

# NEXEED INDUSTRIAL APPLICATION SYSTEM

## USE CASES

# SHOPFLOOR MANAGEMENT

## USE CASES

# Nexeed Industrial Application System – Use Case Overview

## Detection of optimization potential



### User Story

**Who?**

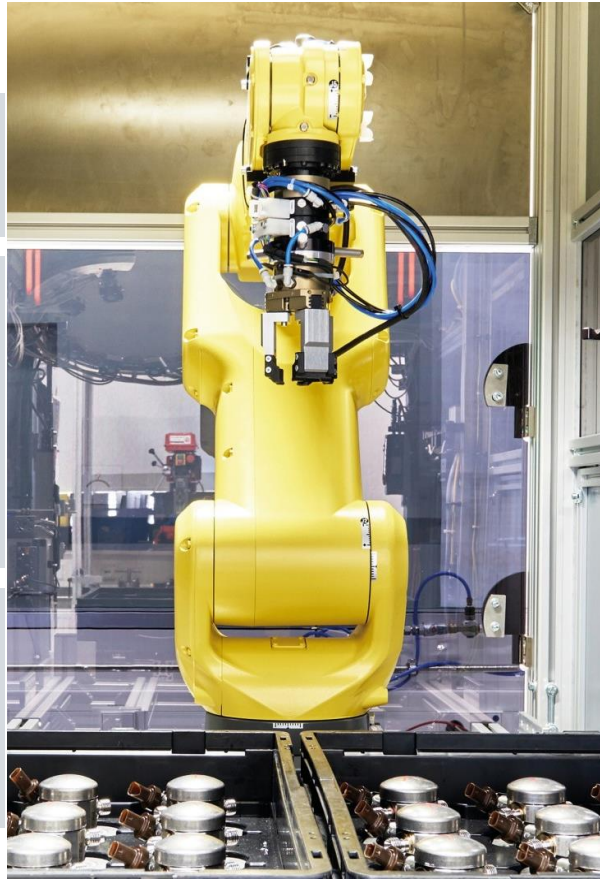
As a production manager,

**What?**

I want to monitor KPIs of my assembly line to ensure customer delivery and quality

**Why?**

So I can react on deviation to ensure customer delivery



### Approach



- ▶ Relevant process data is monitored for each machine of the assembly line
- ▶ Identification of the machine that causes the biggest negative impact
- ▶ Hourly count of production figures (planned/actual produced parts, scrap/repair), for closely monitoring the performance
- ▶ Showing target & average cycle time of the line and stations to understand what to work on next

### Customer benefits



- ▶ Identifies the cause of OEE losses
- ▶ Station and line losses can be differentiated
- ▶ Helps to manage your daily business on the shopfloor

**Fast identification  
of optimization  
potential**

# Nexeed Industrial Application System – Use Case Overview

## Line Bottleneck Detection



### User Story

**Who?**

As a production planer,

**What?**

I want to detect and understand my unseen bottlenecks in my assembly

**Why?**

to understand which station to focus on to increase overall out



### Approach



- ▶ Live Heatmap give an quick overview of the entire situation
- ▶ See deviations and react quickly
- ▶ Do forensics to understand errors patterns in your assembly lines

### Customer benefits



- ▶ Intuitive detection of bottlenecks in the assembly line
- ▶ Easily identify deviations from regular production
- ▶ Quick reaction time to prevent line losses

**Quick identification  
of bottlenecks on  
production lines**

# INTRALOGISTICS

## USE CASES

# Nexeed Industrial Application System – Use Case Overview

## Digitizing material flow and materials localization in real time



### User Story

Who?

As a logistics engineer,

What?

- ▶ Want to achieve a delivery process including an efficient real-time booking and also avoid stock deviations

Why?

- ▶ Employees need long carry out time-consuming manual bookings
- ▶ Less transparency in the warehouse due to manual operations



### Approach



- ▶ Digitization of the internal material flow
- ▶ Automatic material bookings and follow-up orders supports employees in their daily work
- ▶ Using the available lanes and containers efficiently allows the supermarket to be kept relatively small

### Customer benefit



- ▶ Increasing transparency of stock and location
- ▶ Improving error prevention
- ▶ Reduction of booking efforts

**ROI <1,5  
years**



# Nexeed Industrial Application System – Use Case Overview

## Dynamic planning of the entire in-house transport demands



### User Story

Who?

As a logistics engineer,

What?

I want to dynamize my internal transport routes depended from the real-time transport demand

Why?

Inefficient internal transports and milk run processes due to inflexible routes and an increased accident risk due to overburdened drivers.



### Approach



- Dynamic planning for all in-house transports by considering all vehicles with their current charging status, position, route and capacity or maximum load in the system
- Visualization of the dynamic route on the driver's tablet

### Customer benefit



- Live monitoring of all transport orders and vehicles
- Calculation of optimal transport routes in real time
- Higher utilization of milkruns
- ROI < 2 years

**ROI <2,0  
years**

# MACHINE & EQUIPMENT USE CASES



# Nexeed Industrial Application System – Use Case Overview

## Robot Condition Monitoring 1



### User Story

**Who?**

As a Robot System Specialist,

**What?**

I would like to make all processes completely transparent using dashboards and reports,

**Why?**

in order to be able to react to faults in real time, to prevent failures and to increase system availability.



### Approach



- ▶ Transparency regarding changes, deviations, error messages and availability
- ▶ Implementation of suitable dashboards
- ▶ Evaluation of the collected data in the form of reports
- ▶ Email notifications in real time in the event of faults to prevent failures

### Customer benefits



- ▶ System availability is increased

# Nexeed Industrial Application System – Use Case Overview

## Robot Condition Monitoring 2



### User Story

**Who?**

As a maintenance technician,

**What?**

I would like dynamic, condition-based maintenance,

**Why?**

to effectively replace wear parts and thus optimize personnel and material costs, as well as system availability.



### Approach



- ▶ Transparency regarding changes, deviations, error messages and availability
- ▶ Implementation of suitable dashboards
- ▶ Evaluation of the collected data in the form of reports
- ▶ Email notifications in real time in the event of faults to prevent failures

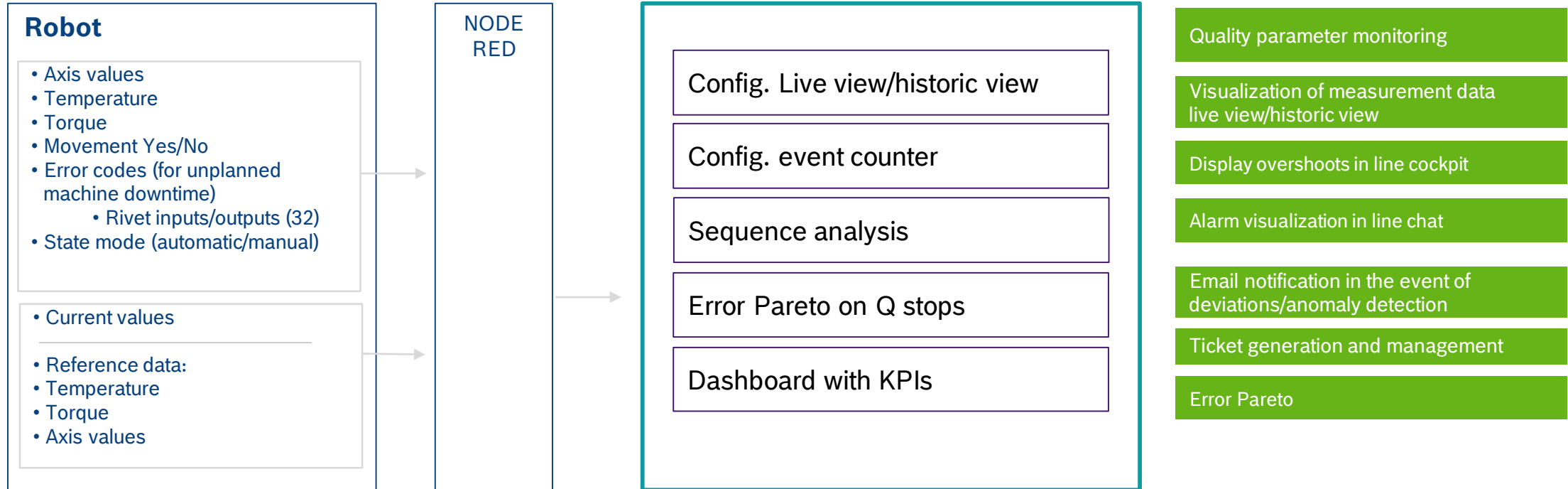
### Customer benefits



- ▶ System availability is increased
- ▶ Material and personnel costs are reduced

