Frederick Viaut

NA Marketing Manager and Aerospace Leader

How to Maximize Process Efficiency

By Desoutter

Light Automation

AI-Powered Analytics

Geolocation

EFFICIENCY AS A COMPETITIVE ADVANTAGE

Tesla, Inc. Oct 7, 2021 Annual Meeting of Stockholders : Elon Musk

2h30

Model Y – Giga factory Shanghai

Industry Average

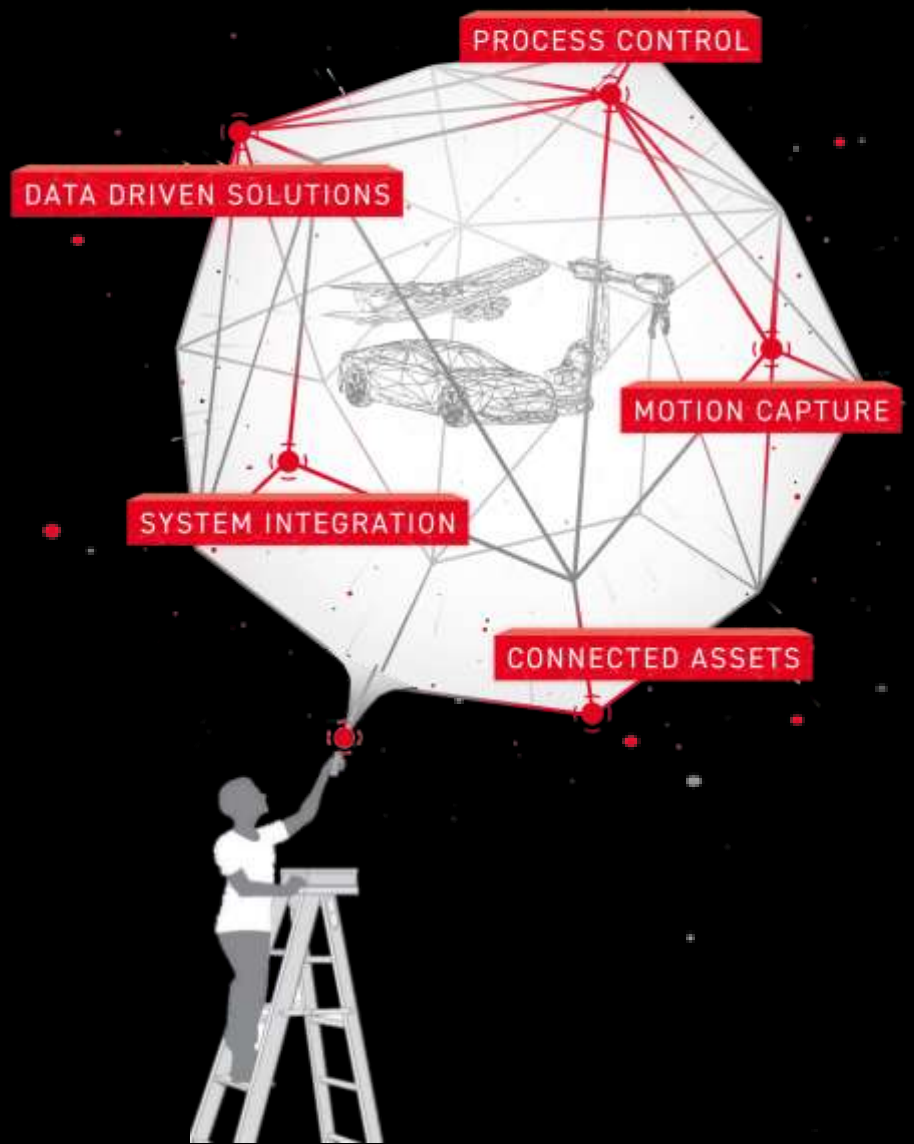
18h-35h

per vehicle

From the first station to the last station

Desoutter Ecosystem

MAXIMISE PROCESS EFFICIENCY



Flexible

Scalable

Intuitive

EFFICIENCY IN MANUFACTURING

- **PRODUCTIVITY**

$$\text{Productivity} = \frac{\text{Output}}{\text{Input}}$$

Total output

- **EFFICIENCY**

$$\text{Efficiency} = \frac{\text{Useful Output}}{\text{Total Input}}$$

