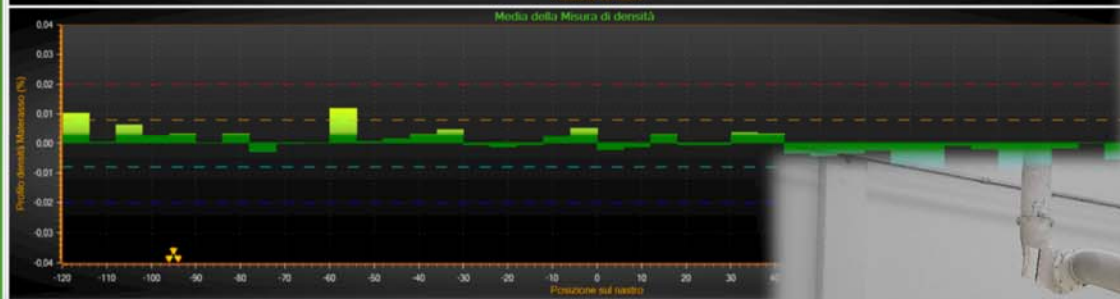
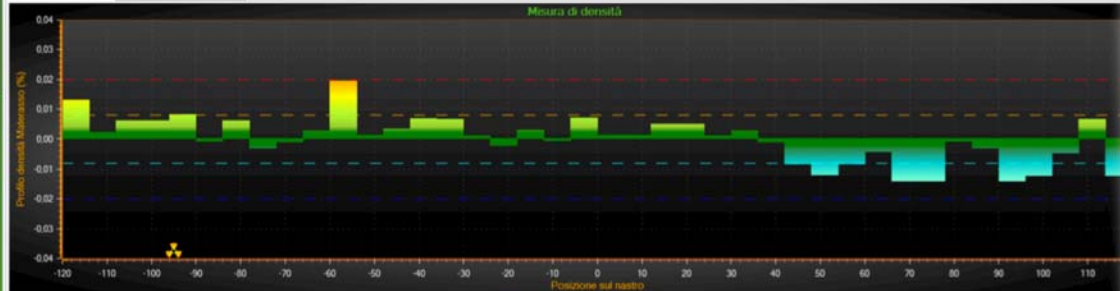
ISO30X

Produzione Attuale

Nome: 12000
Quantità di Materiali (Pcs): 100000000
Quantità di Materiali (Pcs): 475000000
Velocità di Produzione: 2
Quantità di Materiali: 20
Quantità di Materiali: 400
Quantità di Materiali: 0
Quantità di Materiali: 20
Quantità di Materiali: 0

