



**BETTER**

**EVORIS**

**Künstliche Intelligenz  
trifft auf Holzwerkstoffplatte**

**DIEFFENBACHER**  
MOVE FORWARD. TOGETHER.

**INSIGHTS**





# DIEFFENBACHER: HERE TO STAY SINCE 1873



**Long-term orientation**  
145+ years in the  
business



**Independent**  
family-owned



**Close to our customers**  
1,700 employees  
worldwide



**Resilient**  
acting in 3 different  
markets



**Solid revenue**  
Turnover  
400+ mil. € yearly



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DIEFFENBACHER

D

## Wood-based Panels Industry



MDF



Particleboard



LVL



OSB

## Forming Industry



Composites

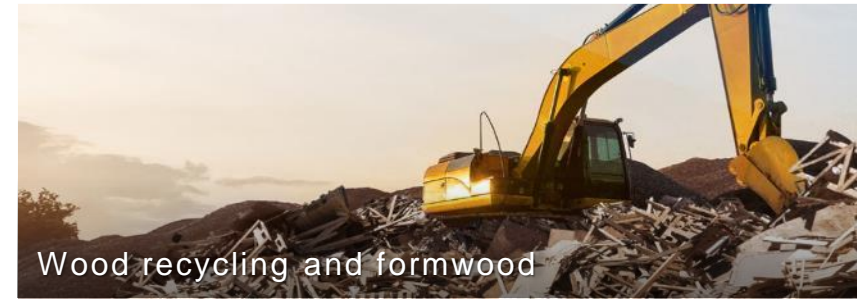


Stainless steel



Metal

## Recycling Industry



Wood recycling and formwood



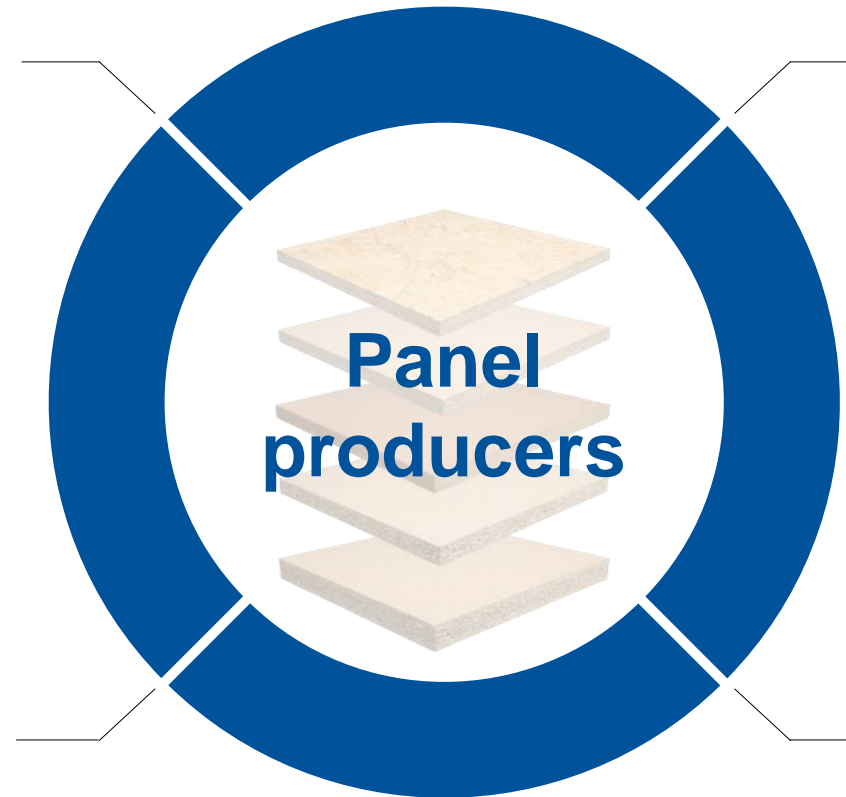
Alternative fuels incl. pellets



W2P – “Second Life” solutions



# WOOD BASED PANELS INDUSTRY







# WOOD BASED PANELS INDUSTRY







# PORTFOLIO - HIGHLIGHTS



Dryer Emission Control System

Belt Dryer

Wireless STS

EVOsteam

EVOscreen

Forming Station PB

CPS+



# EVO RIS - BETTER INSIGHTS



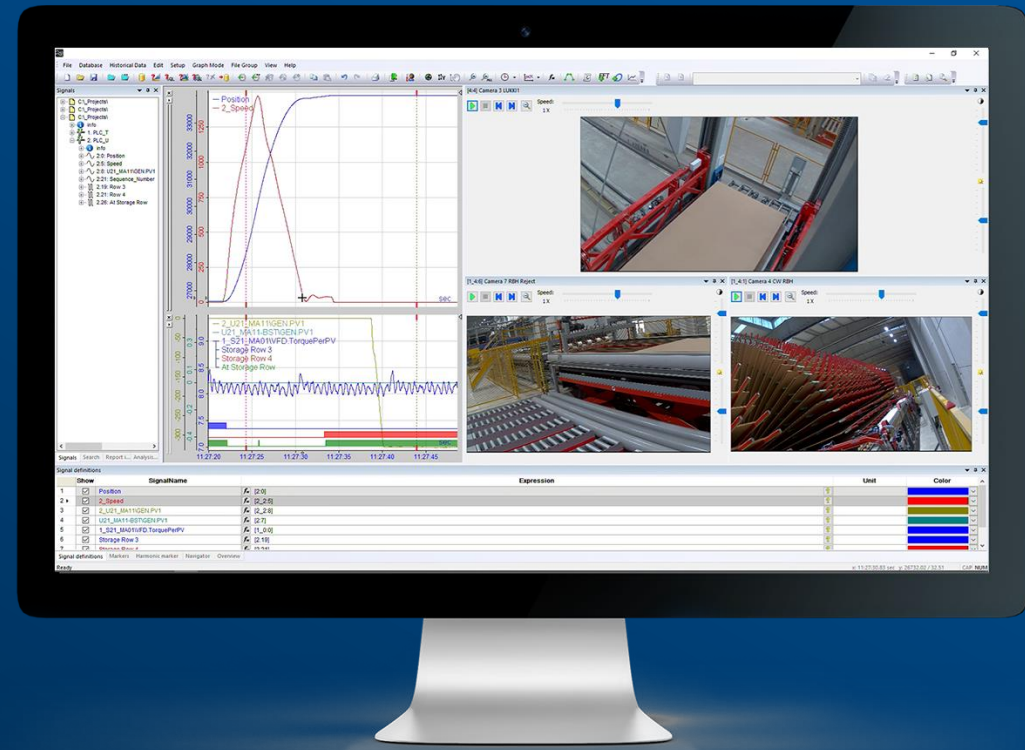
Drive your plant's digitalization easily with

- **Better insights** into production to make better decisions
- **Higher efficiency** in production
- Increase of the **output capacity / speed**
- **Savings on raw material** like glue and wood
- **Reduced operating costs**
- **Less** unplanned **downtime** / higher technical availability
- **Improved board quality** and reduced rejects
- Reduction of training requirements for plant operators
- LifeCycle support with services and ongoing updates.