# Nexeed Industrial Application System – Data Flow Mapping

## Robot Condition Monitoring



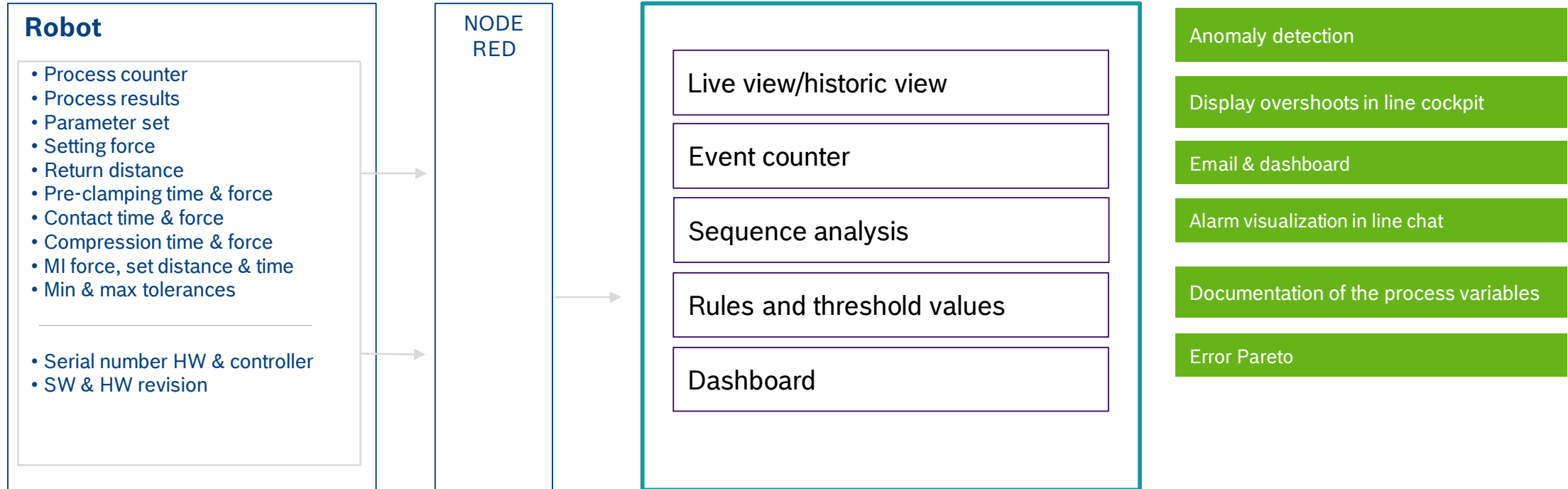
Shopfloor

Nexeed Industrial Application System

Actionable Insights

# Nexeed Industrial Application System – Data Flow Mapping

## Böllhoff self-piercing riveting



Shopfloor

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Actionable Insights

# Nexeed Industrial Application System – Use Case Overview

## Condition monitoring of a manufacturing cell



### User Story

**Who?**

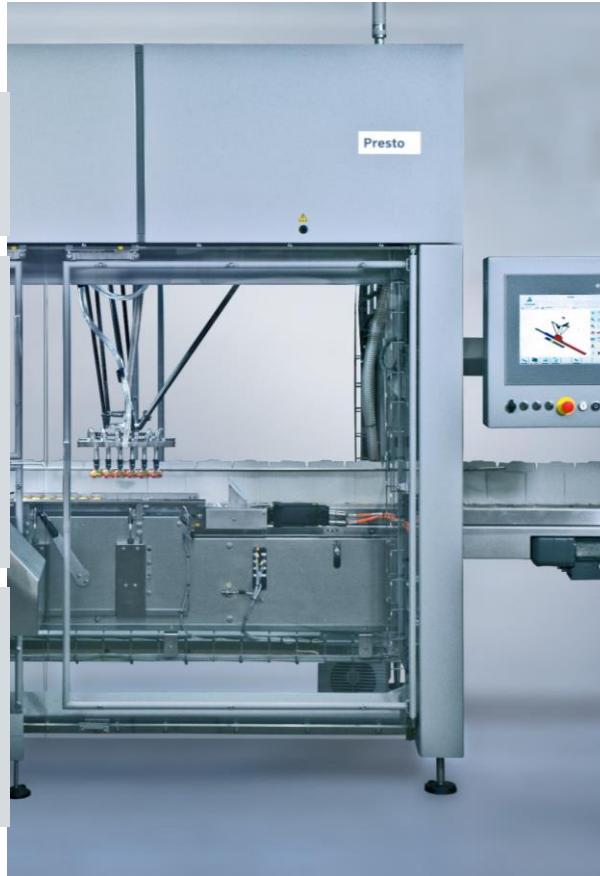
As a maintenance technician,

**What?**

I would like to be informed about the condition of different components

**Why?**

in order to minimize maintenance costs and to maximize system availability.



### Approach



- ▶ Monitoring of environmental parameters in a manufacturing cell to ensure the optimal conditions for manufacturing
- ▶ Monitoring of the relevant parameters (light sensor, temperature sensor, flow sensor)
- ▶ Data analysis to determine the optimal time for maintenance
- ▶ Implementation of the ticket management system

### Customer benefits

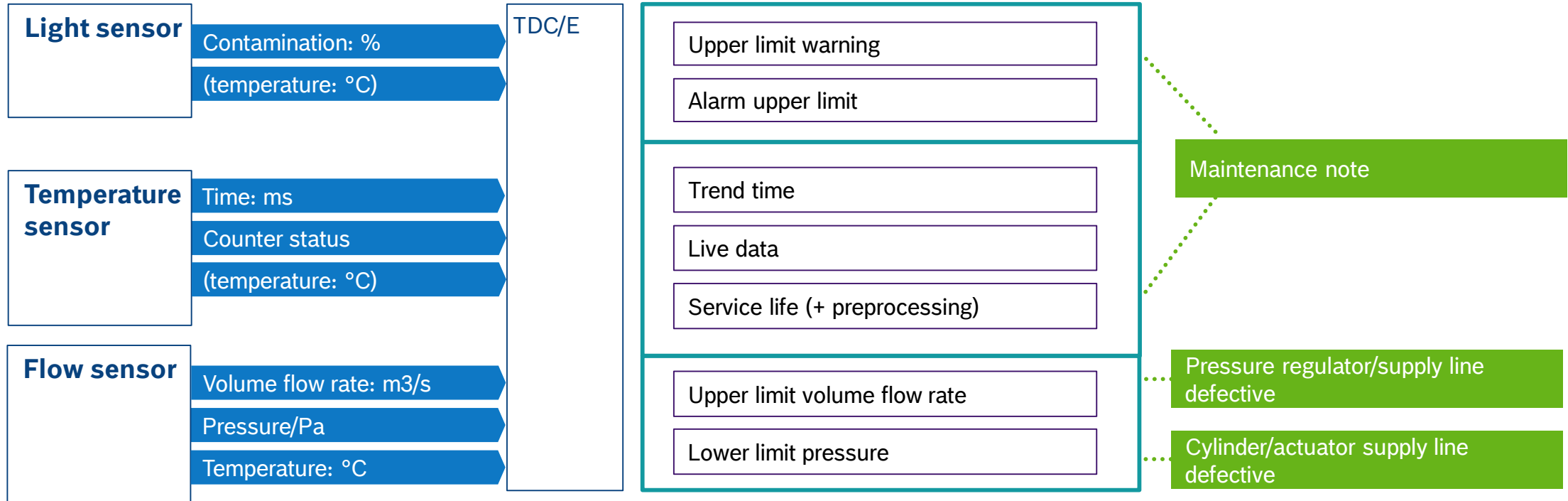


- ▶ Cost reduction
- ▶ Transparency



# Nexeed Industrial Application System – Data Flow Mapping

## Condition monitoring of a manufacturing cell



Shopfloor

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Actionable Insights



# Nexeed Industrial Application System – Use Case Overview

## Tensioner monitoring



### User Story

**Who?**

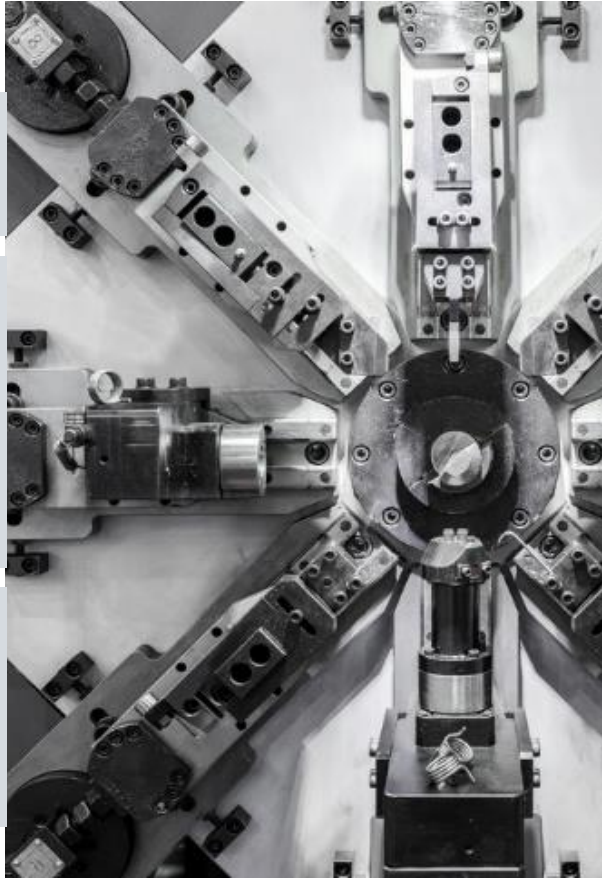
As a maintenance technician,

**What?**

I would like to be informed about the critical states of tensioners

**Why?**

to prevent unplanned shutdowns and to better plan maintenance.



### Approach



- ▶ Permanent monitoring of the temperature
- ▶ Automatic configuration of PLC systems and robots
- ▶ Determination of optimal runtimes
- ▶ Evaluation of live data and determination of KPIs
- ▶ Warning via smartwatch in the event of deviations in PLC valves
- ▶ Timely early warning (> 8 h) and suggestion of efficient maintenance windows
- ▶ Classification of maintenance tasks by the system

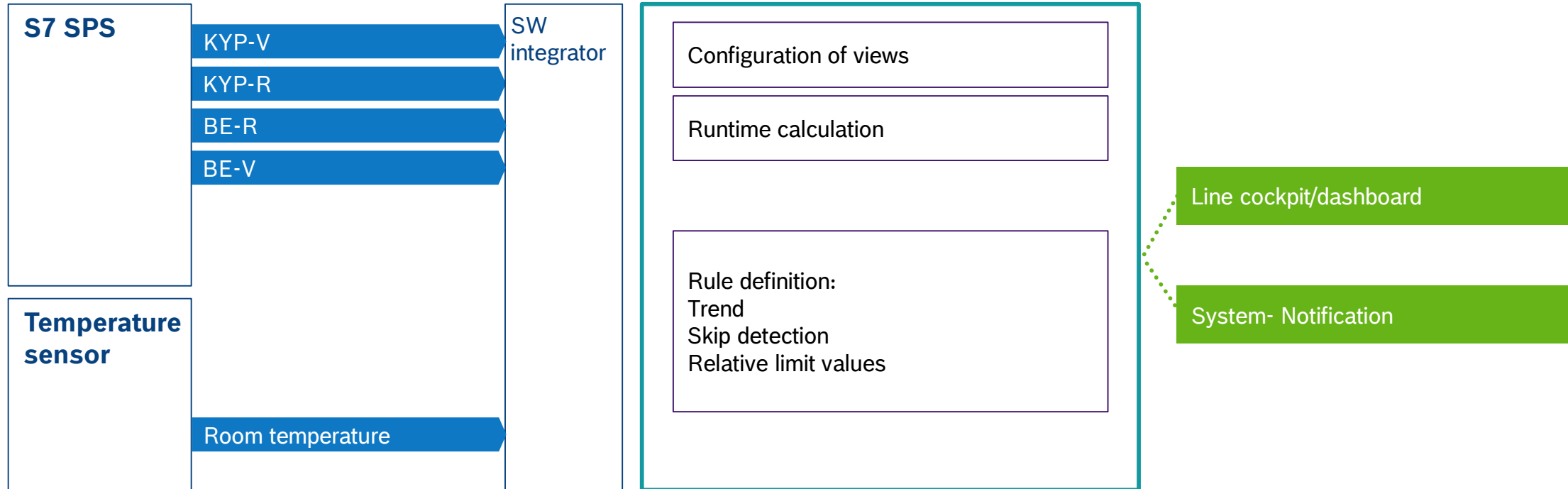
### Customer benefits



- ▶ No loss of production
- ▶ Throttle regulation detection
- ▶ Overview of bouncing tensioners

# Nexeed Industrial Application System – Data Flow Mapping

## Tensioner monitoring



Shopfloor

Nexeed Industrial Application System

Actionable Insights

# Nexeed Industrial Application System – Use Case Overview

## Hydraulic press monitoring



### User Story

**Who?**

As a plant operator,

**What?**

I would like to continuously monitor the hydraulic pressure in the system,

**Why?**

to detect shutdown factors in advance, to avoid consequential damage and to plan for necessary maintenance.



### Approach



- ▶ Implementation of sensors for continuous monitoring of key indicators (pressure, temperature)
- ▶ Set up role-specific alerts based on limits (upper and lower limits)
- ▶ Timely warning via ticket in the event of pressure deviations

### Customer benefits



- ▶ Prevent shutdowns
- ▶ Ensure process stability
- ▶ Reduction of seal wear

# Nexeed Industrial Application System – Use Case Overview

## Monitoring a testing machine



### User Story

**Who?**

As a production employee,

**What?**

I would like to be able to continuously see the state of the testing machine and to be informed about critical states,

**Why?**

to avoid unplanned maintenance and to ensure the quality of the product.