Minimizing Waste
Optimizing processes

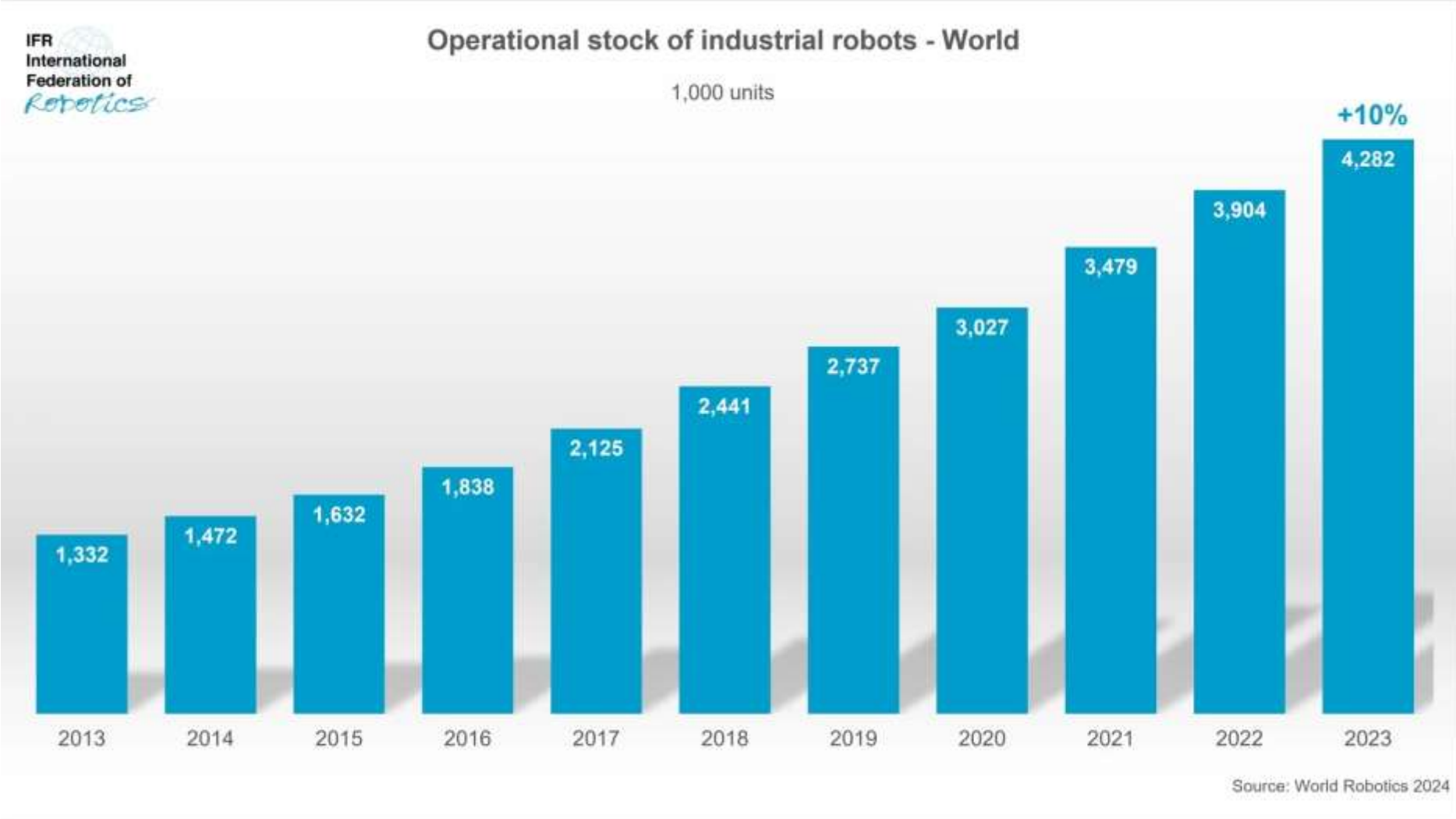
- **OEE**

$$\text{OEE} = \text{Availability} \times \text{Performance} \times \text{Quality}$$

Direct measure of efficiency

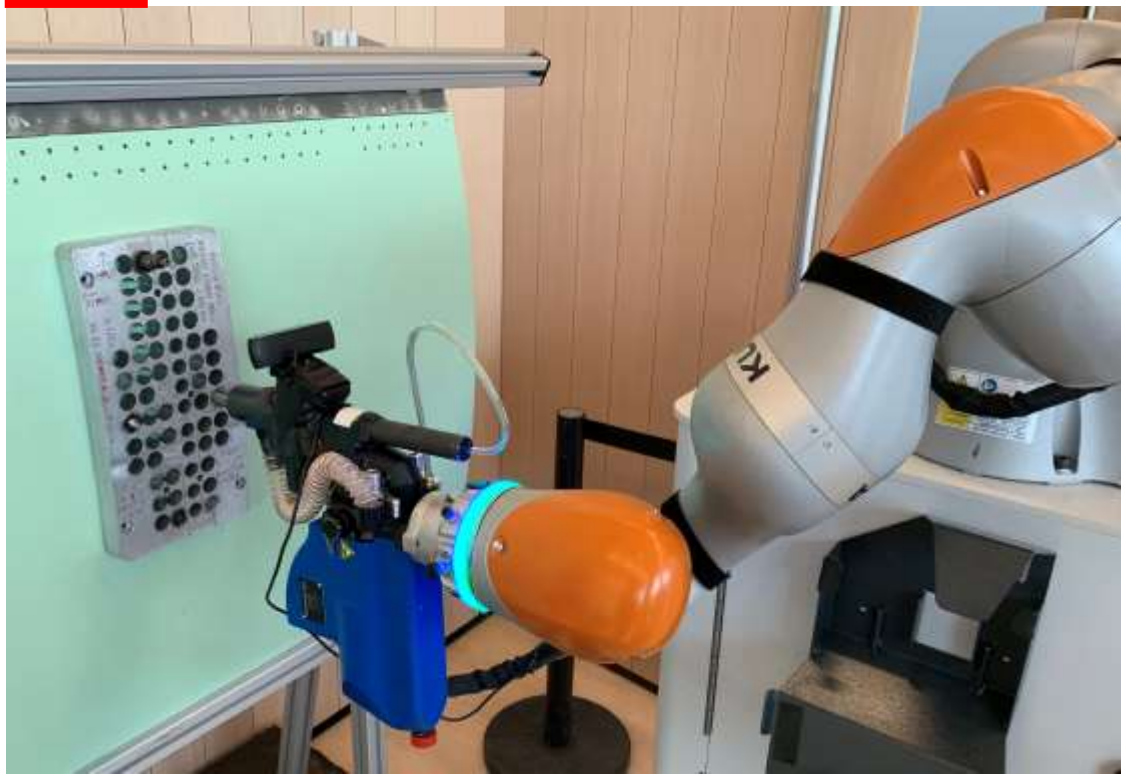
LIGHT AUTOMATION

A GROWING DEMAND



END OF ARM TOOLING

AEROSPACE DRILLING



INDUSTRIAL FASTENING

A SOLUTION FOR EACH APPLICATION

Multi-spindle

Screw-feeder solution

Battery Spindle

Spindle

INTEGRATION MAKE IT ACCESSIBLE

LIGHT AUTOMATION
Desoutter

TRADITIONAL

BUILT-IN VISION

EOAT - BUILT-IN MACHINE VISION

Automation – worth it ?

How to Implement Zero Defects Assembly ?

PROCESS CONTROL – WHY ?