# IBA-SYSTEM





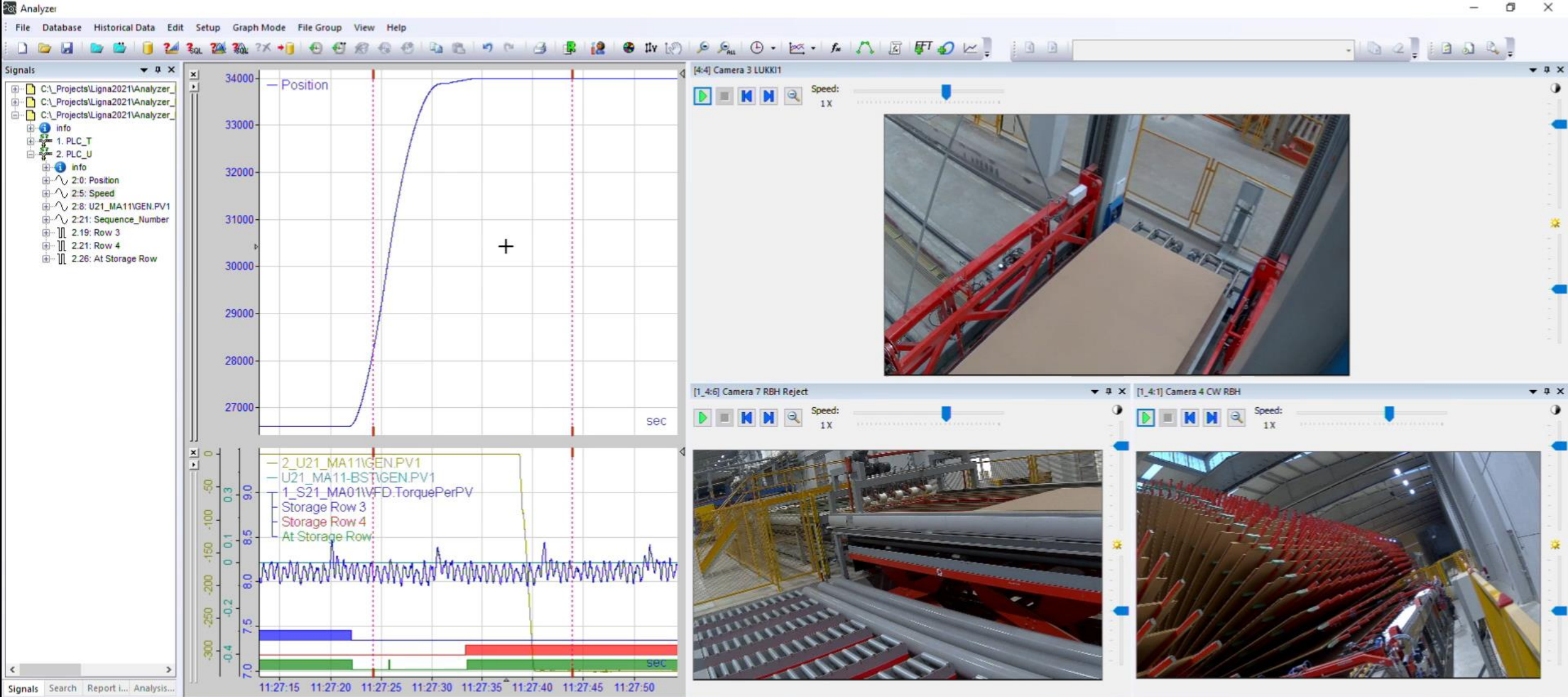


# EVORIS - IBA-SYSTEM



## Features & benefits

- **Cooperation** with iba AG for iba-system in wood-based panel technology
- Expert in data collection in industrial plants
- Industry standard with **over 20,000 installations**
- Comprehensive plant connectivity - **No tag limitation**
- **Central and secure data collection** and storage **on edge** and processing in high resolution
- Easily extendable Trending
- Company-wide flexible **event and time based online and offline analysis**
- **Camera integration and synchronisation with measured values**



Signal definitions

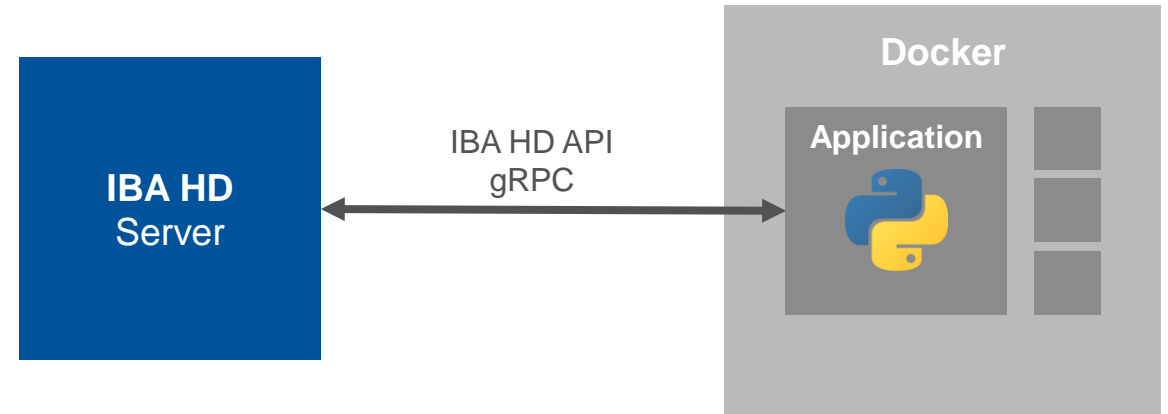
Show	SignalName	Expression	Unit	Color
<input checked="" type="checkbox"/>	Position	$f_{in}$ [2:0]		Blue
<input checked="" type="checkbox"/>	2_U21_MA11GEN.PV1	$f_{in}$ [2:2:8]		Yellow
<input checked="" type="checkbox"/>	U21_MA11-BSTGEN.PV1	$f_{in}$ [2:7]		Green
<input checked="" type="checkbox"/>	1_S21_MA01WFD.TorquePerPV	$f_{in}$ [1_0:0]		Blue
<input checked="" type="checkbox"/>	Storage Row 3	$f_{in}$ [2:19]		Red
<input checked="" type="checkbox"/>	Storage Row 4	$f_{in}$ [2:21]		Blue
<input checked="" type="checkbox"/>	At Storage Row	$f_{in}$ [2:26]		Green





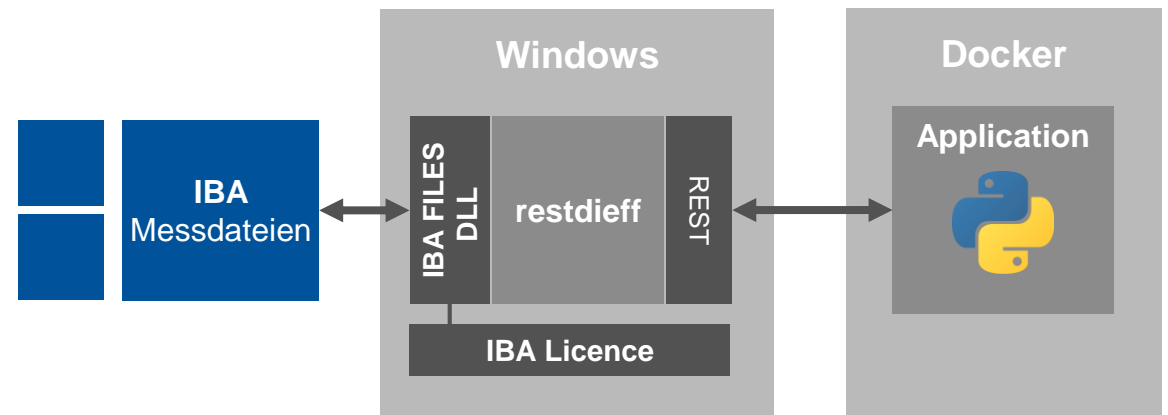
## IBA HD API – Zugriff auf Zeitreihendatenbank

- Python-Applikationen als Docker-Container (Ubuntu-Basis)
- gRPC-Client auf Basis der IBA HD API-Referenz abgeleitet und in Applikation eingebunden
- Performante Datenabfrage von IBA HD-Server direkt aus dem Container über IBA HD API möglich