### Approach



- ▶ Implementation of sensors and software
- ▶ Visualization of the live data
- ▶ Determination of rules
- ▶ Email notifications and ticket creation in the event of irregularities

### Customer benefits

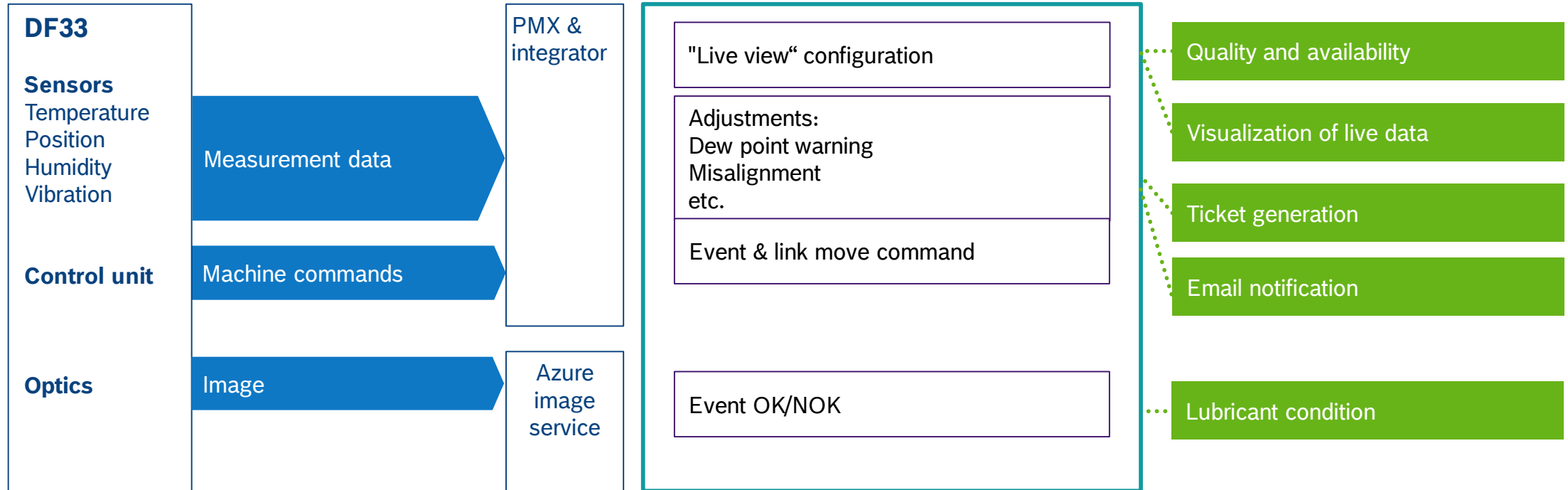


- ▶ Reduce machine shutdown time
- ▶ Prevent unplanned machine shutdown times

**Reduced  
maintenance  
costs**

# Nexeed Industrial Application System – Data Flow Mapping

## Monitoring a testing machine



Shopfloor

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# Nexeed Industrial Application System – Use Case Overview

## Monitoring lubricants & filters for hydraulic valve production



### User Story

**Who?**

As a maintenance technician,

**What?**

I want to visualize lubricant and filter data,

**Why?**

in order to reduce maintenance costs as well as improve quality (oil cleanliness) and OEE.



### Approach



- ▶ Take the existing 30 test facility without an IT connection and retrofit it with about 20 IoT Gateways using IO-Link, Bluetooth, and USB
- ▶ Send data on lubricants and filters to Nexeed IAS for visualization

### Customer benefit



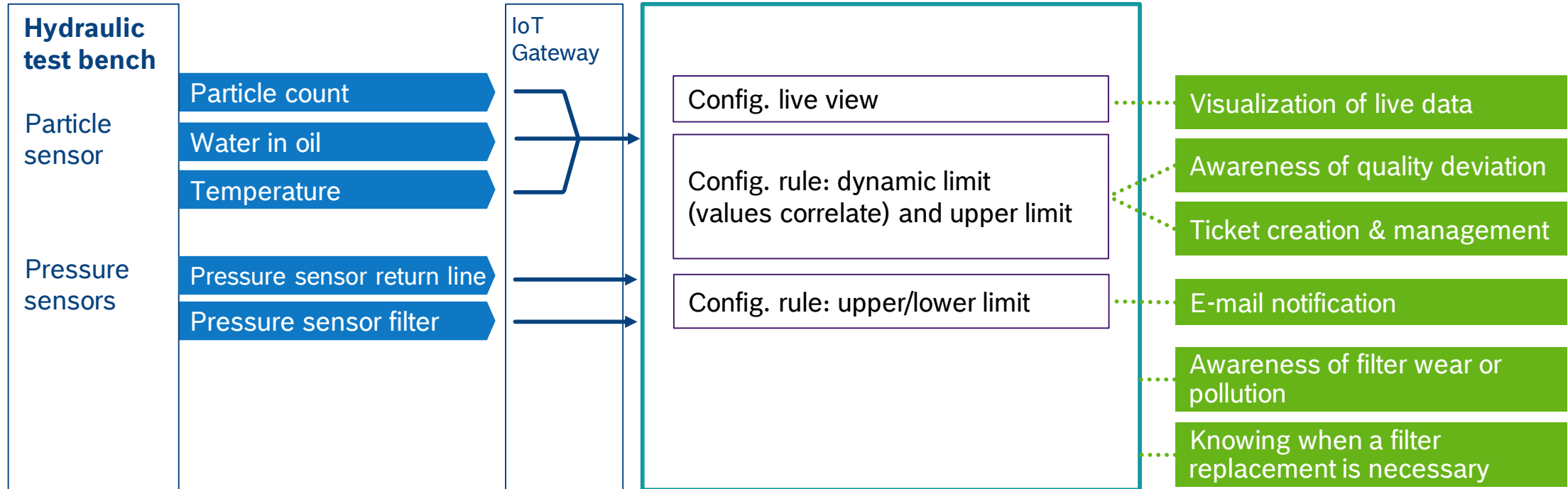
- ▶ 25% reduction in maintenance costs
- ▶ 20% less complexity in manual testing of oil cleanliness
- ▶ 5% increase in OEE

**ROI < 1.5  
years**



# Nexeed Industrial Application System – Data Flow Mapping

## Monitoring lubricants & filters for hydraulic valve production



Shop floor

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Actionable insights

# Nexeed Industrial Application System – Use Case Overview

## Trumpf Laser monitoring for early service



### User Story

**Who?**

As a maintenance technician,

**What?**

I want to and evaluate and centralize data,

**Why?**

in order to detect the amount of soiling and decrease need of servicing.



### Approach



- ▶ Display all data centrally to evaluate the amount of soiling
- ▶ Evaluate the data to detect need for servicing early on

### Customer benefit

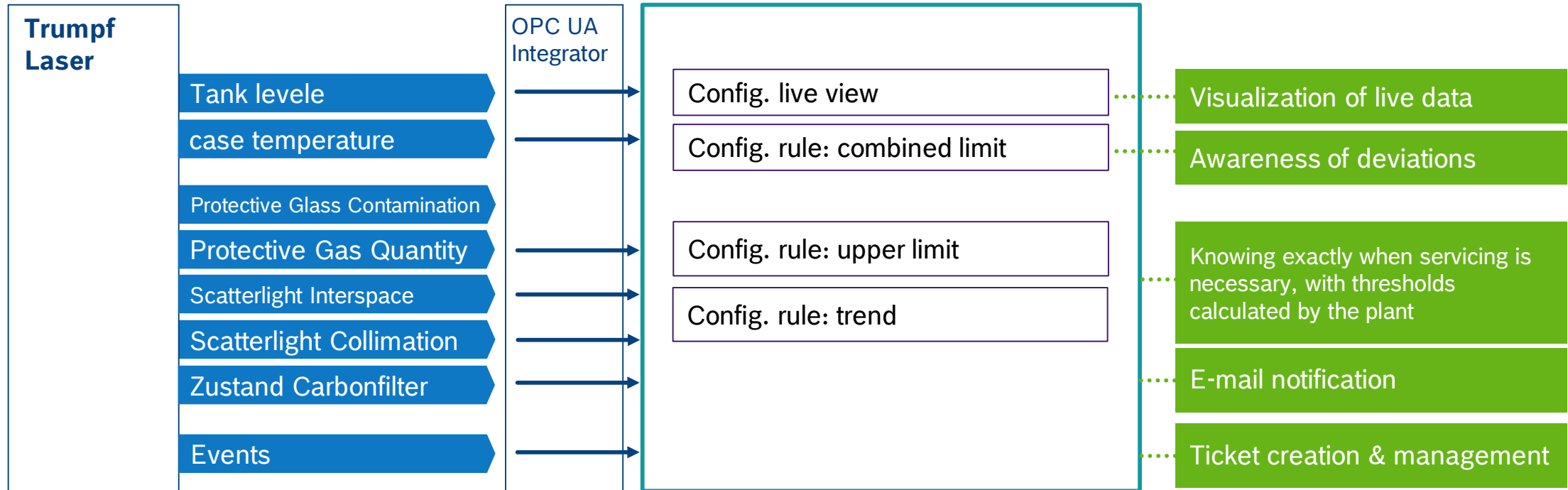


- ▶ Flexible and plannable service intervals for boosting OEE
- ▶ Less need for servicing
- ▶ €57,000 in savings due to less machine downtime

**1% higher  
OEE**

# Nexeed Industrial Application System – Data Flow Mapping

## Trumpf Laser monitoring for early service



Shop floor

Nexeed Industrial Application System

Actionable insights

# Nexeed Industrial Application System – Use Case Overview

## STÄUBLI robots health monitoring



### User Story

**Who?**

As a Robot System Specialist,

**What?**

I would like to monitor the utilization of robots as well as the process data at any time, and record actual running times,

**Why?**

in order to create transparency, to recognize problems faster and to reduce maintenance costs through runtime-dependent maintenance.