	Simple Process *Same repetitive activity*	Advanced Process *Various operations, multiple assets, variants*
Core	 Avoid Inaccuracy & Breakdowns	 Address Rigid & Unsupported Special Software
Add-Ons	 Avoid Missing Bolts  People Turnover  Reduced Downtime/ Defect/Recall	

Improve your OEE with Desoutter

PROCESS CONTROL - SOLUTIONS

	Simple Process *Same repetitive activity*	Advanced Process *Various operations, multiple assets, variants*
Core	 Tool Controllers	 Process Low-Code Designer
Add-Ons	 Real Time Location	 Operator Guidance
		 Traceability & Continuous improvement

Improve your OEE with Desoutter

POSITION TRACKING

X.Y.Z COORDINATES

Encoder

TORQUE ARM

Virtual Cable

ULTRA WIDE BAND

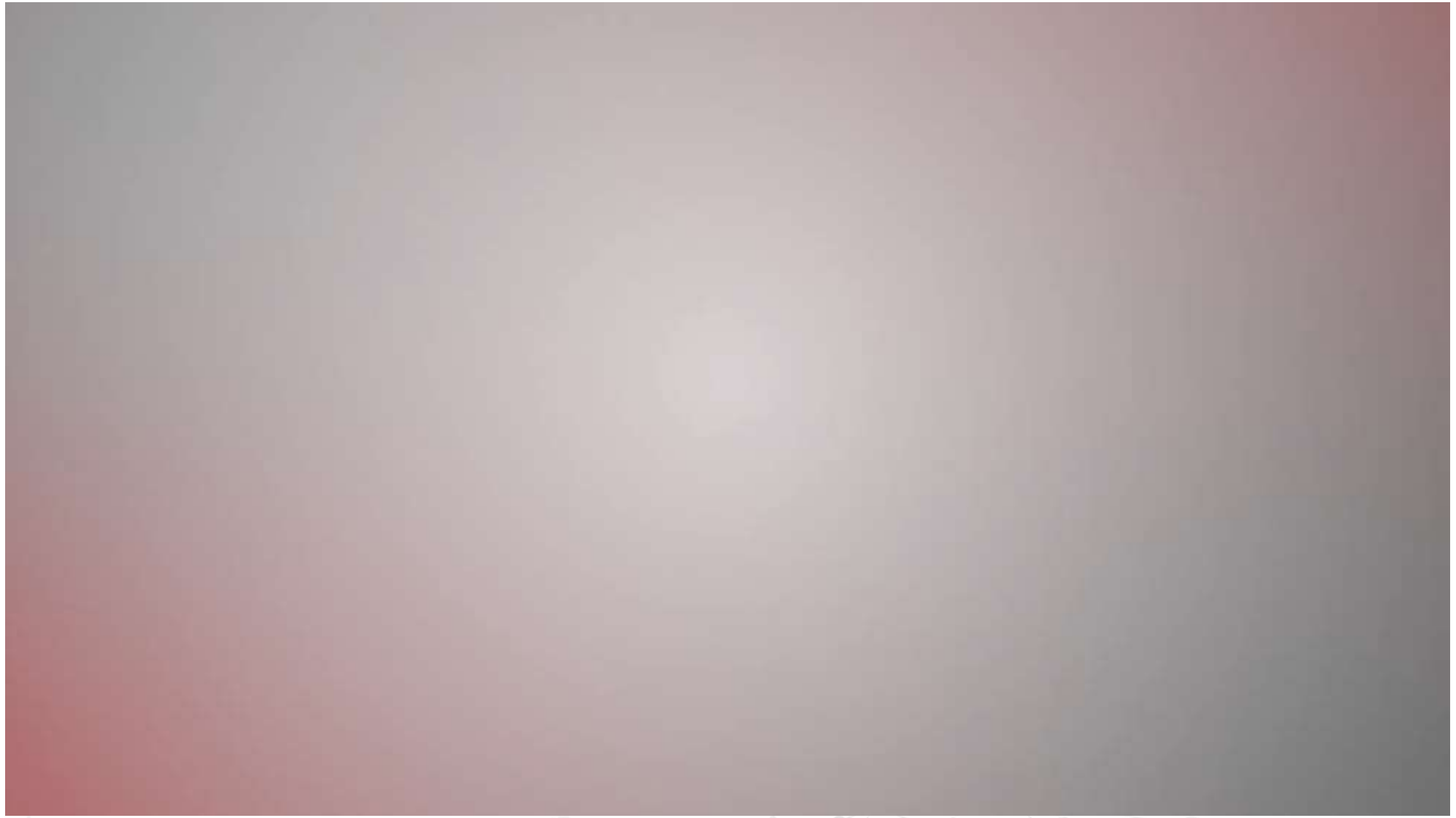
Accuracy 10 in

Real Time Position Tracking

INFRARED SENSOR + TRACKER

Accuracy 1 mm

BATTERY ASSEMBLY VIDEO



100% ERROR PROOF

REAL TIME POSITION TRACKING

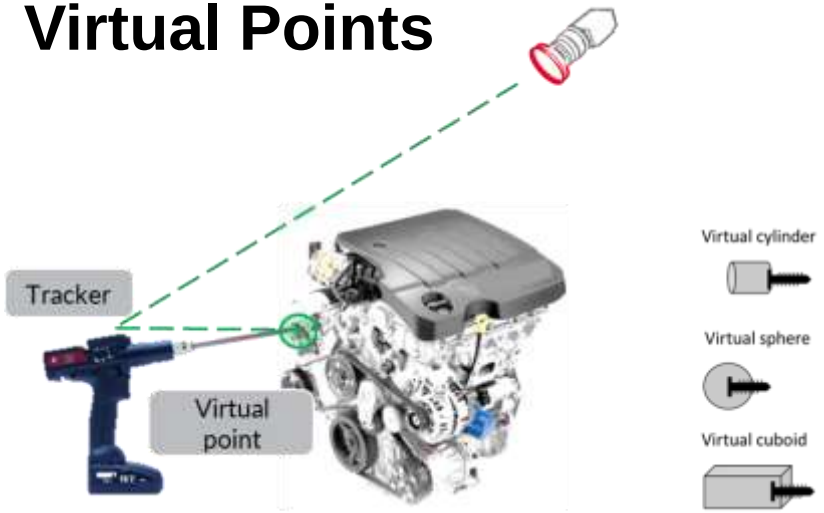
- No missing screws
- Secure fastening sequence
- Apply right torque at right location