## IBA FILES.DLL – Zugriff auf Messdateien

- Messdateien werden mit **IBA FILES.DLL**-Schnittstelle ausgelesen
- restdieff-Microservice (Windows-Basis) liest Messdateien mit **IBA FILES.DLL** ein und stellt Daten auf REST-Schnittstelle bereit
- Python-Applikationen (Docker-Container) greift auf REST-Schnittstelle des restdieff-Service zu
- IBA FILES.DLL benötigt Verbindung zu IBA Lizenzdienst (Windows) und kann deshalb aktuell nicht direkt im Docker-Kontext verwendet werden





# EVORIS START CENTER





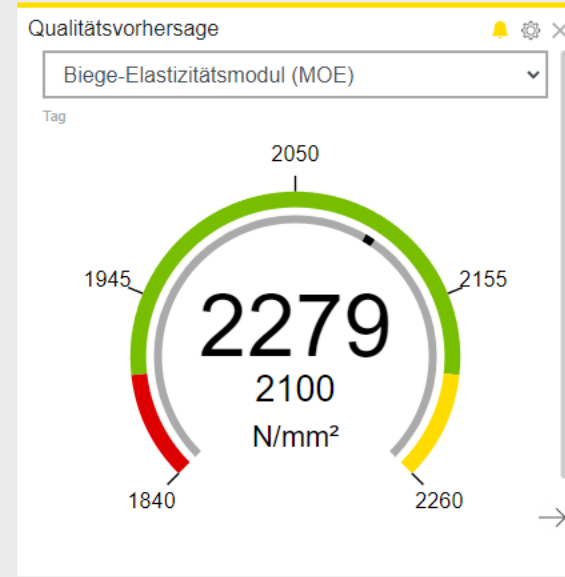
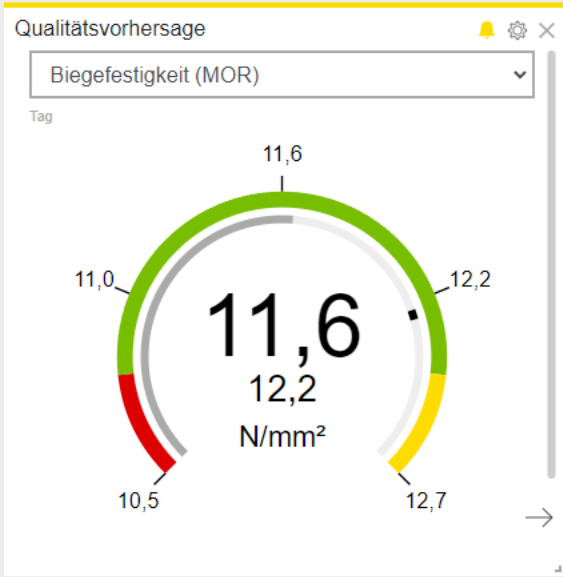


## Features & benefits

- Company-wide secure access to **the browser-based EVORIS solution - even mobile**
- Multilingual Start Center and **apps in modern and user-friendly design**
- Individually **configurable dashboards** and needs-based views
- Storage of configured dashboards
- **Easy, intuitive and attractive** user interface
- **Expandable** with future apps



- APPS
- Anomaly Detection
  - Quality Prediction
  - Curve Analysis
  - Component History
  - Zeroing
  - Pressure Insulation
  - Vibration Monitoring
  - Particle Size
  - Actual value
  - Template App



### Taschenrechner

308 × 42

12,936

AC ± % ÷

7 8 9 ×

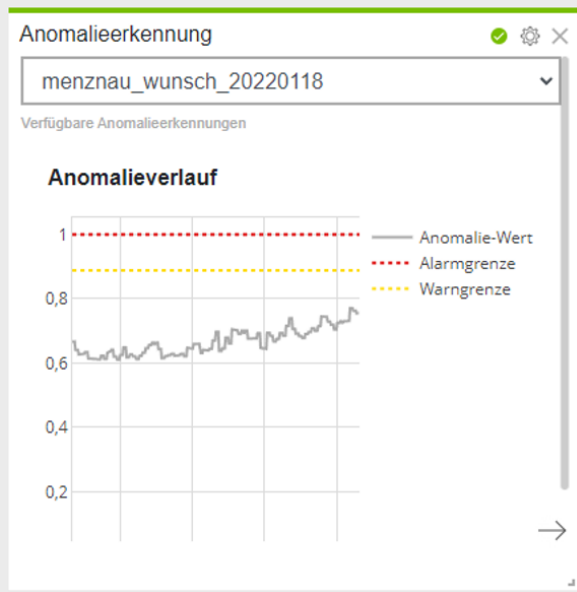
4 5 6 -

1 2 3 +

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### Qualitätsvorhersage

Tag	Status	Wert	Target	Einheit
MOR	✓	11.5	12.2	N/mm <sup>2</sup>
MOE	⚠	2,285	2,100	N/mm <sup>2</sup>
IB	✓	0.50	0.50	N/mm <sup>2</sup>
SS	✓	1.21	1.17	N/mm <sup>2</sup>
DENS	✓	623	625	kg/m <sup>3</sup>



### Wetter

Cloudy, High/Low 24°/14°, Wind 6 mph, Humidity 65%, Dew Point 12°, Pressure 1018.0 mb

18° C

TUE 20° C WED 15° C THU 12° C FRI 13° C

### Zeroing

Suspicious Frames

Left 2 6

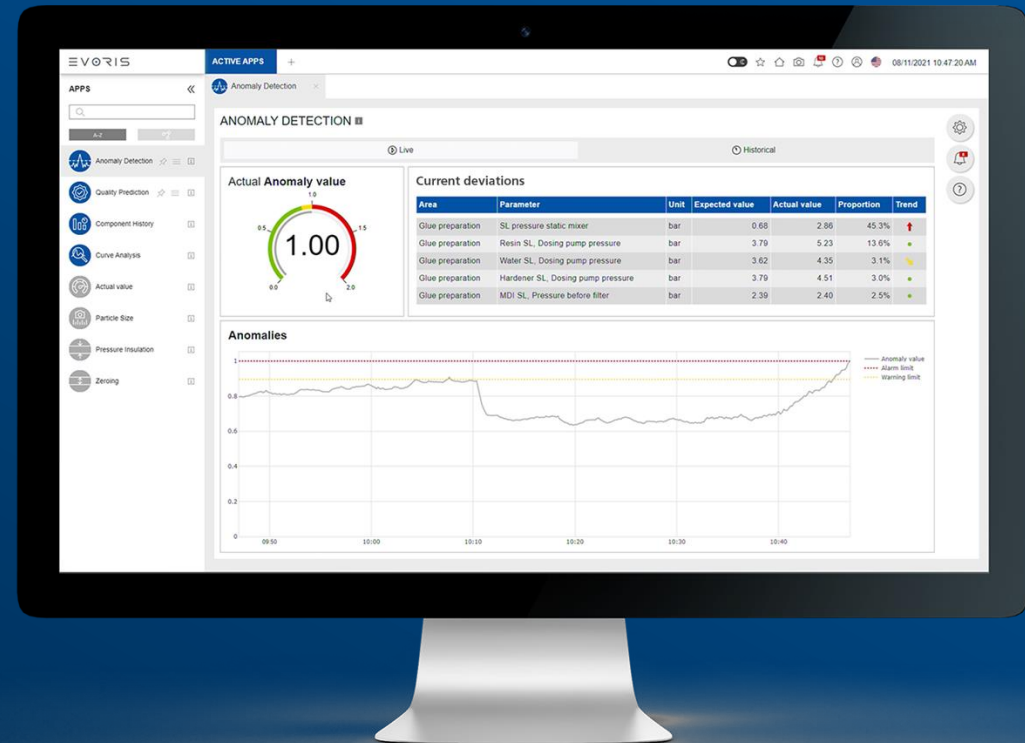
Right 2







# ANOMALY DETECTION





# EVORIS - ANOMALY DETECTION



## Features & benefits

- Live data on **deviations from the normal state** of a production (Anomaly)
- Automatic **detection of threshold values**
- Displaying of **signals causing an anomaly**
- **Fewer or shorter production downtimes**
- Fast and accurate **error identification**
- Plannability of preventive maintenance activities
- Easier shift handovers due to more transparency