### Approach



- ▶ Display/monitor relevant machine data (CPU temp, housing temp, positioning errors, overload errors)
- ▶ Evaluate the data to detect need for maintenance
- ▶ Collect and display data centrally: acceleration, maintenance level, motor speed, position, torque (dynamic), torque (electric), velocity

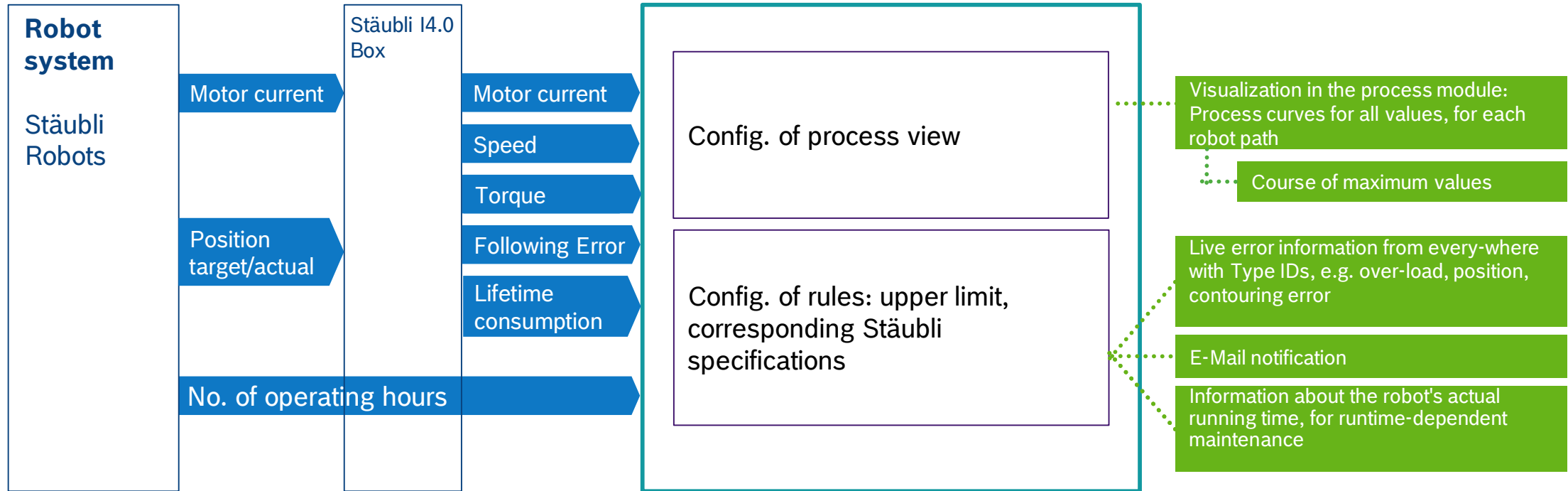
### Customer benefit



- ▶ Transparency of machine health
- ▶ When axis deviations occur or temperatures rise, service team can intervene before machine is damaged → increased uptime
- ▶ Early recognition of wear → opportunity to carry out predictive maintenance before robot stalls

# Nexeed Industrial Application System – Data Flow Mapping

## STÄUBLI robots health monitoring



Shop floor

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Actionable insights

# Nexeed Industrial Application System – Use Case Overview

## Dynamometer monitoring



### User Story

**Who?**

As a maintenance technician,

**What?**

I would like to be informed in good time via email about a needed bearing replacement,

**Why?**

in order to change the process from annually to when actually needed. (predictive maintenance)



### Approach



- ▶ Current situation: Annual check of roller bearings (fixed cycles)
- ▶ Prospective: Process-relevant measurement data (frequency, temperature, etc.) from the S7 Control is sent to the Nexeed IAS via a gateway
- ▶ In the future, statistical tools (trend analysis, Nelson rules) will help to detect when bearing replacement is required

### Customer benefits



- ▶ Reduction of default risk
- ▶ Prolonged use of the warehouse (cost reduction)

**Reduced  
maintenance  
costs**



# Nexeed Industrial Application System – Use Case Overview

## Spindle monitoring



### User Story

**Who?**

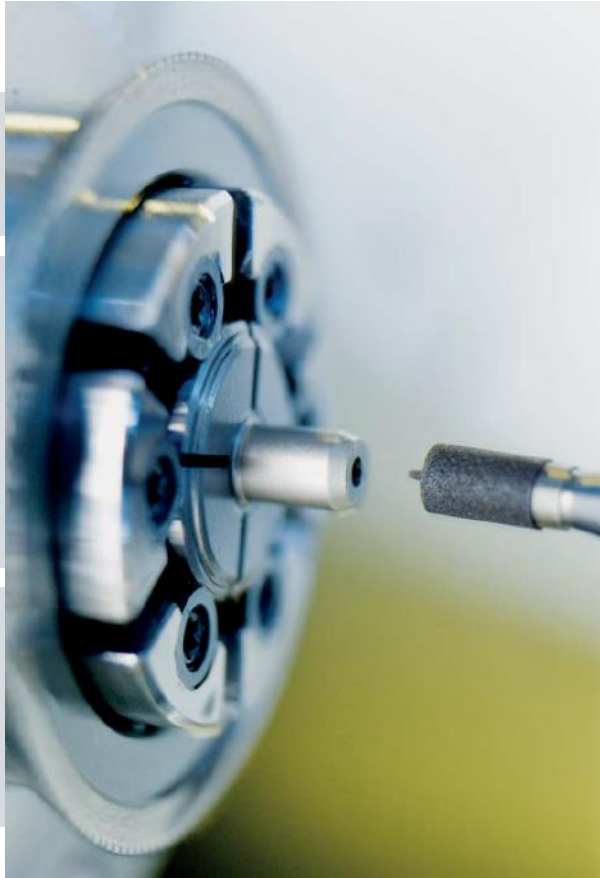
As a maintenance technician,

**What?**

I want to overlook and analyze the data more effectively,

**Why?**

in order to reduce the number of stoppages.



### Approach



- ▶ Monitor vibration in spindles, as it leads to bearing failure
- ▶ Pre-process vibration data with a 3rd-party component (IFM box)
- ▶ Send push notifications to employees when oscillation process is abnormal and deviations occur

### Customer benefit



- ▶ Less downtime thanks to swift intervention in the event of a disruption
- ▶ Shorter downtimes result in savings of €500/machine/month

**savings of €500/  
machine/month**

# Nexeed Industrial Application System – Use Case Overview

## Monitor **pneumatic cylinder**



### User Story

**Who?**

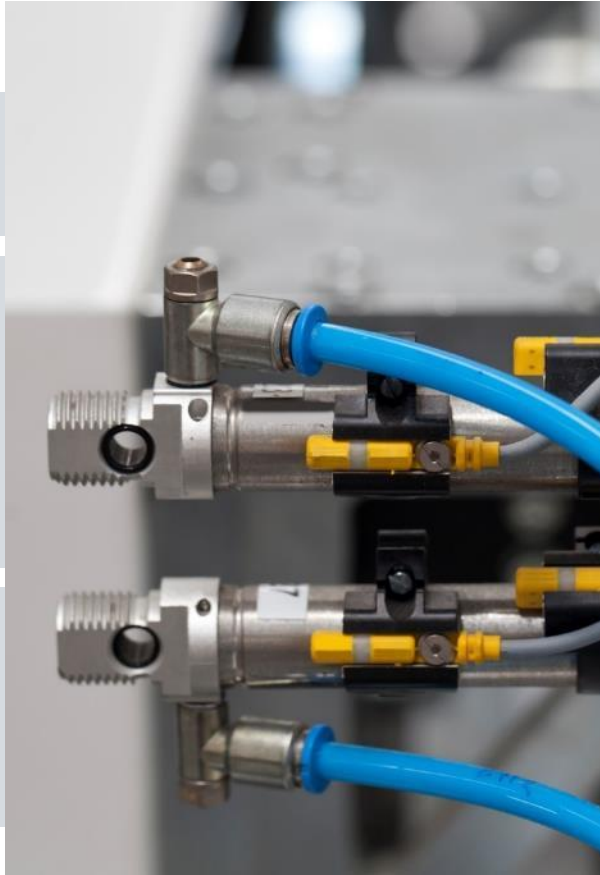
As a maintenance technician,

**What?**

I want to analyze the movement speed of cylinder,

**Why?**

in order to detect changes and to fix errors faster.



### Approach



- ▶ Recording the movement of each individual cylinder
- ▶ The first time a cylinder exceeds a lower boundary value, a real-time message is displayed in the line cockpit
- ▶ The message indicates the faulty cylinder
- ▶ A ticket is also generated if a cylinder exceeds an upper boundary value

### Customer benefit



- ▶ Reduced time for error identification
- ▶ Detailed single asset monitoring
- ▶ Timely wear detection

**+ 12.845 €  
annually**

Time for error  
identification  
from 2h to 10mins / failure

# Nexeed Industrial Application System – Use Case Overview

## Force monitoring during **dry test**



### User Story

**Who?**

As a maintenance technician,

**What?**

I want to monitor specific data in the dry test,

**Why?**

in order to reduce unplanned line stops.



### Approach



- ▶ Real time monitoring of measurement point iGain
- ▶ E-mail if moving average reaches a lower or upper bound

### Customer benefit



- ▶ Reduced scrap rate
- ▶ Reduction of unplanned maintenance
- ▶ Reduced downtime

**+ 260,000 €  
annually**

Fewer line stoppages  
from 4 malfunctions to 0 / year

# Nexeed Industrial Application System – Use Case Overview

## Cycle time monitoring for EDM



### User Story

**Who?**

As a maintenance technician,

**What?**

I want to overlook and evaluate the existing data of EDM-processes,

**Why?**

in order to detect cycle time deviations to optimize the production process.



### Approach



- ▶ Read and visualize the data from the existing database (Q-DAS) of process qualifications
- ▶ Evaluate and notify associates when deviations occur
- ▶ Check and service machines based on demand

### Customer benefit



- ▶ Greater output thanks to early detection of cycle time deviations

**8% increase  
in output**



# Nexeed Industrial Application System – Use Case Overview

## Cycle time monitoring for CNC machine



### User Story

**Who?**

As a maintenance technician,

**What?**

I want to optimize production parameters and initialize warning systems,

**Why?**

in order to lower machine downtime and avoid faults.



### Approach



- ▶ Centrally process & visualize machine parameters (cycle time, axis vibration, spindle backlash, etc.)
- ▶ Set up role-specific alerts based on limits
- ▶ Trigger standardized machine checks to optimize production parameters

### Customer benefit



- ▶ Less machine downtime
- ▶ Early warning system to avoid faults
- ▶ Continuous improvement based on machine benchmarking and condition monitoring

# Nexeed Industrial Application System – Use Case Overview

## Cooling system monitoring



### User Story

**Who?**

As a maintenance technician,

**What?**

I want to mount and connect sensors to cooling pipes,

**Why?**

in order to reduce plant downtime and prevent clogging.



### Approach



- ▶ Mount temperature and flow sensors in cooling pipes
- ▶ Connect sensors to the Nexeed IAS
- ▶ Set limits (information, warning, error) for cooling power and flow; inform experts

### Customer benefit



- ▶ Timely information in the event of impending clogging
- ▶ Less or no plant downtime
- ▶ Less pump maintenance



# Nexeed Industrial Application System – Use Case Overview

## Electrical box monitoring



### User Story

**Who?**

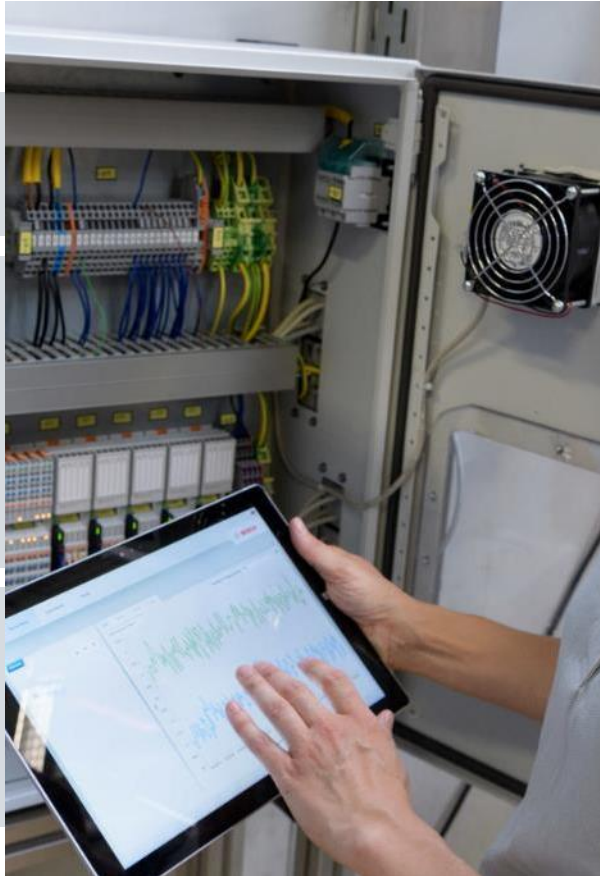
As a maintenance technician,

**What?**

I want to read and visualize thermal data via alert and ticketing systems,

**Why?**

in order to make safety check ups and safety controls more efficient.