Produzioni Grafici Allarmi Attenzione Messaggi Parametri I/O

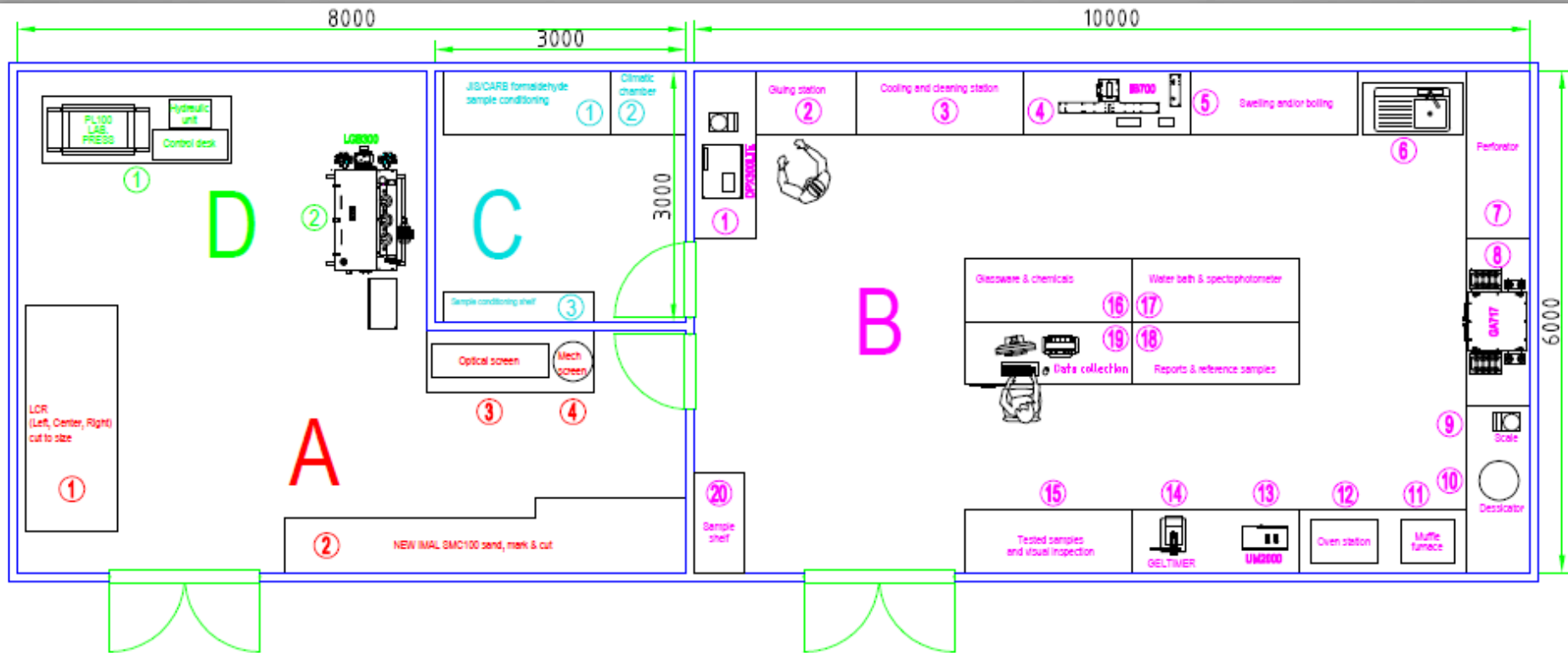
Grafici densità Grafico densità 3D



LABORATORY



IMAL SmartLab Layout



Lab Blender and Press

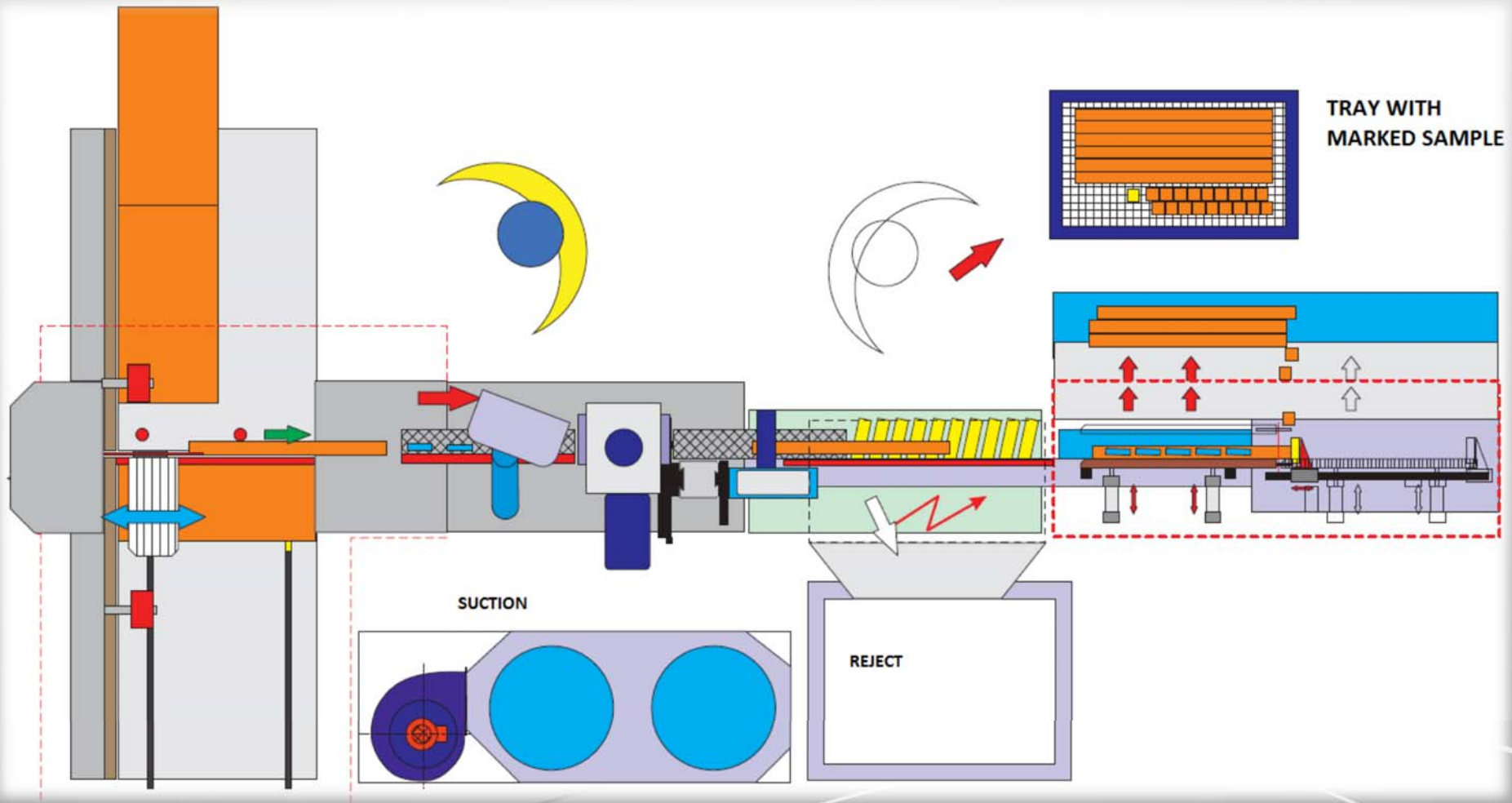


SMC100: Sand, Mark &

Cut
ACTUAL SITUATION



SMC100: Sand, Mark & Cut



new coming
product

IB700



Tests performed in compliance with EN European standards:

- Dimensions (EN 325)
- Density (EN 323)
- Tensile strength (EN319)
- Surface soundness (EN311)
- Screw holding (EN320)
- Bending strength and modulus of elasticity (EN310)
- Optional for pallet block

Other tests performed for IB700:

- ASTM D 1037 - American standard
- AS/NZS 4266 - Australian and New Zealand
- JIS A 5905/5908 - Japanese standard
- GOST 9622 - Russian standard
- EN ISO 12777 - Pallet block standard
- ISO 3350 - Janka hardness

DPX – Lab Density Profile



DPX300



DPX300-LTE

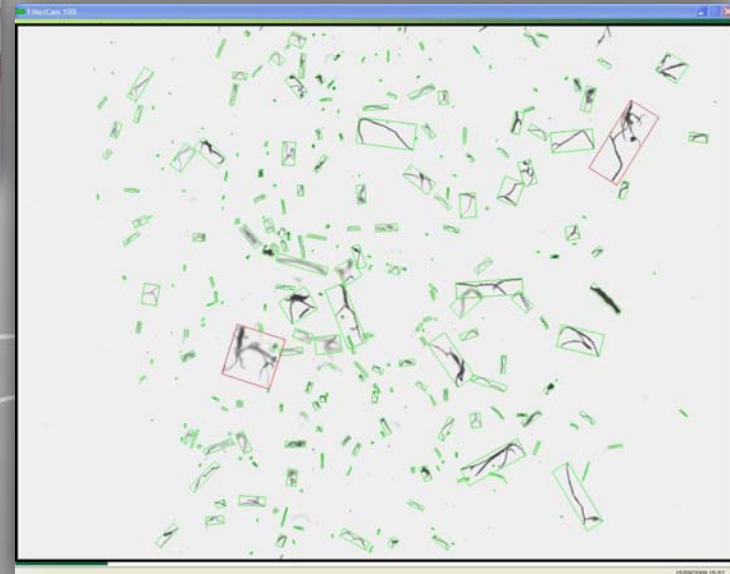
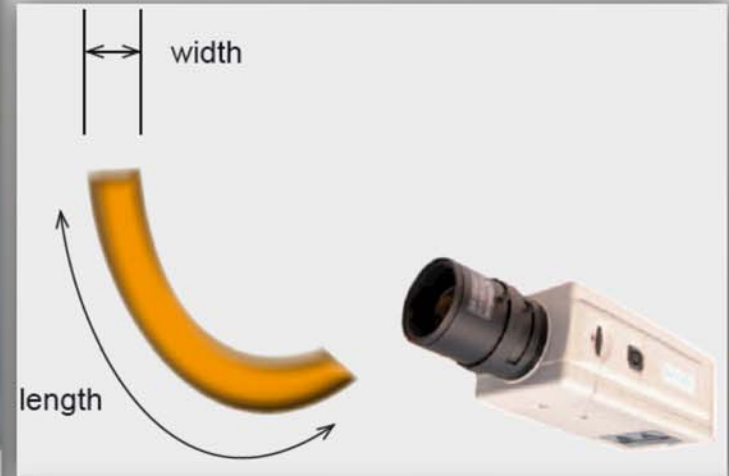
GA717 GAS ANALYZER



FIBERCAM and SCREEENCAM



- Accurate measurement of the true dimension
- Short test cycle
- Optical technology
- Energy reduction
- Improvement of the particle quality



Screening and Sonic Sifter



Boil – Swelling Test



Glue Gel Timer



Thank you for your participation



IMAL

PAL

GLOBUS