- APPS
- Anomaly Detection
  - Quality Prediction
  - Zeroing
  - Pressure Insulation
  - Component History
  - Particle Size

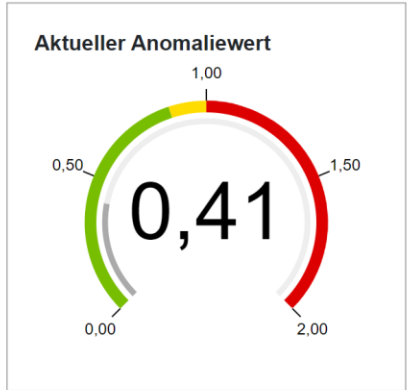
- Particle Size
- Anomaly Detection
- Quality Prediction

## ANOMALY DETECTION i

bandlauf

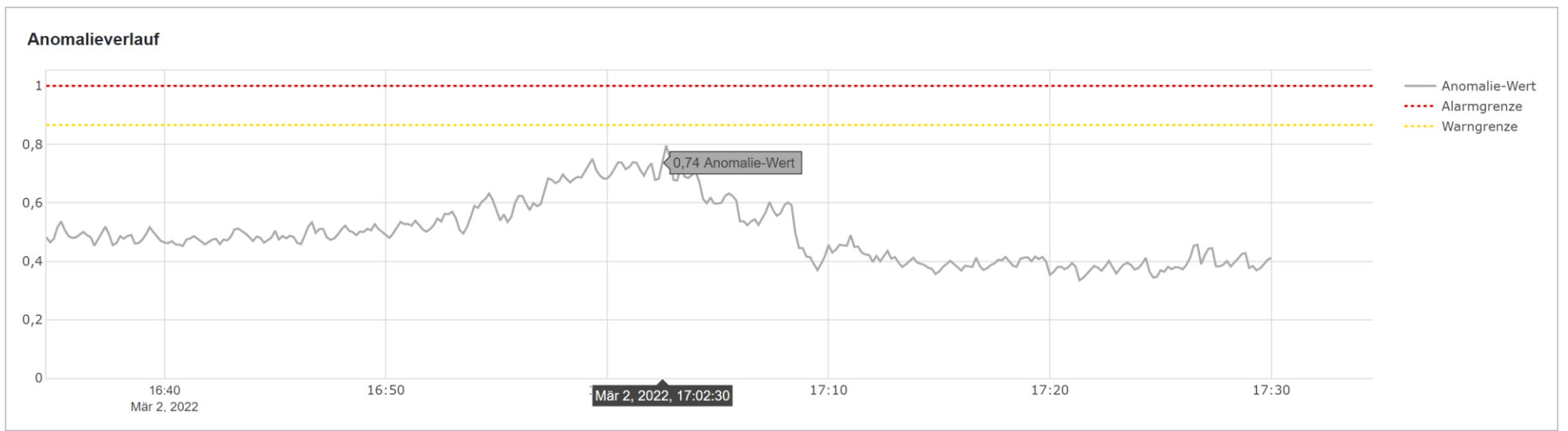
Verfügbare Anomalieerkennungen

Live
  Historisch



### Aktuelle Auffälligkeiten

Bereich	Parameter	Erwarteter Wert	Aktueller Wert	Anteil	Trend
unknown	Belt alignment outfeed bottom	-0,69 mm	-2,02 mm	10,44 %	●
unknown	Outlet drum top left control valve set point	0,16 V	0,12 V	10,04 %	●
unknown	Outlet drum bottom right position	284,47 mm	285,03 mm	7,54 %	●
unknown	Belt alignment outfeed top	0,47 mm	-0,49 mm	7,12 %	●
unknown	Orthogonal Adjust AV	-0,21 mm	-0,22 mm	6,02 %	●



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?

**APPS**

Search:  A-Z

- Anomaly Detection
- Quality Prediction
- Zeroing
- Pressure Insulation
- Component History
- Particle Size

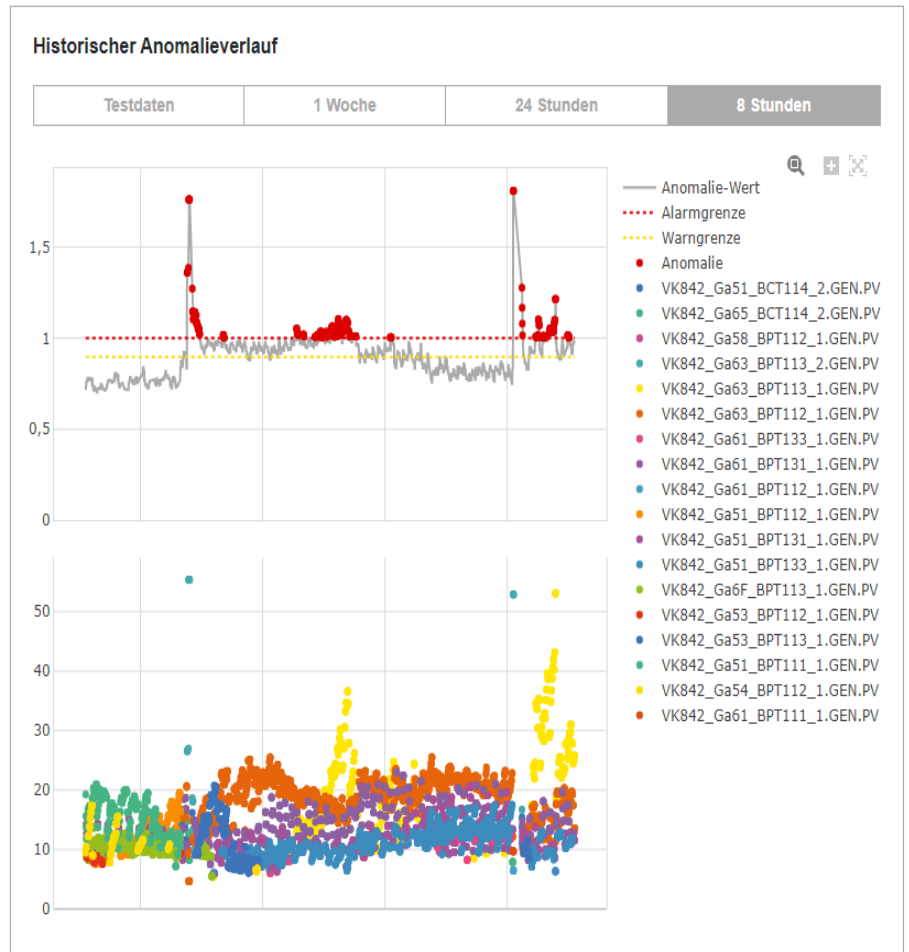
Particle Size x Anomaly Detection x Quality Prediction x

