
AVEVAWORLD
ACCELERATE INDUSTRIAL INTELLIGENCE

AI at the Shopfloor: Material Tracing and Sawblade Lifetime Optimization

Linus Kohl
Florian Mayer
Andreas Stadler

voestalpine Krems GmbH
www.voestalpine.com/krems

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THE voestalpine GROUP
FACTS AND FIGURES

» voestalpine is a leading steel and technology group with combined material and processing expertise, holding global top positions in its business units.

BY 2024/25

500 companies & locations	49,700 employees globally	1.3 bn. EUR EBITDA
50 countries on 5 continents	15.7 bn. EUR revenue	4 strong divisions

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THE VOESTALPINE GROUP
GLOBAL PRESENCE

» 500 locations » 50 countries » 5 continents » Headquarters in Linz, AT

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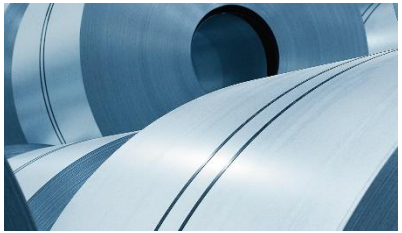
THE voestalpine GROUP
DIVISONS

The voestalpine Group has four divisions that are leading providers in Europe and globally thanks to their outstanding product portfolios.



» STEEL DIVISION

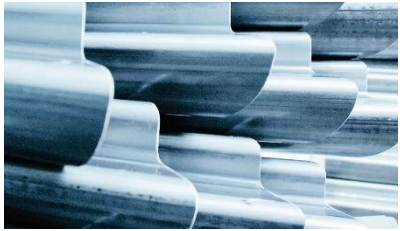
» 35%
» of Group revenue

» HIGH PERFORMANCE METALS DIVISION

» 20%
» of Group revenue

» METAL ENGINEERING DIVISION

» 26%
» of Group revenue



» METAL FORMING DIVISION

» 19%
» of Group revenue

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METAL FORMING DIVISION

Organized in 4 specialized business units

Tubes & Sections

EUR 1,197 million
4.211 employees

Customized special tubes and sections as well as system solutions for industries with highest requirements

Automotive Components

EUR 1,292 million
4.603 employess

Innovative lightweight components and assemblies with a global presence

Precision Strip

EUR 276 million
1.129 employees

Leading competence in precision strip steel for demanding applications

Warehouse & Rack Solutions

EUR 373 million
918 employees

Intelligent rack system solutions for complex logistical tasks

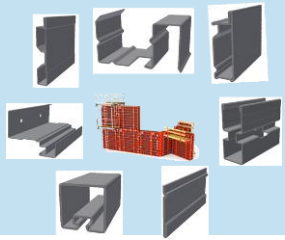
BY 2024/25

Division

3,125 Mio. EUR revenue
10,899 employees

Center of competence for highly refined sections, tubes, and precision strip steel products as well as for ready-to-install system components made of pressed, stamped and roll-formed parts.

Company Intro voestalpine Krems GmbH



- embedded in voestalpine **Metal Forming Division**, business unit **Tubes & Sections**
- ~500 employees, 519.000 sqm
  30.000 sqm production area
- **core business**
  rollforming of steel, processing and services
- 10 Tailored Section lines
  12 Tailored Tube lines
  Processing, Tooling, Engineering
- **business segments**
  mobility, construction, material handling, trading partners & processing industries, renewable energy
- **Revenue** 2024/25: EUR 174,9 Mio

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Use cases in the Lighthouse project

Use Case 1 – Track&Trace of a formed steel production

- Integration of RELISTE camera data into AVEVA CONNECT data services
- Optimize quality of data collection
- Development of a data recognition methodology, association between product and process data

Use Case 2 – Sawblade Lifetime Extension

- Collection of relevant data from saw machine through AVEVA System Platform Historian
- Implementation of a logic to detect critical events using AVEVA Advanced Analytics
- Provide visualization for the operator on critical events