### Approach



- Create thermal data with a simple sensor and a gateway
- Read and visualize thermal data in the Nexeed Industrial Application System with basic alert and ticket creation in cases of deviation

### Customer benefit



- Automated safety control, improved safety
- Efficient time-saving checks
- Report creation

# Nexeed Industrial Application System – Use Case Overview

## Condition monitoring for a **laser welding** process



### User Story

**Who?**

As a maintenance technician,

**What?**

I want to monitor the welding process and laser condition continuously,

**Why?**

in order to decrease and prevent highly expensive machine downtime.



### Approach



- ▶ Centrally gather and process machine notifications and operating times for different modules (e.g. filter, pump)
- ▶ Implement role-specific assignment of jobs using tickets
- ▶ Employ automatic escalation

### Customer benefit



- ▶ Less machine downtime
- ▶ Increased production output

# Nexeed Industrial Application System – Use Case Overview

## Predictive maintenance for **milling machines**



### User Story

**Who?**

As a maintenance technician,

**What?**

I want to monitor the spindles,

**Why?**

in order to predict a spindle damage and to avoid a machine breakdown.



### Approach



- ▶ Visualize vibrations by using SKF/IFM boxes and sensors
- ▶ Identify patterns of a spindle that will break soon
- ▶ Set up rules for alerts and send event-based push notifications, such as emails or tickets, with regard to the current machine state (machine running / not running)
- ▶ Find correlations between SKF module sensor data (such as vibration) and machine messages (e.g. error messages) and workpiece information (e.g. individual pump identifier)

### Customer benefit



- ▶ Higher process transparency
- ▶ Lower maintenance costs
- ▶ Less machine downtime

# Nexeed Industrial Application System – Use Case Overview

## Condition monitoring for milling machines



### User Story

**Who?**

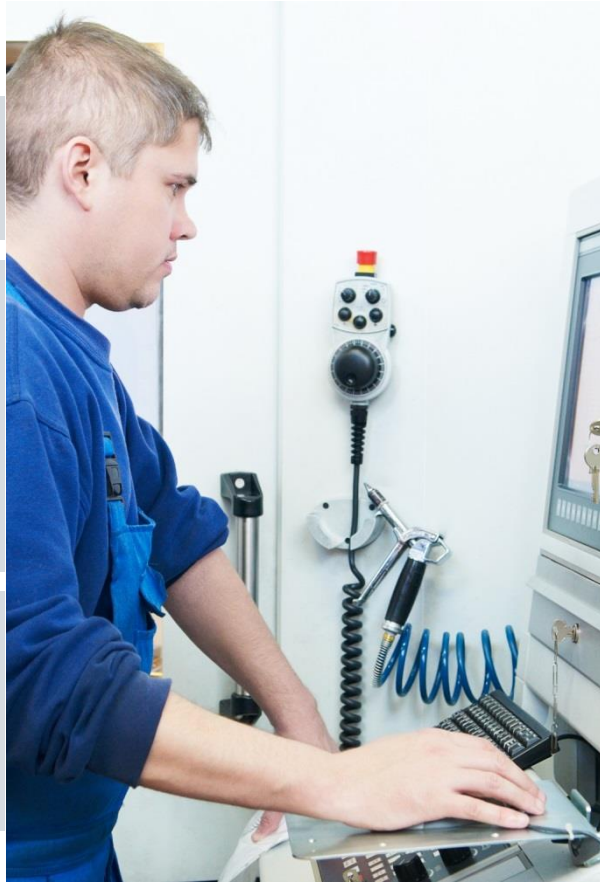
As a maintenance technician,

**What?**

I would like to monitor the condition of various production process parameters

**Why?**

in order to create transparency and reduce maintenance costs.



### Approach



- ▶ Evaluate the data to detect the need for maintenance
- ▶ Monitoring of machine error messages and analysis of statistical relationships regarding the error messages
- ▶ Monitoring the parameters of the added media (e.g., pressure, temperature)
- ▶ Monitoring the spindle parameters (e.g., cooling, acceleration)

### Customer benefits

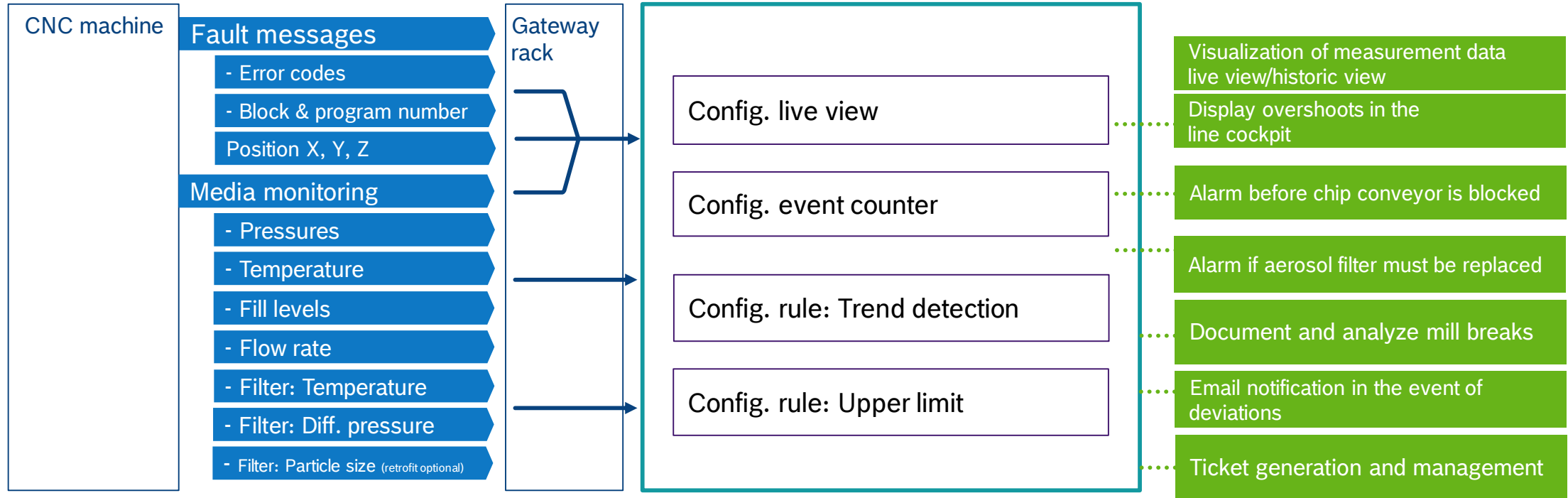


- ▶ Transparency of machine health
- ▶ Fewer mill breaks

**Reduced  
maintenance  
costs**

# Nexeed Industrial Application System – Data Flow Mapping

## Condition monitoring for milling machines



Shopfloor

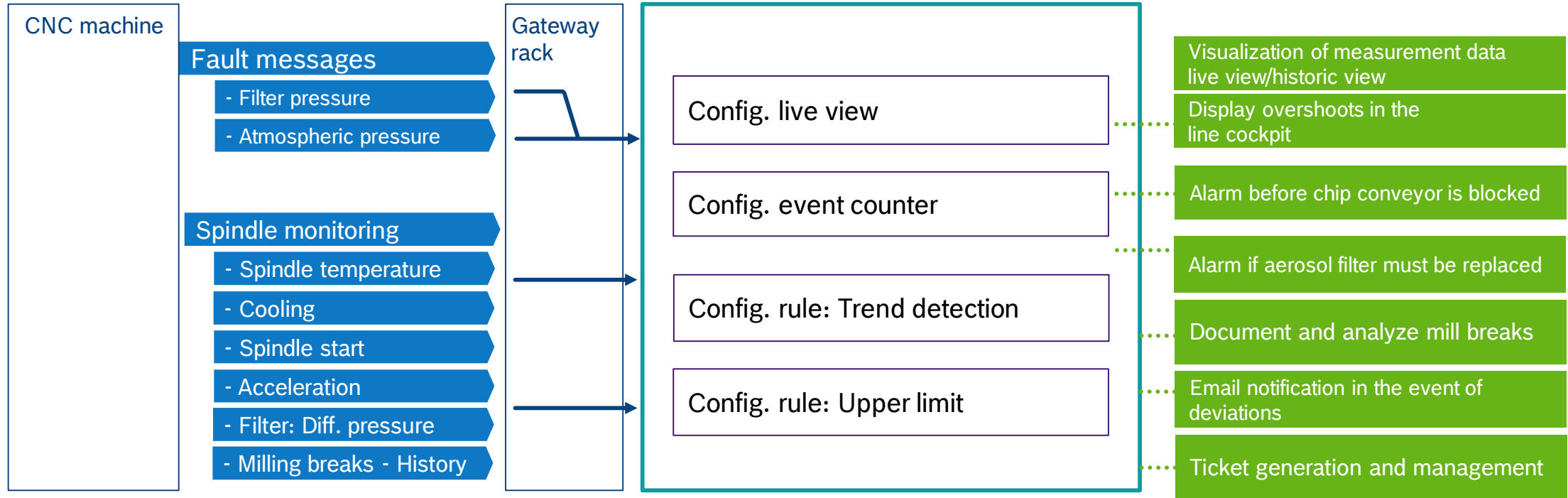
Nexeed Industrial Application System

Actionable Insights



# Nexeed Industrial Application System – Data Flow Mapping

## Condition monitoring for milling machines



Shopfloor

Nexeed Industrial Application System

Actionable Insights



# PRODUCT & QUALITY

## USE CASES

# Nexeed Industrial Application System – Use Case Overview

## Monitoring of the tightening process



### User Story

**Who?**

As a process and quality engineer,

**What?**

I want to visualize torque over angle and tightening errors from anywhere (without standing next to the machine),

**Why?**

in order to increase process transparency, speed up and facilitate troubleshooting and to reduce the number of returns.