## ANOMALY DETECTION

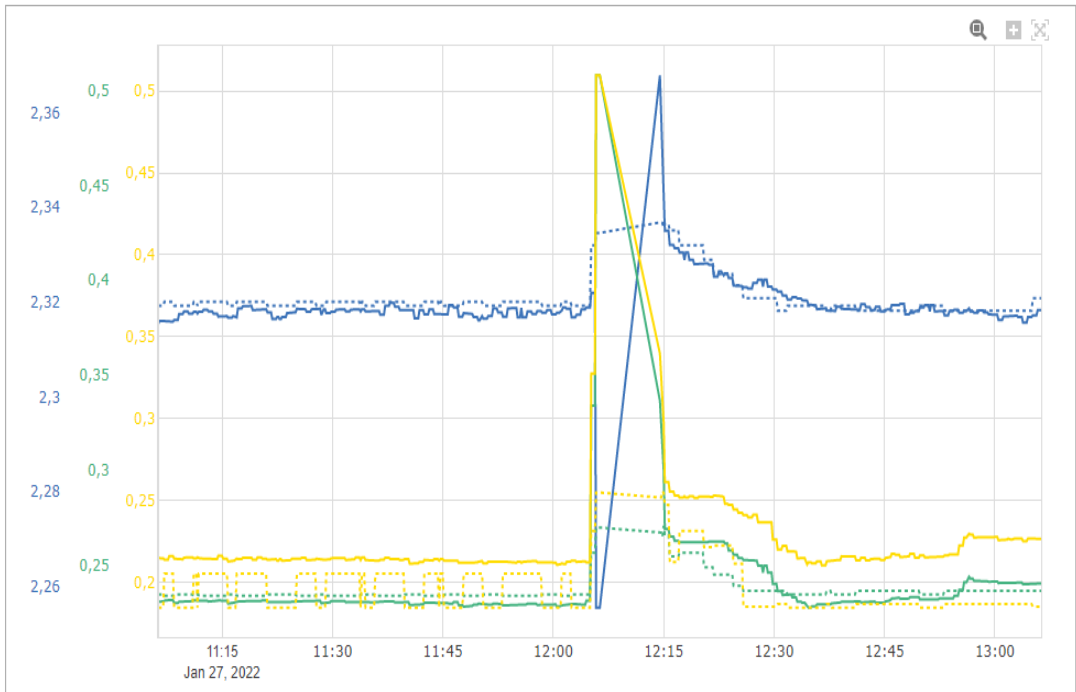
review\_test

Verfügbare Anomalieerkennungen

Live Historisch



Sichtbar	Farbe	Bereich	Parameter	Einheit	Erwarteter Wert	Aktueller Wert	Anteil
<input checked="" type="checkbox"/>	▼	Leimdosierung	MDI CL 2, Dosing pump pressure	bar	2,33	2,26	52,87 %
<input checked="" type="checkbox"/>	▼	Leimdosierung	Resin CL, Pressure before filter	bar	0,27	0,51	9,69 %
<input checked="" type="checkbox"/>	▼	Leimdosierung	Resin CL, Dosing suction pressure	bar	0,25	0,51	6,46 %







# EVORIS - MULTI ANOMALY DETECTION



EVORIS

ACTIVE APPS

DASHBOARD\_MENZNAU

02.03.2022 17:24:49

APPS

Anomaly Detection

Quality Prediction

Zeroing

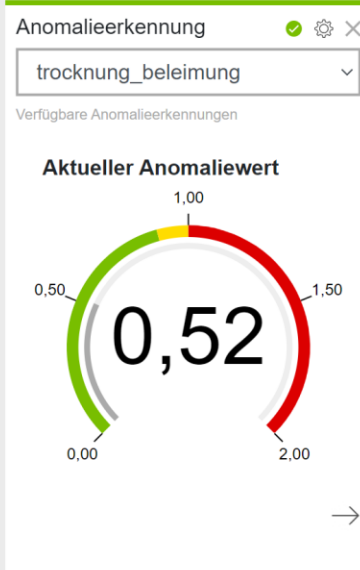
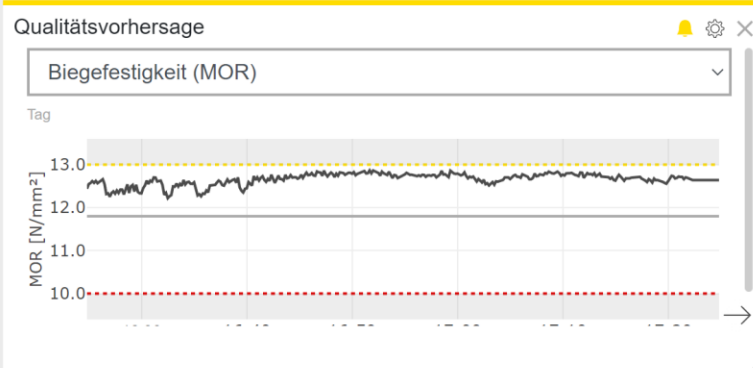
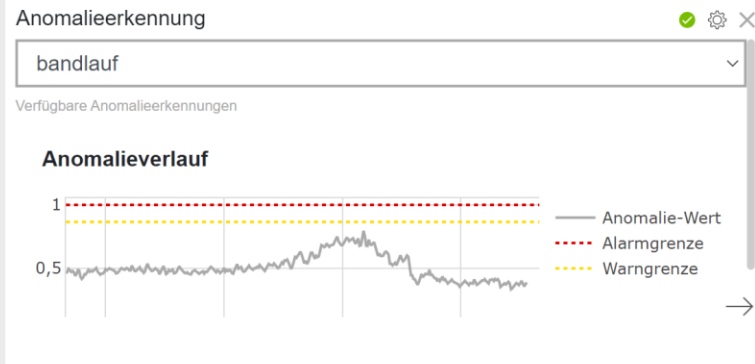
Pressure Insulation

Component History

Particle Size

Qualitätsvorhersage

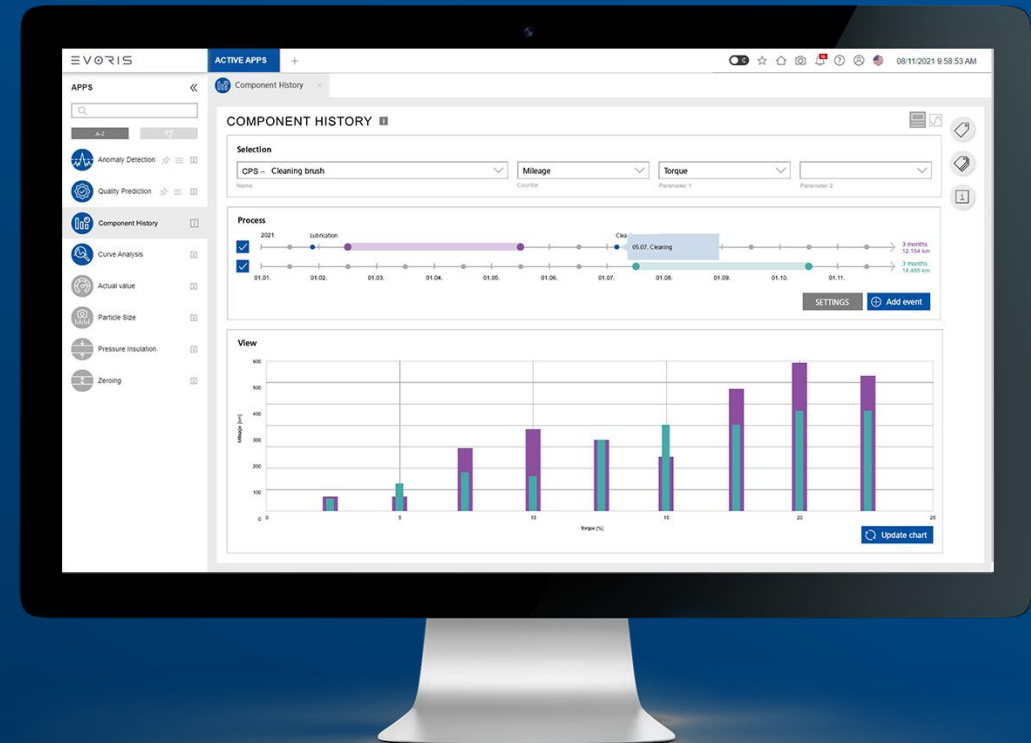
Tag	Status	Wert	Target	Einheit
MOR	✓	12,7	11,8	N/mm <sup>2</sup>
MOE	🚨	2.553	2.200	N/mm <sup>2</sup>
IB	✓	0,60	0,60	N/mm <sup>2</sup>
SS	✓	1,29	1,20	N/mm <sup>2</sup>
DENS	🚨	654	580	kg/m <sup>3</sup>



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☆+  
📄



# COMPONENT HISTORY







# EVORIS - COMPONENT HISTORY



## Features & benefits

- Compressed recording of the **load on components over the entire life cycle**
- **Archiving and comparing of component histories** / Estimation of the (service) life of components
- Holistic **analysis of the load on a component** over its entire life cycle
- Faster **error detection and cause analysis**
- Better deduction of **preventive maintenance measures** (Fewer or shorter downtimes)



City or motorway?