- Is this the right screw ?
- Is this the right drilling location ?
- Don’t perform the operation twice

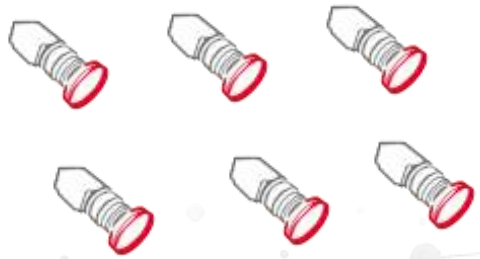
WHAT'S THE MAGIC ?

6D Position Tracking

Virtual Points



Multiple IR Sensors



Relative Positioning

Reference tracker

Laser tracker

CASE STUDY


CATL
Desoutter
DISCOVER HOW CATL
IMPROVES ITS PRODUCTION
EFFICIENCY IN BATTERY
MANUFACTURING


Desoutter
Realize the power
of Real-Time
Location System
In partnership with
FORVIA
faurecia

GEO-TAGGING THE DATA

QUALITY ENGINEER

"With **smart tools** on the shop floor, we can now generate data for each fastener tightened and hole drilled.

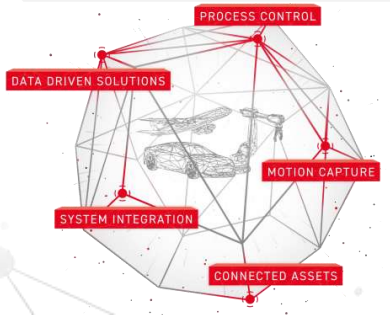
To realize the aircraft's digital twin, we must know the **precise location** of these results and curves."

Customer challenge

Track process data at position level

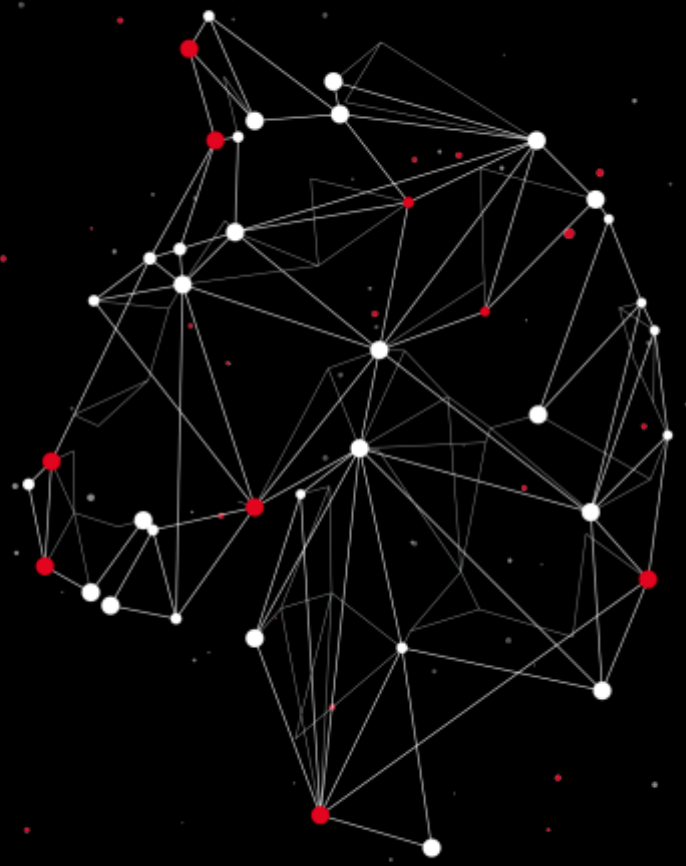
Desoutter Solution

- Traceability data
- Geo-tagging the data



Smart factory

REAL TIME = MAXIMIZING OEE

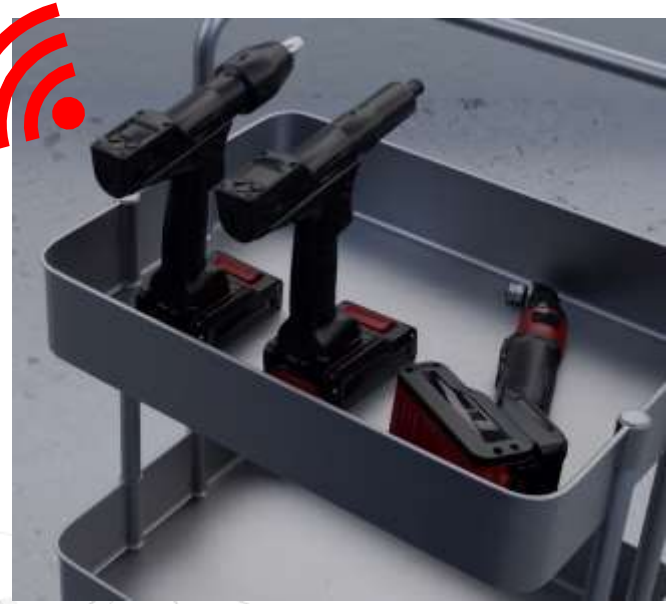


LIVE MONITORING

“If You Can’t Measure It, You Can’t Improve It.”