### Approach



- ▶ Final torque values of all nutrunners are visualized centrally in Nexeed IAS (torque over angle)
- ▶ Message if connection is faulty
- ▶ Integrate Active Cockpit on Shopfloor with Nexeed Industrial Application System

### Customer benefit



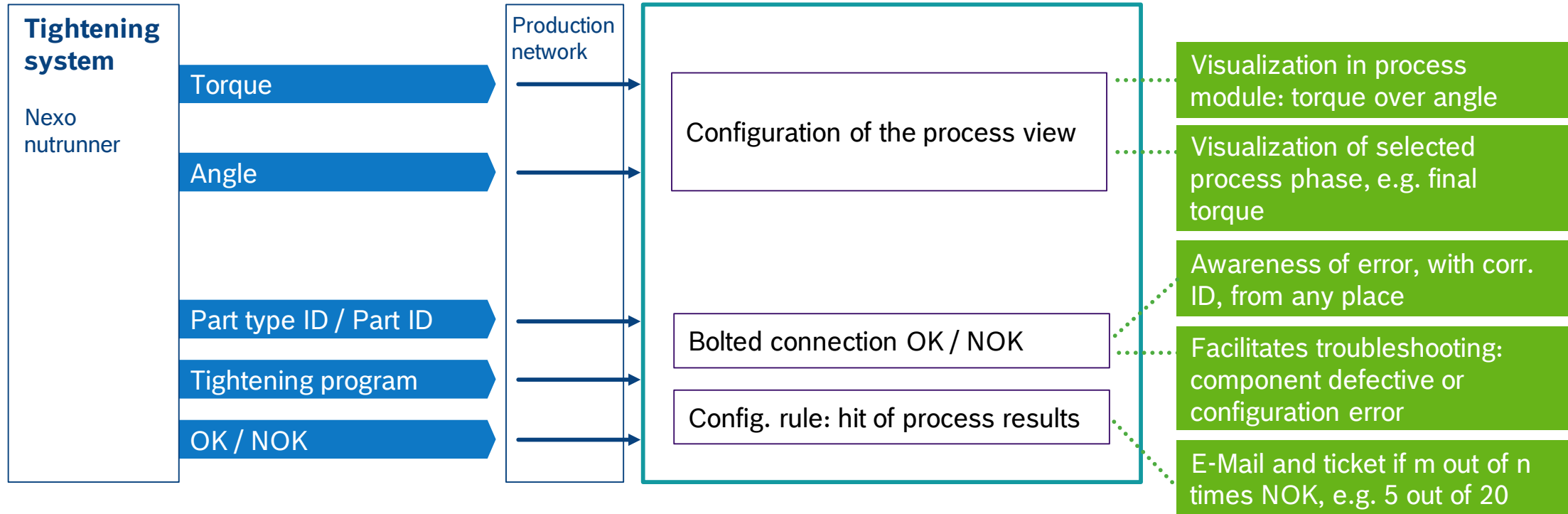
- ▶ Centralized visualization always accessible from anywhere
- ▶ Increased process transparency
- ▶ Easier error identification
- ▶ Reduction of returns

**+ 18.000 €  
annually**

Fewer customer complaints  
3 complaints at €500/month to 0

# Nexeed Industrial Application System – Data Flow Mapping

## Monitoring of the tightening process



Shop floor

Nexeed Industrial Application System

Actionable insights

# Nexeed Industrial Application System – Use Case Overview

## Process monitoring for self-piercing riveting



### User Story

**Who?**

As a process engineer,

**What?**

I would like to set fault and warning messages, as well as threshold values, see process parameters and be notified automatically,

**Why?**

in order to quickly detect process fluctuations and to increase process quality.



### Approach



- ▶ Evaluation of available data
- ▶ Determination of limit values
- ▶ Automatic notifications in real time when limits are exceeded or undershot to prevent failures

### Customer benefits



- ▶ Increased process quality
- ▶ Process continuity

# Nexeed Industrial Application System – Use Case Overview

## Monitor yield during the welding process



### User Story

Who?

As a process engineer,

What?

I want to monitor yield and exceedance frequency,

Why?

in order to reduce my scrap rate and replace electrodes only when necessary.



### Approach



- ▶ Monitoring yield (the smaller the yield, the worse the condition of the electrodes)
- ▶ Determining a lower boundary for the yield
- ▶ Determining an upper boundary for exceedance frequency
- ▶ Observing increased variance
- ▶ Message to adjuster if electrode replacement is necessary

### Customer benefit



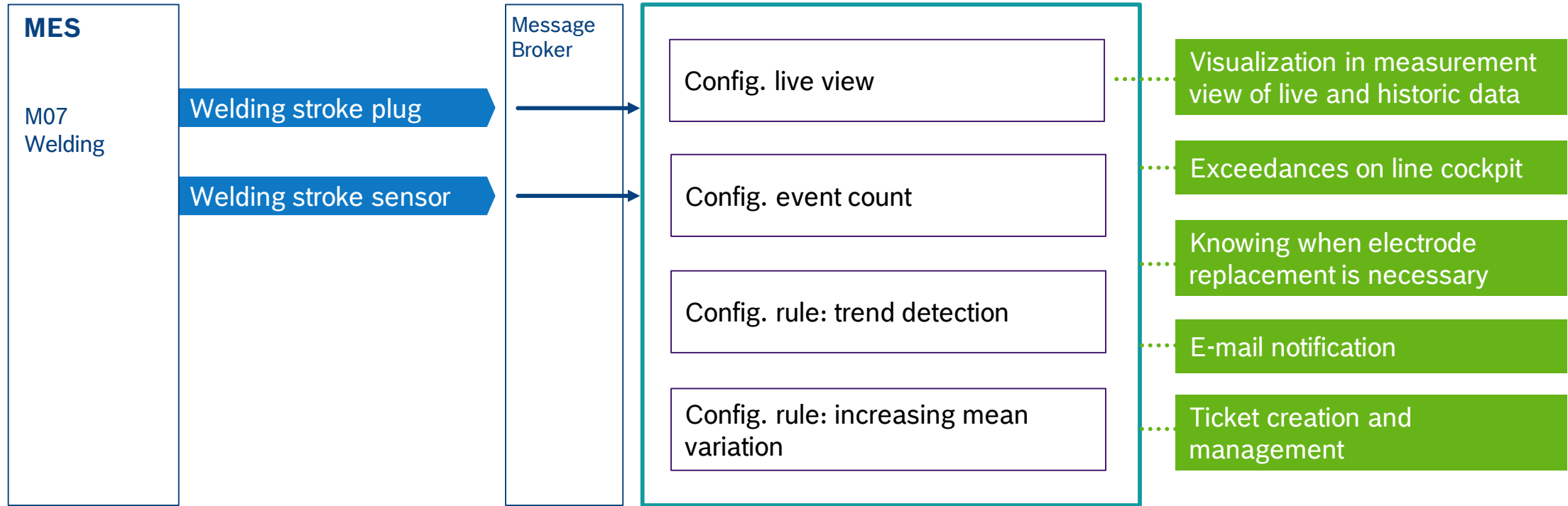
- ▶ Improved OEE
- ▶ Improved tool life
- ▶ Reduced scrap rate

**+ 81.270 €  
annually**

Production increase  
due to fewer electrode  
replacements

# Nexeed Industrial Application System – Data Flow Mapping

## Monitor yield during the welding process



Shop floor

Nexeed Industrial Application System

Actionable insights



# Nexeed Industrial Application System – Use Case Overview

## Quality management of the pressing process



### User Story

**Who?**

As a process and quality engineer,

**What?**

I want to visualize force and position of processes, receive event messages and information automatically,

**Why?**

in order to improve response times and increase product quality.



### Approach



- ▶ Promess presses able to natively send data using PPMP
- ▶ Process data and event messages (change of modus or completion of a special process) are collected and sent to the Nexeed IAS for visualization

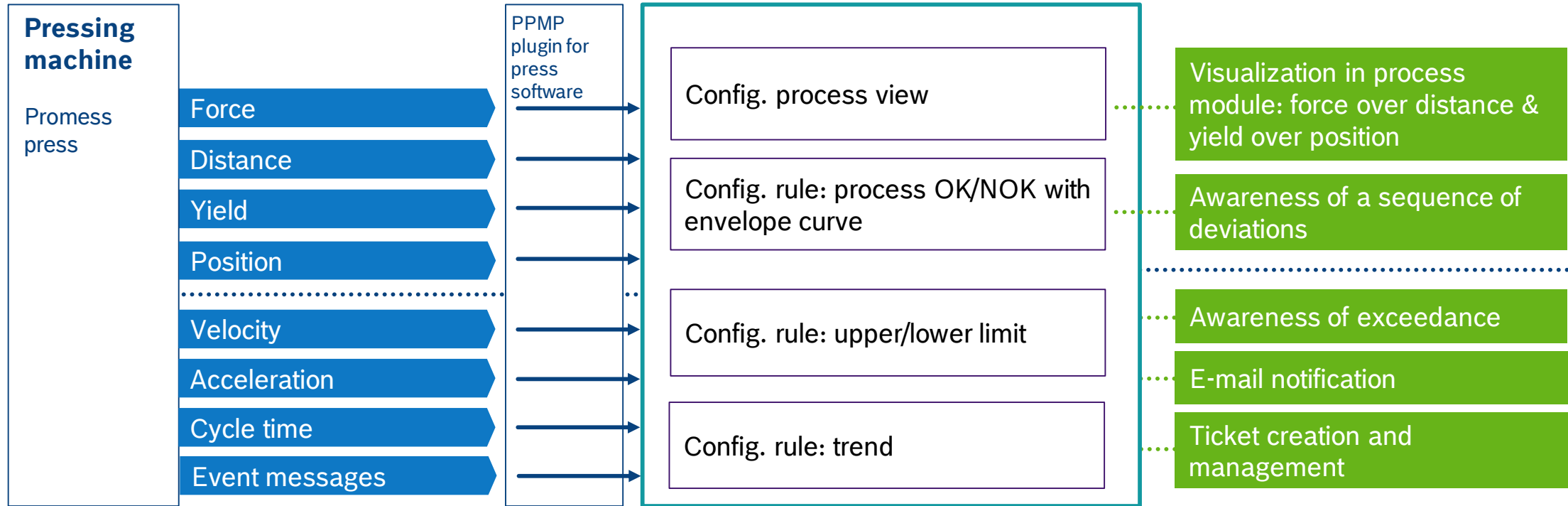
### Customer benefit



- ▶ Improved response times and comprehension due to automated triggering of events and information
- ▶ Increased process transparency
- ▶ Increased product quality

# Nexeed Industrial Application System – Data Flow Mapping

## Quality management of the pressing process



Shop floor

Nexeed Industrial Application System

Actionable insights

# Nexeed Industrial Application System – Use Case Overview

## Monitor **error rate** during leak testing



### User Story

**Who?**

As a process and quality engineer,

**What?**

I want to monitor the leak testink,

**Why?**

in order to reduce the scrap rate.