How was it driven?

Summer vehicle?



- APPS
- Search
- A-Z
- Anomaly Detection
- Quality Prediction
- Component History**
- Curve Analysis
- Actual value
- Particle Size
- Pressure Insulation
- Zeroing

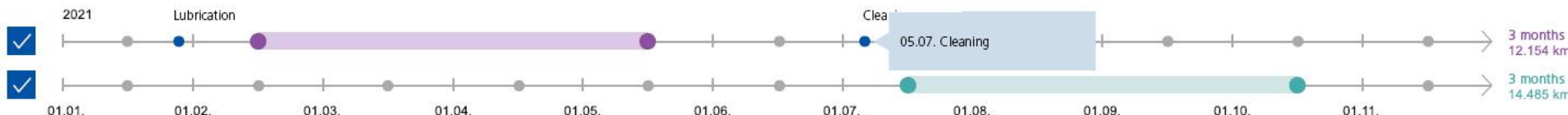
Component History

### COMPONENT HISTORY

#### Selection

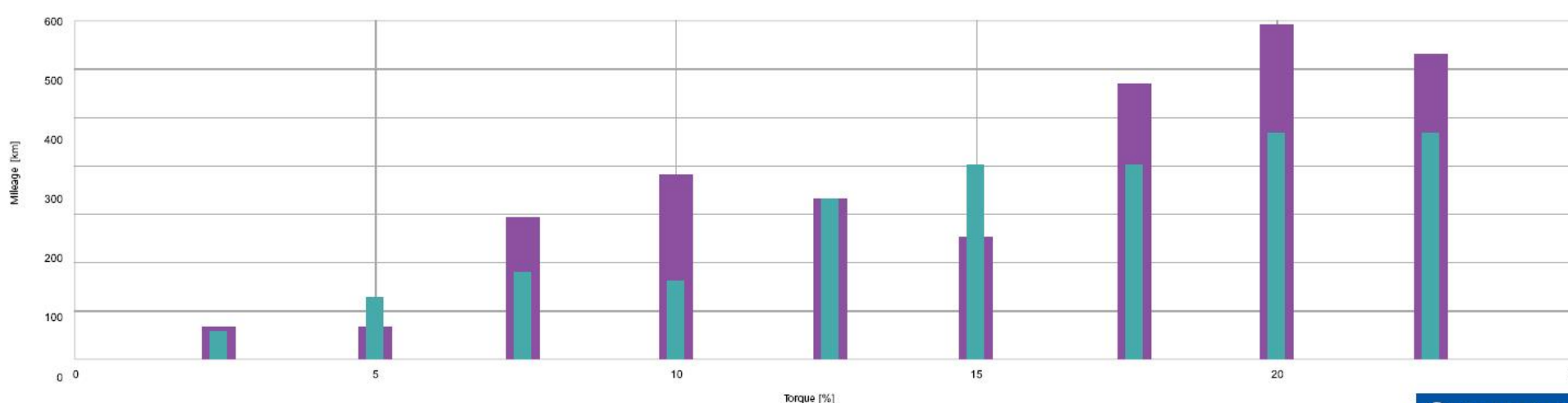
Name      Counter      Parameter 1      Parameter 2