Industry 4.0 transformation

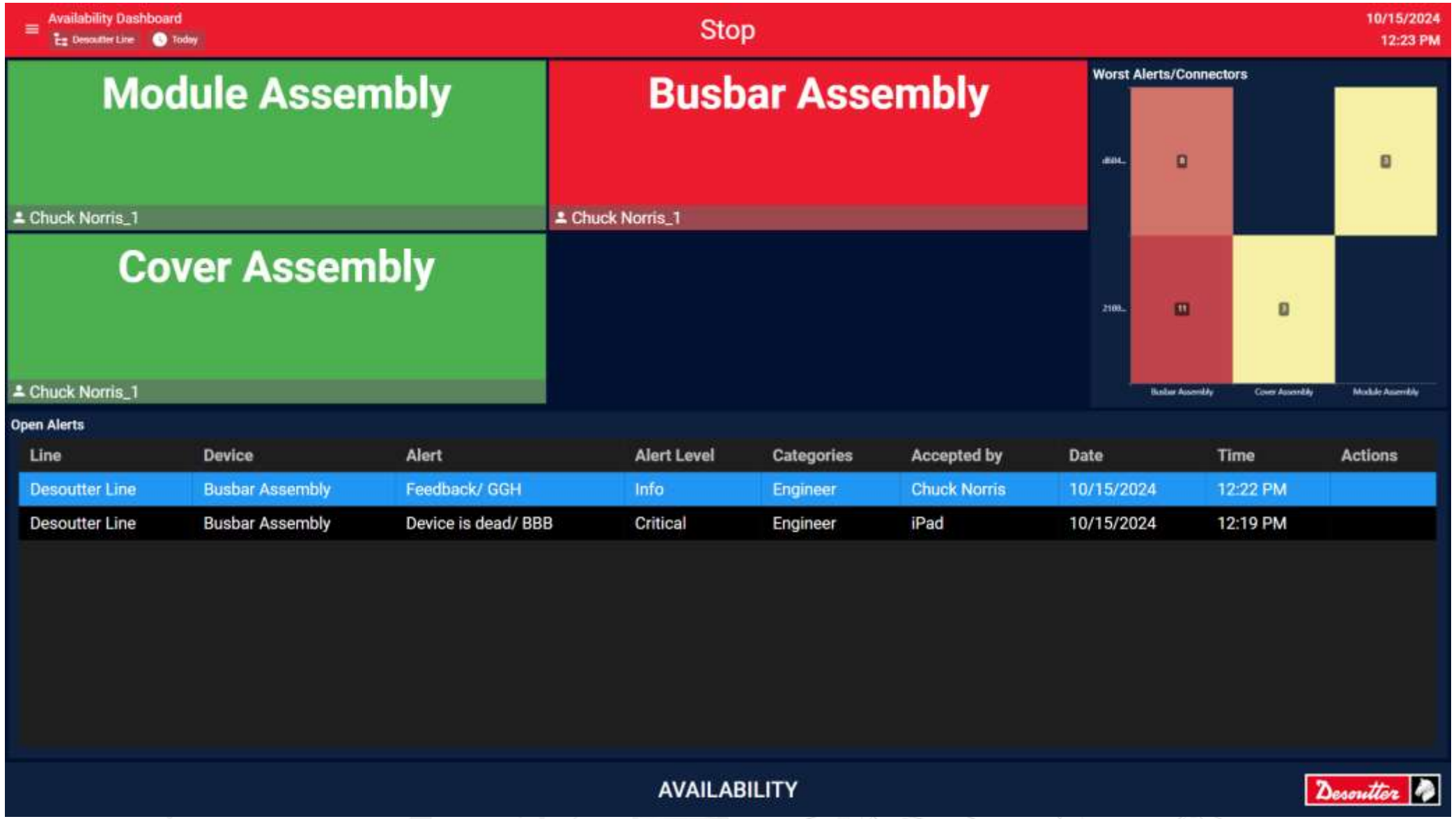
- Torque & Angle Curves
- Production Alerts
- Assembly steps
- Error codes



DESOUTTER

OEE - PERFORMANCE

OEE - AVAILABILITY



DISTINCTIVE APPROACHES TO QUALITY

REACTIVE ANALYTICS

Respond to past event

Immediate problem solving

- Look at historical data
- Manual traceability
- Curve manual overlapping

vs

PRO-ACTIVE ANALYTICS

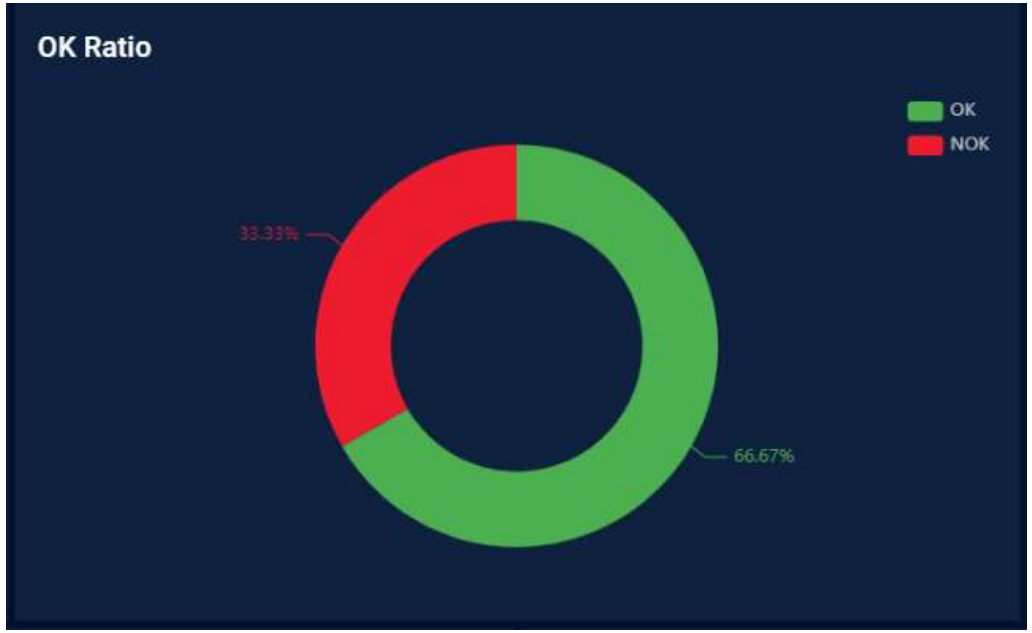
Anticipate future event

Focus on prevention

- Real-time
- Predictive data

QUALITY – HOW TO DETECT ANOMALIES ON-TIME ?