### Approach



- ▶ Error rate is a decisive indicator for early error detection during leak testing
- ▶ Warnings in the line cockpit when a specified boundary is exceeded -- Responsible individuals can react more quickly
- ▶ Permanent display of faulty parts in the preceding 7 hrs. (esp. important during shift changes)

### Customer benefit



- ▶ Higher response rates
- ▶ Centralized machine health monitoring
- ▶ Reduced scrap rate

**+ 31,450 €  
annually**

Reduced scrap rate  
from 1512 to 1200 bad parts /  
day

# Nexeed Industrial Application System – Use Case Overview

## Monitor **calibration** during final assembly



### User Story

**Who?**

As a process and quality engineer,

**What?**

I want to analyze the final assembly steps,

**Why?**

in order to provide actionable insights, to reduce the scrap rate



### Approach



- ▶ Relevant measured values are monitored via Nexeed IAS
- ▶ Message and/or ticket to the system supervisor with explicit recommendation for action when values exceed or fall short of specified tolerances
- ▶ Enables faster and more targeted reaction

### Customer benefit



- ▶ Reduced scrap rate
- ▶ Faster error identification
- ▶ Significantly fewer downtimes related to troubleshooting

**+ 5.190 € p.a.**

Time for error identification  
from 960mins to 30mins / day  
Scrap parts  
from 120 to 20 parts / day

# Nexeed Industrial Application System – Use Case Overview

## Monitoring of **imager assembly press**



### User Story

**Who?**

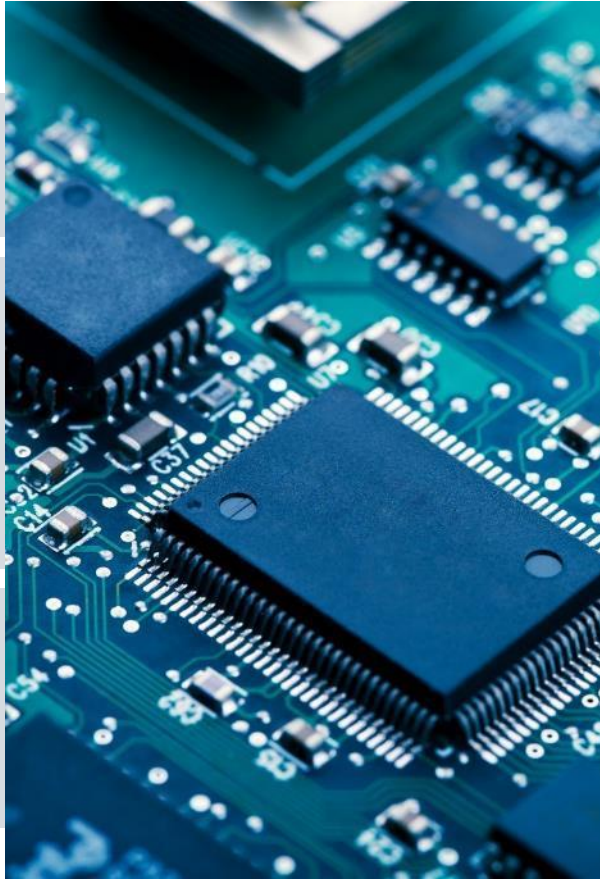
As a process and quality engineer,

**What?**

I want to monitor continuously four assembly presses,

**Why?**

in order to reduce the scrap rate.



### Approach



- ▶ Monitor the four assembly presses
- ▶ In case of trends or jumps, compare presses with one another
- ▶ If all presses show the same result, the operator is contacted via e-mail in order to undertake immediate optimization measures

### Customer benefit



- ▶ Increased process transparency
- ▶ Reduced scrap rate

**+ 64,000 €  
annually**

Reduced scrap rate  
from 8.000 to 0 bad parts / day



# Nexeed Industrial Application System – Use Case Overview

## Product **quality** monitoring in **paint shop**



### User Story

**Who?**

As a process and quality engineer,

**What?**

I want to the parameters of the paint shop,

**Why?**

in order to reduce the scrap rate.



### Approach



- ▶ Integrate the IoT Gateway to collect production data
- ▶ Identify relevant product quality parameters: temperature, humidity, paint consumption
- ▶ Based on threshold values, provide alerts when quality parameters are out of range

### Customer benefit



- ▶ Increased product quality
- ▶ Faster response times in cases of quality deviations
- ▶ Less scrap

- ▶ Press release: <https://www.boschrexroth.com/en/xc/company/press/index2-27136>

# Nexeed Industrial Application System – Use Case Overview

## Monitor **size indicators** in test benches



### User Story

**Who?**

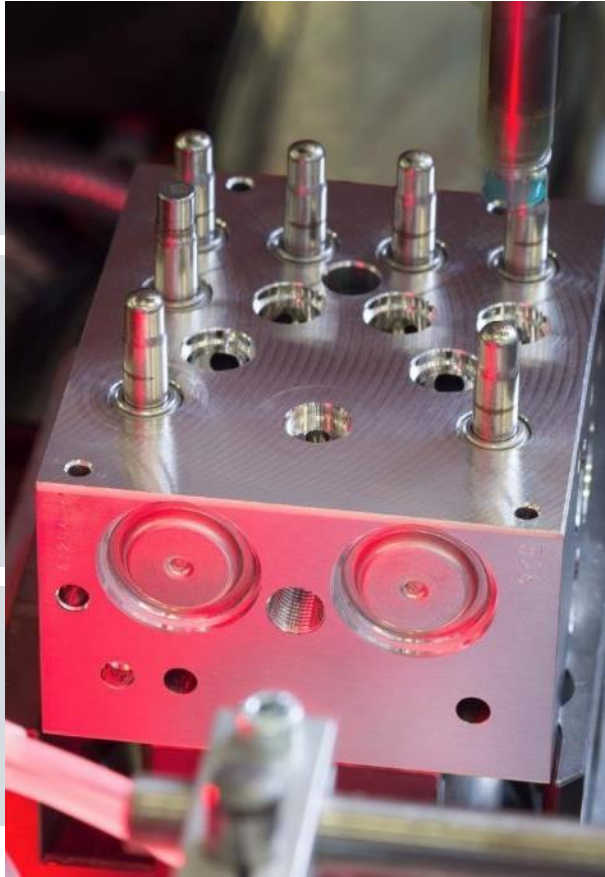
As a process and quality engineer,

**What?**

I want to digitalize the manual process to evaluate process deviations,

**Why?**

in order to save time and reduce cost.



### Approach



- ▶ Indicator trend monitoring is possible with the process supervisor at any time and in near real-time
- ▶ Creating a ticket for the supervisor if values exceed or fall short of the defined boundaries

### Customer benefit



- ▶ Manual assessment is no longer necessary
- ▶ Significantly reduced scrap rates

**+ 6,240 €  
annually**

**Cut manual assessment  
from 30mins to 0mins /  
assessment**

# Nexeed Industrial Application System – Use Case Overview

## Tightening process monitoring



### User Story

**Who?**

As a maintenance technician,

**What?**

I want to get real time information about NOK deviations,

**Why?**

in order to reduce the response time in case of failure and to minimize the rework effort.



### Approach



- ▶ Accumulation of NOKs partially detected lately but can be an important indication of process problems
- ▶ Cleco screwdriver sends data to the Nexeed IAS according to the IPM protocol
- ▶ The system informs automatically via email in case of NOK accumulation and enables analysis thanks to central data management

### Customer benefits



- ▶ Minimization of response time in case of failure
- ▶ Reduction of rework costs

**Ensured  
process  
quality**

# Nexeed Industrial Application System – Use Case Overview

## Paint shop monitoring



### User Story

**Who?**

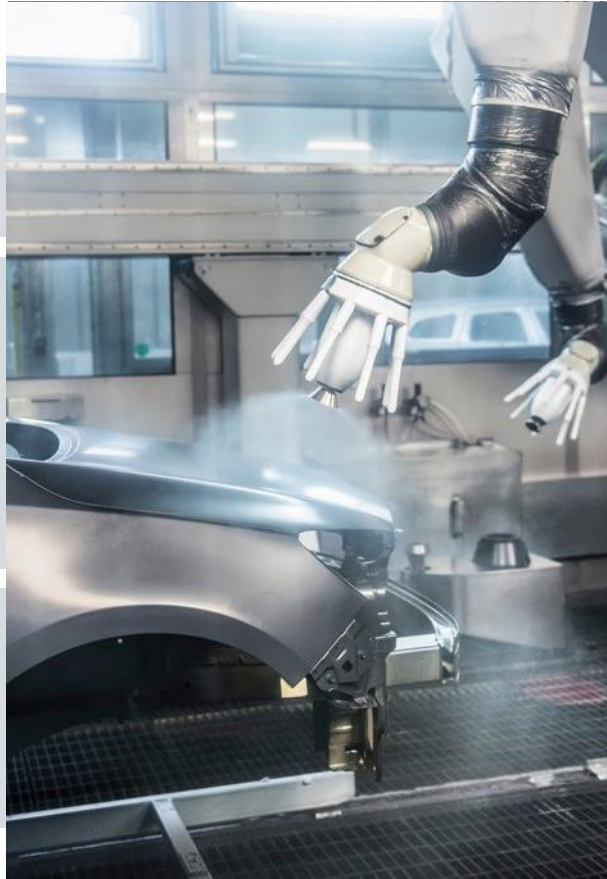
As a plant operator of the paint shop,

**What?**

I would like to combine the current parameters/ actual values with quality criteria,

**Why?**

in order to reduce the rework processes and costs caused by rejects.



### Approach



- ▶ Current parameters are read out via a gateway from the S7 Control and sent to the Nexeed IAS
- ▶ Quality criteria (OK/NOK/error images) are taken from the SQL database and sent to the Nexeed IAS
- ▶ Links between actual values and quality criteria are established with data analytics approaches (reference and envelope curve, sequence analyses)

### Customer benefits



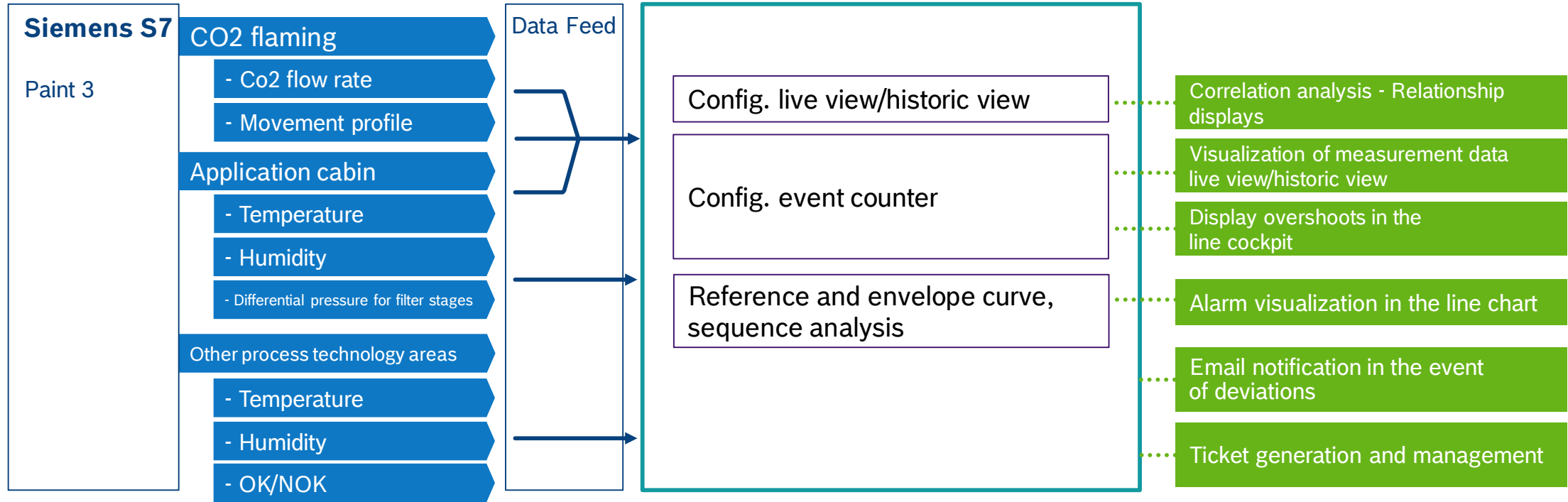
- ▶ Reduction of rework
- ▶ Reduction of costs caused by rejects