#### Process



SETTINGS    + Add event

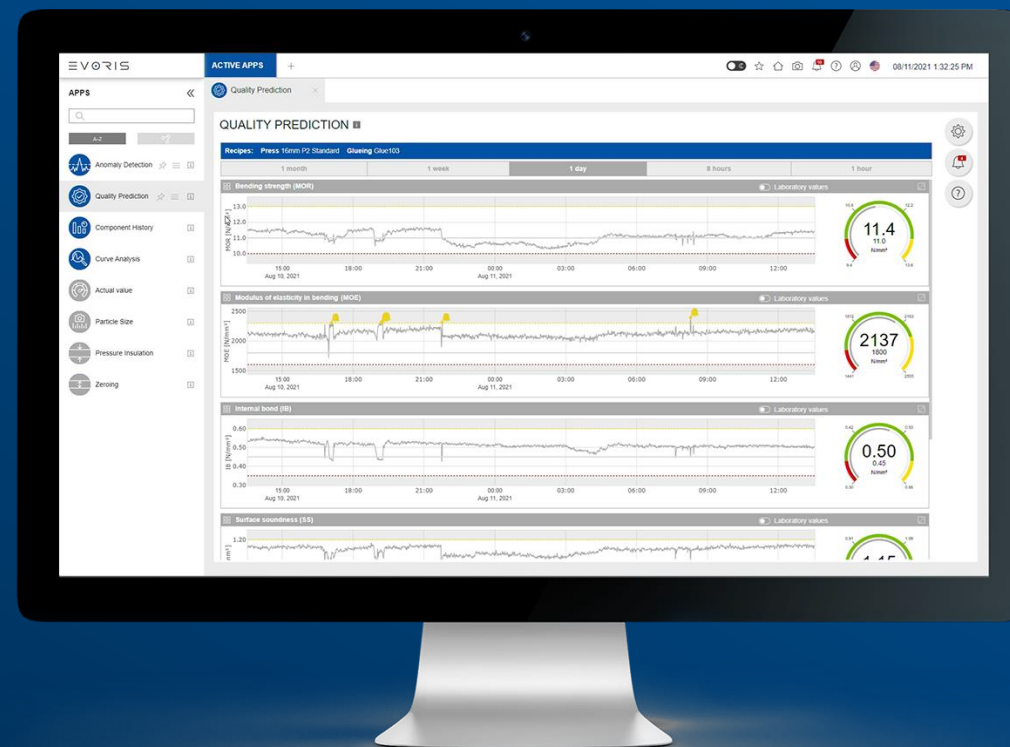
#### View



Update chart



# QUALITY PREDICTION







# EVORIS - QUALITY PREDICTION



## Features & benefits

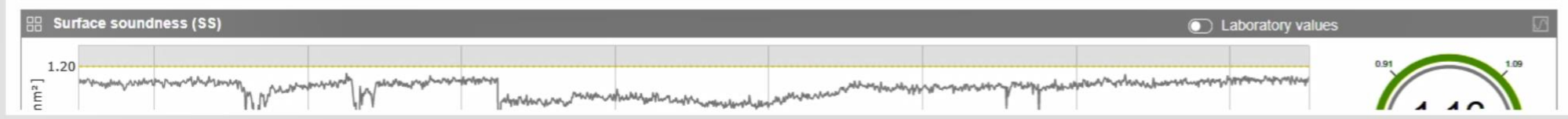
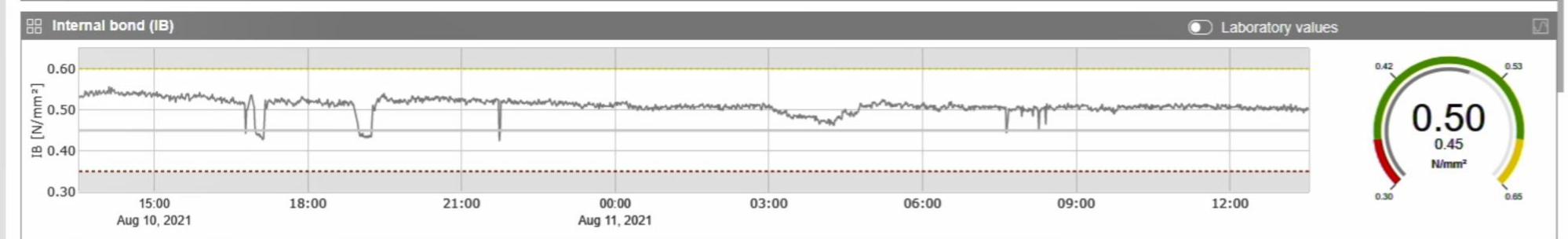
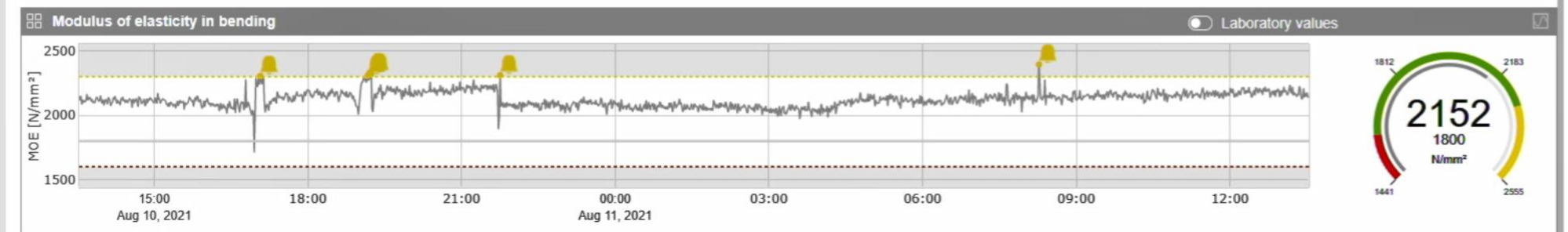
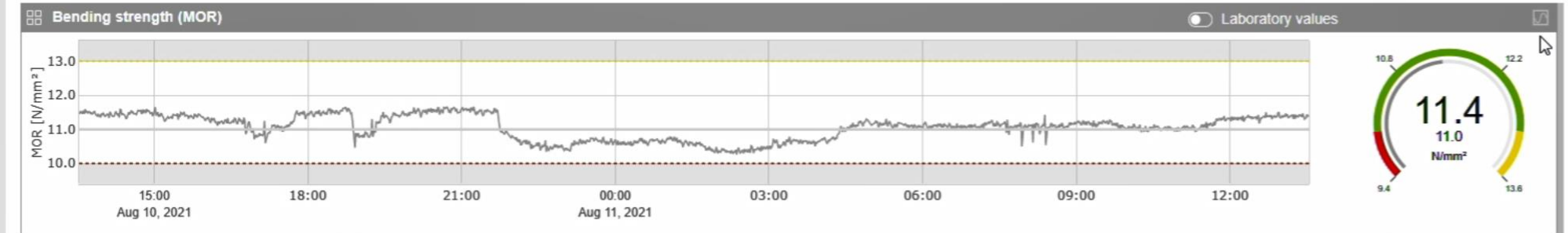
- **Real-time prediction of quality-relevant production parameters**
- MOR, MOE, IB and surface soundness
- Full **self-learning AI system**
- Continuously increasing prediction accuracy over time
- **Improved board quality and higher production speed** through product optimization
- **Saving on resources** (wood, glue, energy) and **reject reduction**
- Increased **sustainability** of production
- Automatic system adaptation to changing production conditions and products
- Early **detection of quality deviations** and **faster error detection**
- Automatic **import of laboratory data**

- APPS
- SEARCH
- A-Z
- Anomaly Detection
- Quality Prediction
- Component History
- Curve Analysis
- Actual value
- Particle Size
- Pressure Insulation
- Zeroing

# QUALITY PREDICTION

Recipes: Press 16mm P2 Standard Glueing Glue103

1 month 1 week 1 day 8 hours 1 hour

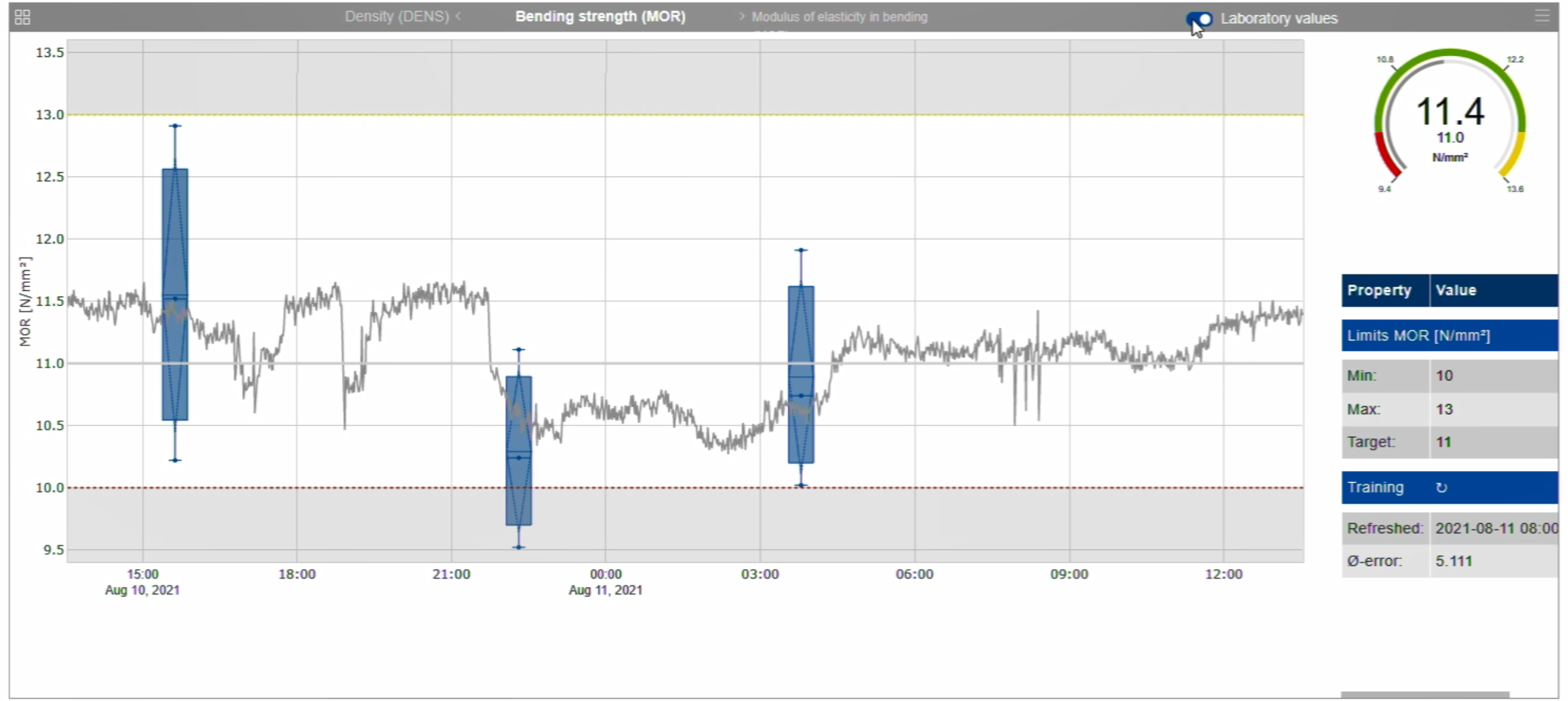


- APPS
- A-Z
- Anomaly Detection
  - Quality Prediction
  - Component History
  - Curve Analysis
  - Actual value
  - Particle Size
  - Pressure Insulation
  - Zeroing