- Regular Inspections and Testing
- Quality Metrics and KPIs
- Statistical Process Control (SPC)
- Cause-and-Effect Diagram (Fishbone/Ishikawa)
- Customer Feedback
- Quality Audits
- Employee Training



GO BEYOND WITH AI

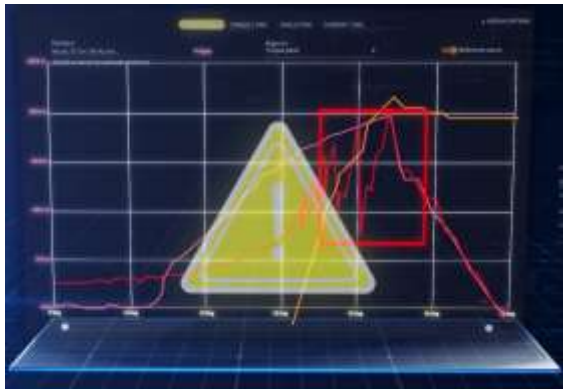
AI-Powered Curves Analytics

CURVES ANALYTICS

AI-POWERED

Can detect

- ✓ Cross-Threading
- ✓ Overshoot > NOK > retry OK > damaged part
- ✓ Variations in Material Properties
- ✓ Undetected Flaws in Fasteners
- ✓ Temperature and Environmental Factors (clusters)