## Reduced scrap rate



# Nexeed Industrial Application System – Data Flow Mapping

## Paint shop monitoring



Shopfloor

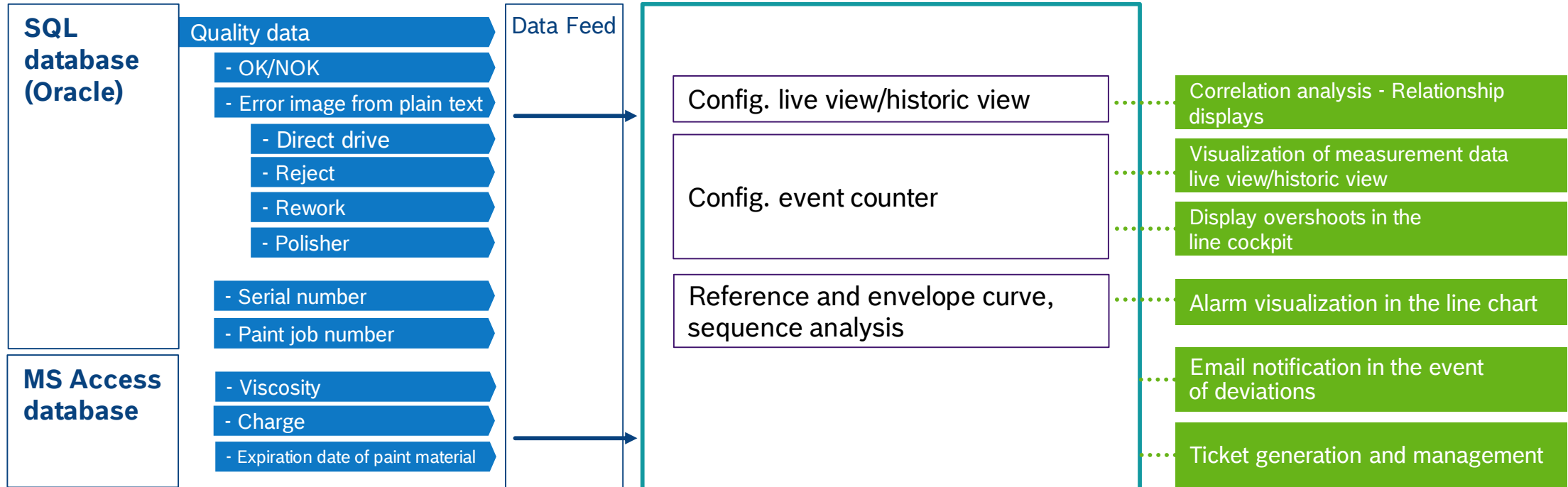
Nexeed Industrial Application System

Actionable Insights



# Nexeed Industrial Application System – Data Flow Mapping

## Paint shop monitoring



Shopfloor

Nexeed Industrial Application System

Actionable Insights

# Nexeed Industrial Application System – Use Case Overview

## Monitoring a production line for sanitary ceramics



### User Story

**Who?**

As a process engineer,

**What?**

I would like to get notifications regarding anomalies and correlate these data and to quantify the results

**Why?**

in order to reduce rework and scrap rates to minimize costs.



### Approach



- ▶ Installation of sensors to monitor 3 production processes:
  - ▶ Pressurized casting
  - ▶ Oven & drying
  - ▶ Glazing monitoring
- ▶ Define parameters for each process that is monitored
- ▶ Define rules to analyze the parameters and set alerts for early warnings to avoid production faults

### Customer benefits

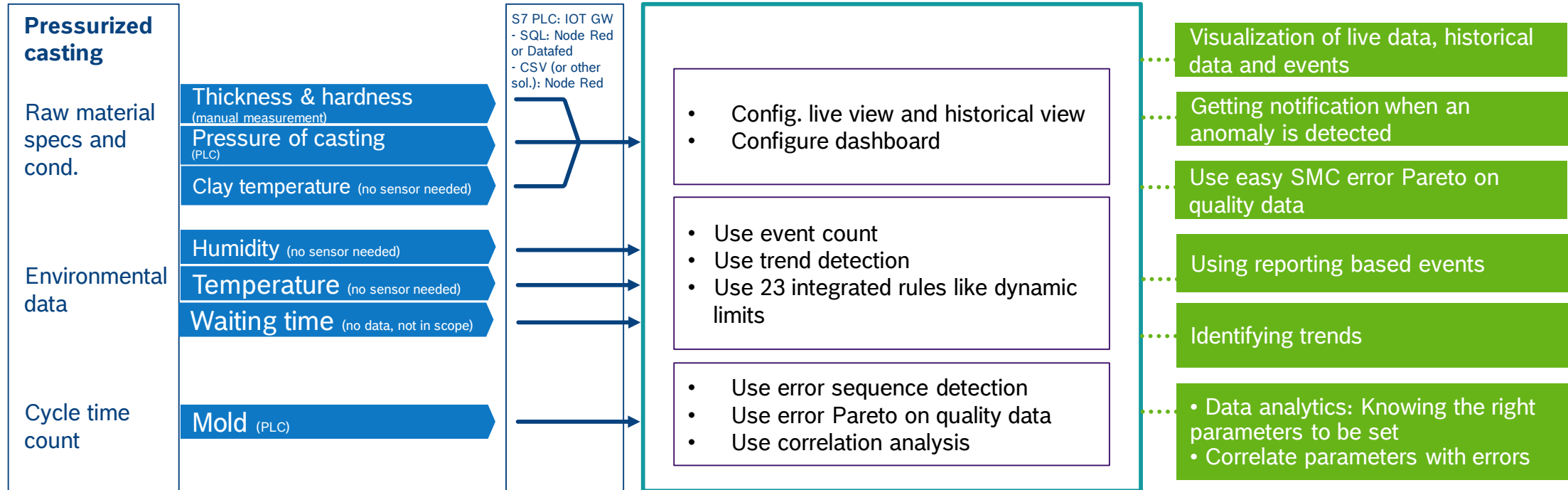


- ▶ Reduction of scrap rate and rework processes
- ▶ More transparency

## Reduced scrap rate

# Nexeed Industrial Application System – Data Flow Mapping

## Pressurized casting monitoring



Shopfloor

Nexeed Industrial Application System

Actionable Insights

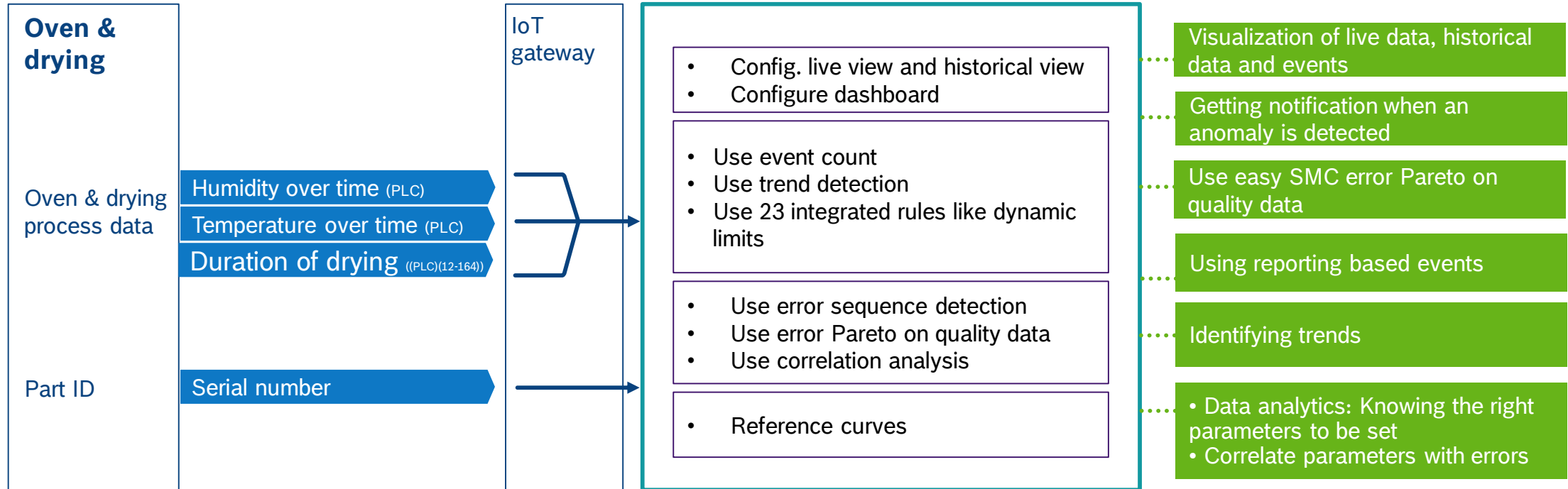
15 DATA POINTS (sample rate > 1 sec)

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# Nexeed Industrial Application System – Data Flow Mapping

## Oven & drying monitoring



Shopfloor

Nexeed Industrial Application System

Actionable Insights

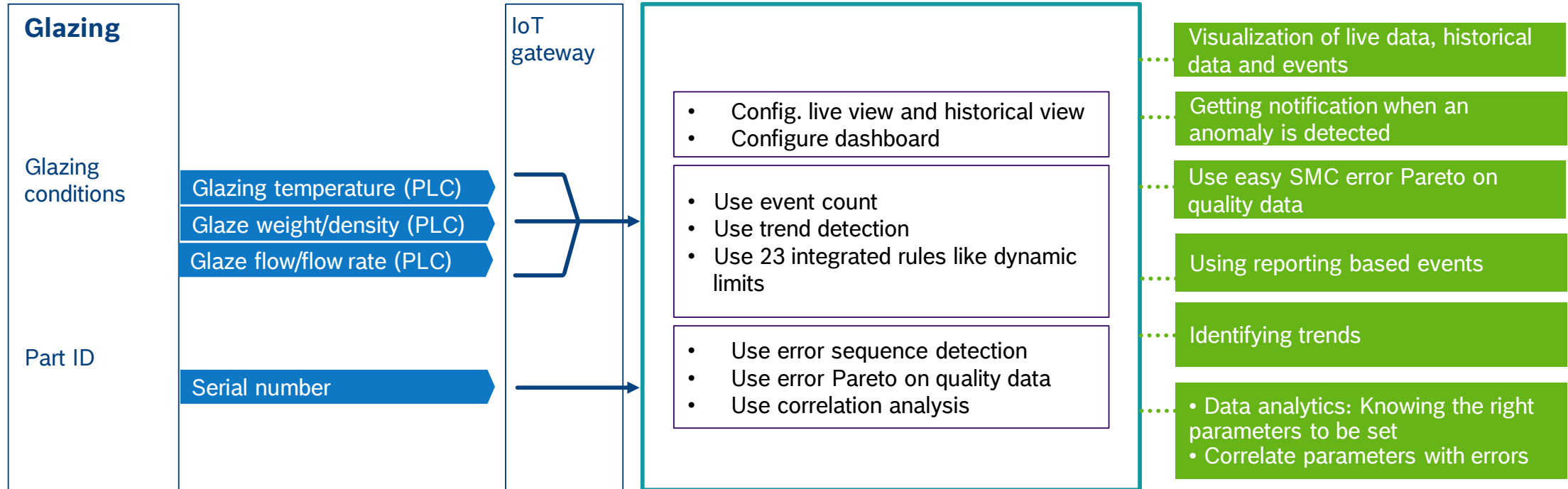
4 DATA POINTS (sample rate > 15 sec)

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# Nexeed Industrial Application System – Data Flow Mapping

## Glazing monitoring



Shopfloor

Nexeed Industrial Application System

Actionable Insights

5 DATA POINTS (sample rate 1-5 sec)

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