## QUALITY PREDICTION

Recipes: Press 16mm P2 Standard Glueing Glue103

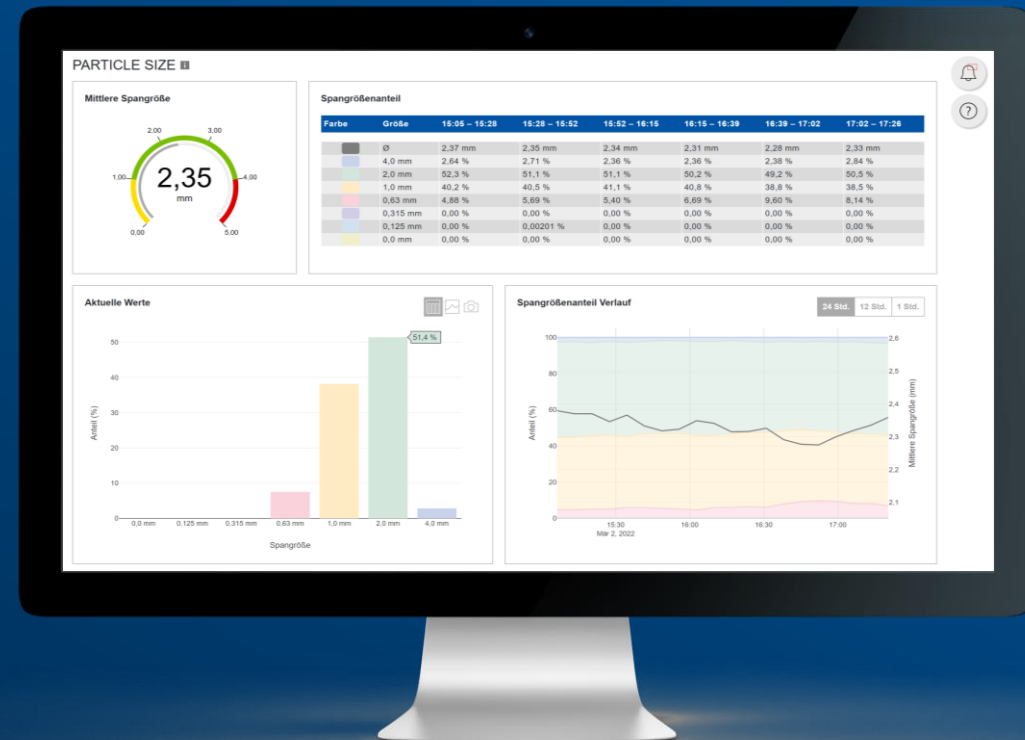
1 month 1 week 1 day 8 hours 1 hour







# PARTICLE SIZE





# EVORIS - PARTICLE SIZE



## Features & benefits

- **Live data on particle size and distribution**
- Displaying of distribution over time
- **Notifications of deviations**
- Automatic adaptation to mat height
- **Detection of machinery defects and wear**
- **Better board quality and quality prediction**



# PARTICLE SIZE

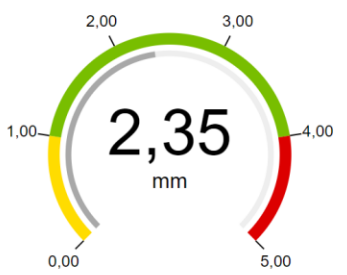




- APPS
- Anomaly Detection
  - Quality Prediction
  - Zeroing
  - Pressure Insulation
  - Component History
  - Particle Size

### PARTICLE SIZE i

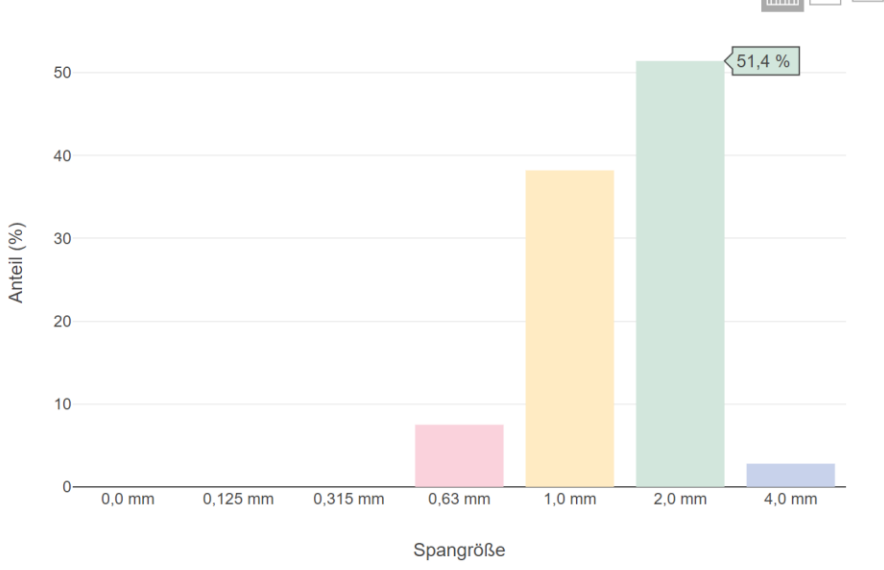
#### Mittlere Spangröße



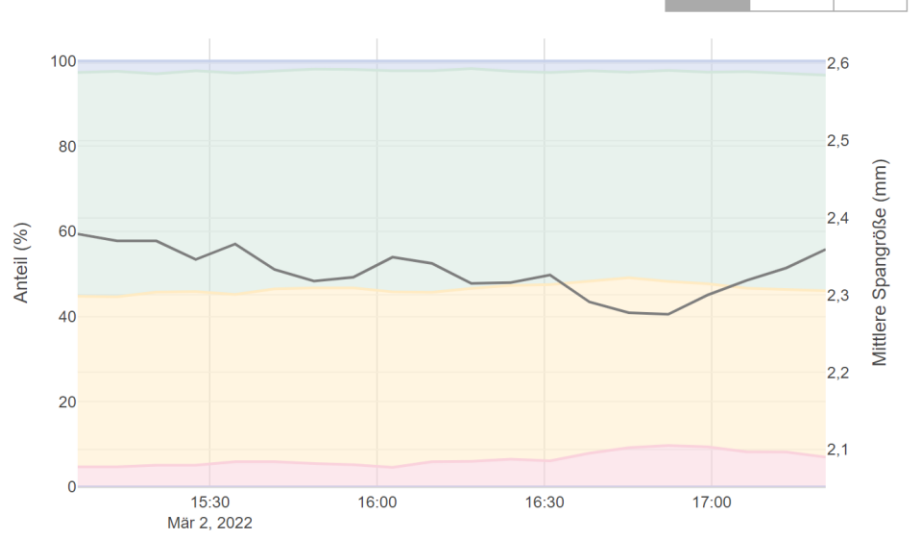
#### Spangrößenanteil

Farbe	Größe	15:05 – 15:28	15:28 – 15:52	15:52 – 16:15	16:15 – 16:39	16:39 – 17:02	17:02 – 17:26
Ø		2,37 mm	2,35 mm	2,34 mm	2,31 mm	2,28 mm	2,33 mm
4,0 mm		2,64 %	2,71 %	2,36 %	2,36 %	2,38 %	2,84 %
2,0 mm		52,3 %	51,1 %	51,1 %	50,2 %	49,2 %	50,5 %
1,0 mm		40,2 %	40,5 %	41,1 %	40,8 %	38,8 %	38,5 %
0,63 mm		4,88 %	5,69 %	5,40 %	6,69 %	9,60 %	8,14 %
0,315 mm		0,00 %	0,00 %	0,00 %	0,00 %	0,00 %	0,00 %
0,125 mm		0,00 %	0,00201 %	0,00 %	0,00 %	0,00 %	0,00 %
0,0 mm		0,00 %	0,00 %	0,00 %	0,00 %	0,00 %	0,00 %

#### Aktuelle Werte



#### Spangrößenanteil Verlauf



Notification bell icon and help icon.



# INCREASE

# PRODUCTION EFFICIENCY

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Vice President Automation

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**DIEFFENBACHER**

MOVE FORWARD. TOGETHER.