Curves Analytics
to evaluate the risk of abnormalities

Real-time detection

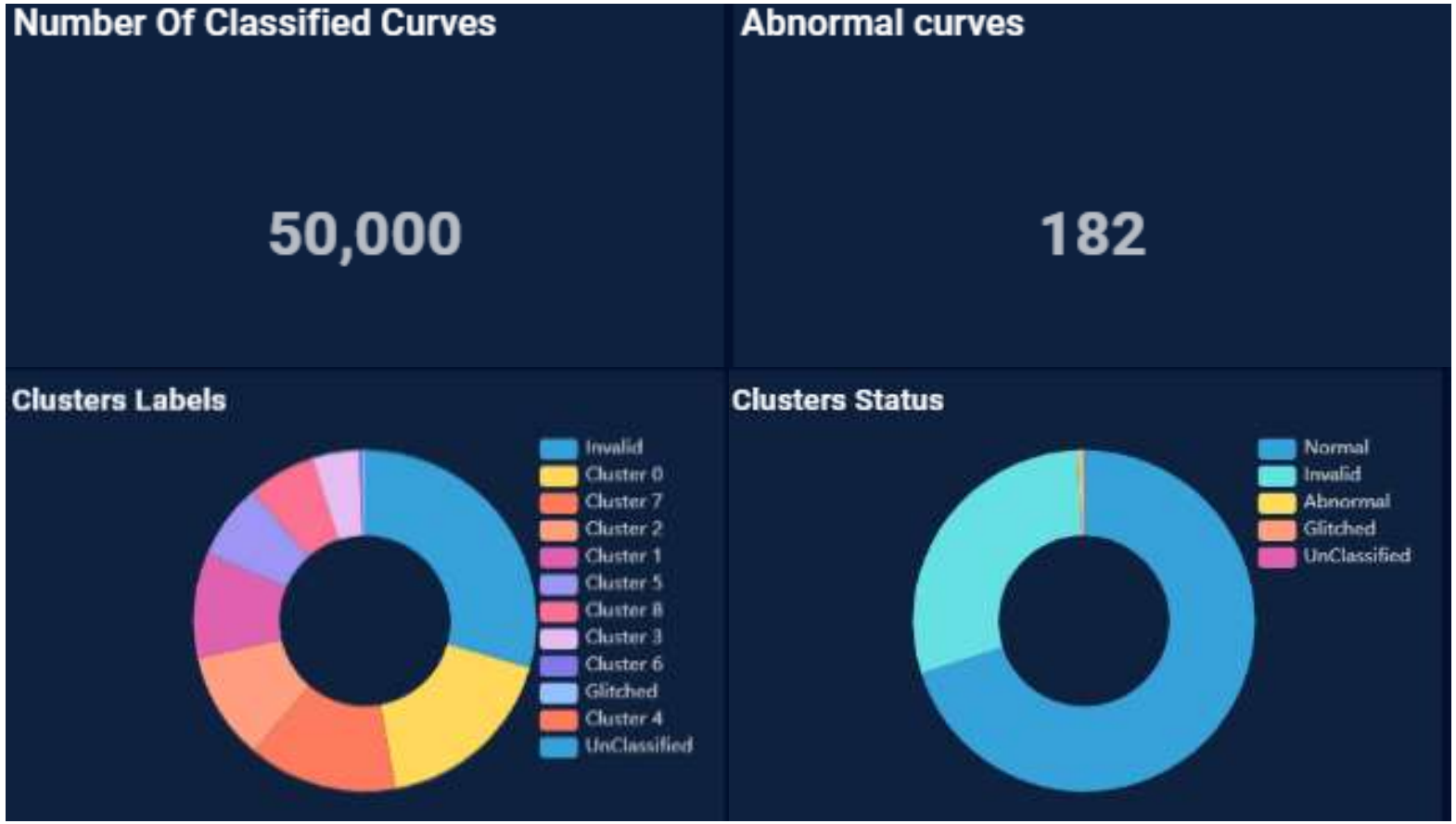
Cost savings

Improved quality

MACHINE LEARNING

Data Collection

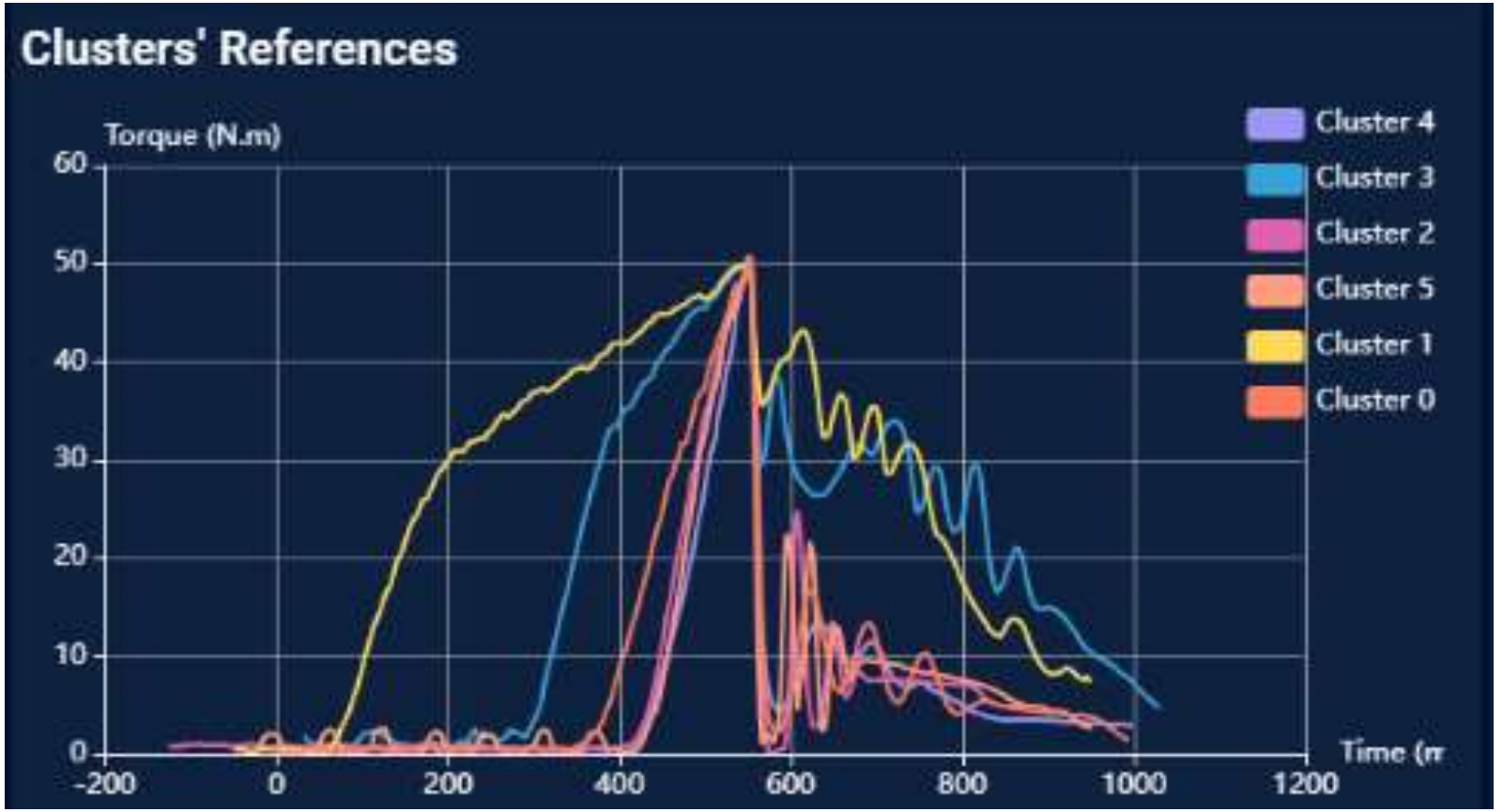
Data Preparation



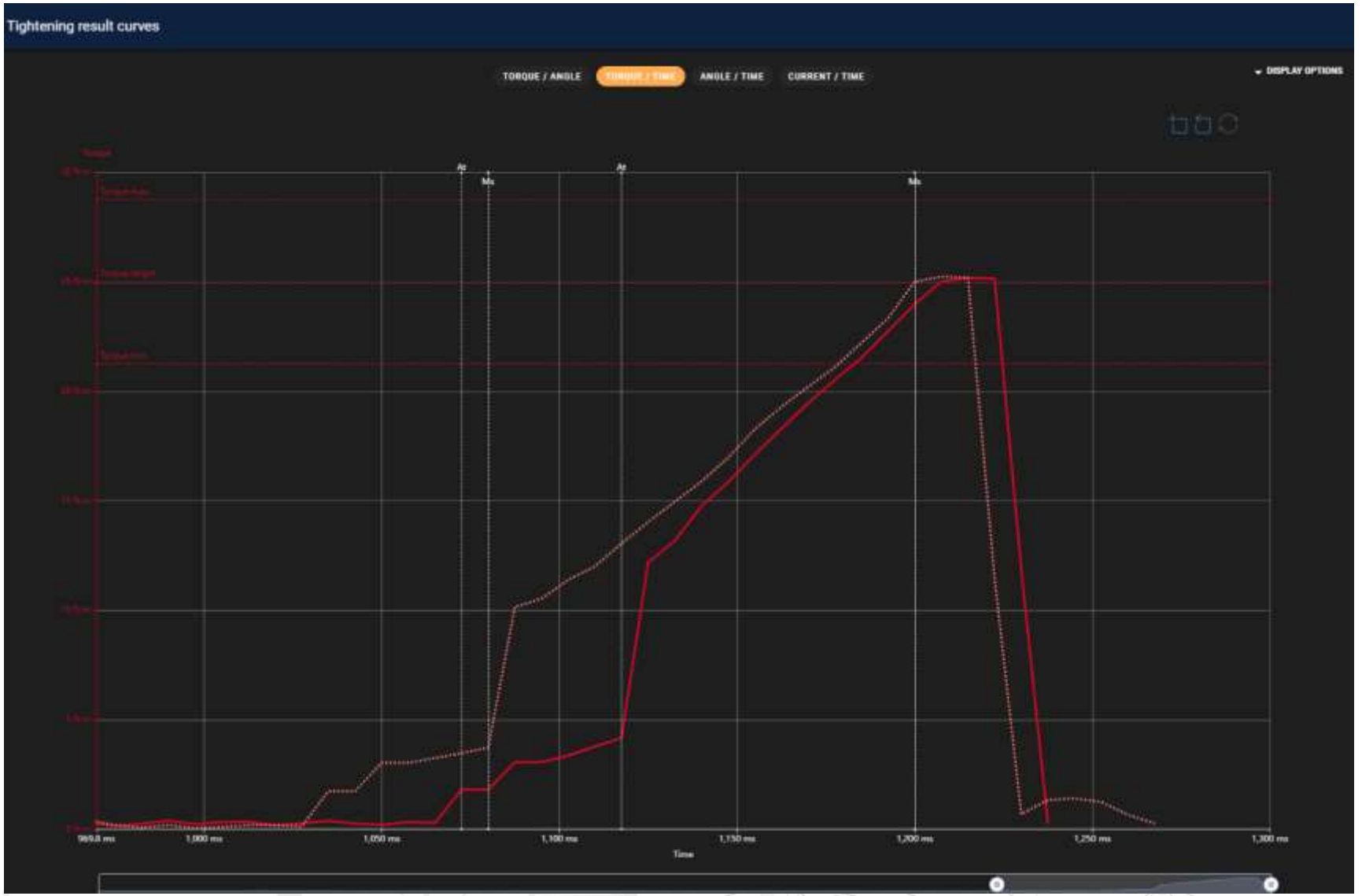
Trend interpretation

Pattern extraction

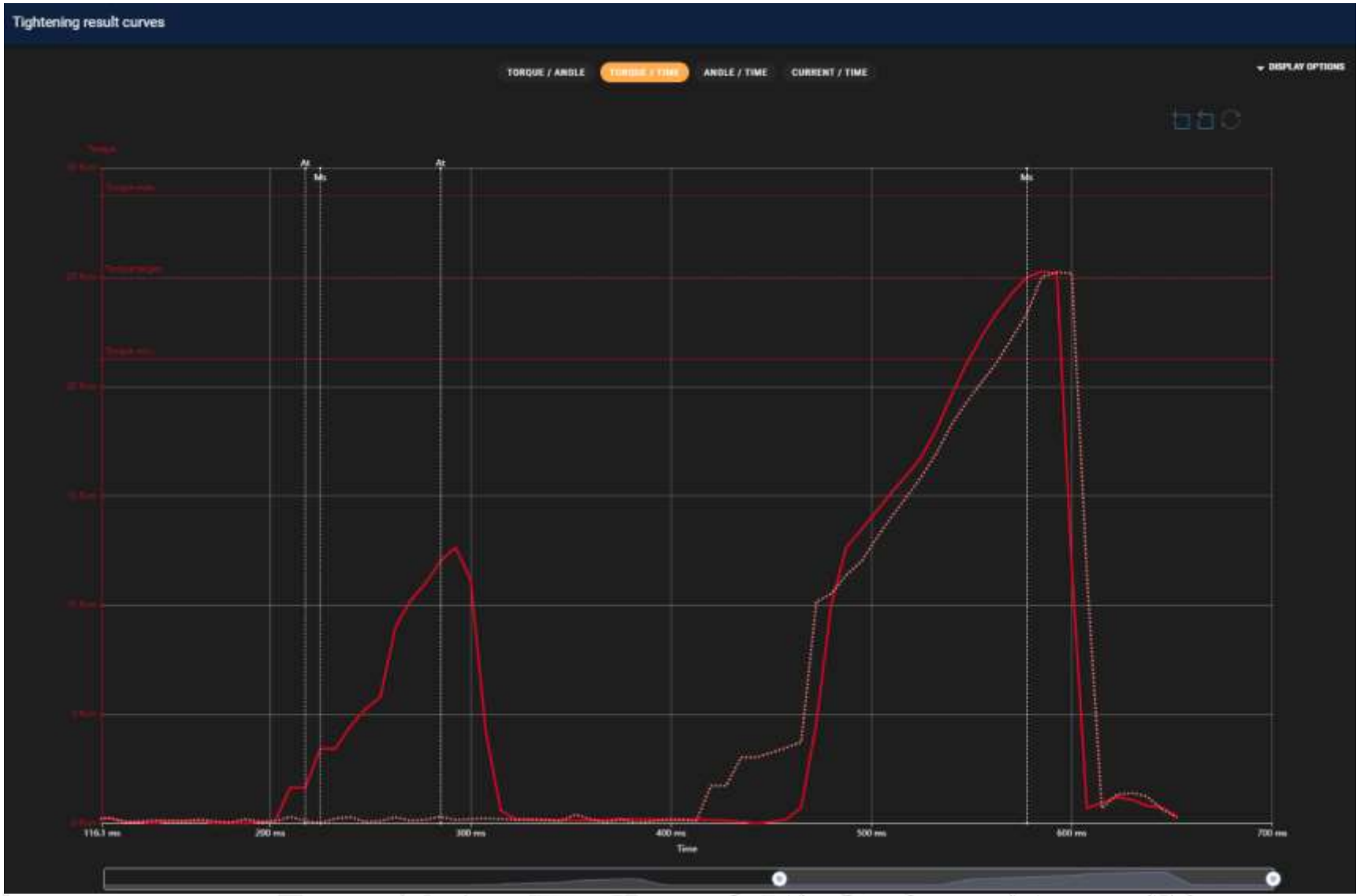
OUTPUT - REFERENCE CURVE PER CLUSTER



“Normal” curve profile with Reference curves



“*Abnormal*” curve with Reference curves



SMART ALERTS

Trigger alert for:

- OK/NOK
- User infos : battery low, tool disconnected
- Curves Analytics status
- Cp/Cpk, SPC rules
- Trends computation

Tailored monitoring

Improved reactivity

Conclusion

TALK TO OUR EXPERTS

Booth #431

THE ASSEMBLY SHOW

Booth #431

Desoutter

More Than Productivity

www.desouttertools.com