Our success factors

Rapid **Data Integration** between OT data sources and CONNECT data services

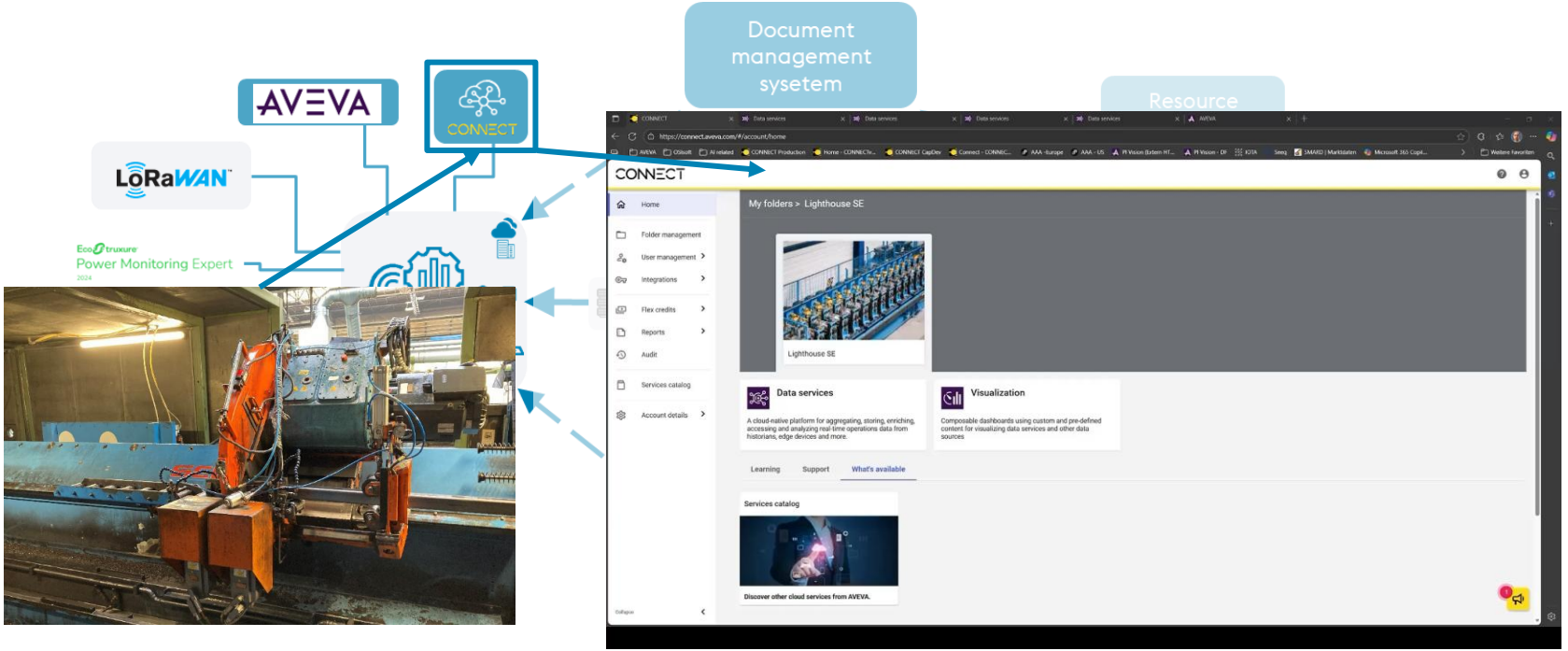
Development of a **Track & Trace methodology** for a steel rollforming lines

Integration with existing **ProLeiT Plant iT** / LMS to capture MES data into CONNECT data services

Apply AVEVA Advanced Analytics for **Asset Monitoring** (Sawblade Lifetime)

Succesful PoC implementation in a production environment

Digital Platform: the Architecture



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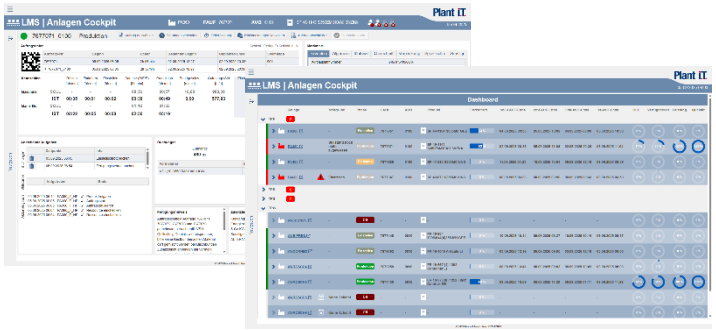
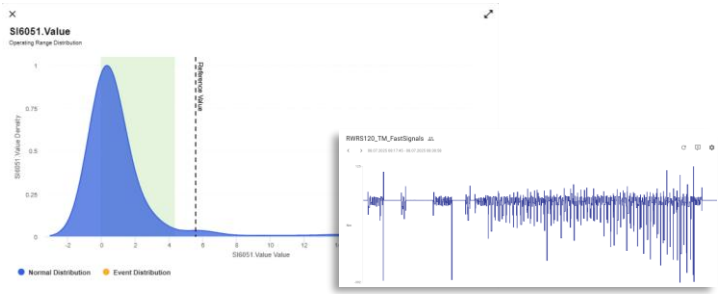
Digital Platform: Core Components





- **Line Management System (LMS)**
  - Live OEE monitoring for real-time production transparency
  - Automatic phase changes and downtime detection based on machine signals
  - Operator-facing interfaces for production order feedback directly at the machines
- **Industrial Data Layer**: Historian & Connect
  - High-resolution machine data recording
  - Central, reliable data foundation for continuous process optimization
  - Enabler for advanced analytics and AI models, including:
    - condition monitoring
    - predictive maintenance
    - process and quality optimization

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Saw Machine RWRS120: a Flying Cut-Off System

- **Flying cut-off system** located at the end of a tube roll-forming line, cutting at full production speed
- **Advanced sensors:**
  - torque
  - rotational speed motion & position monitoring
- **Operational challenge:**
  - Saw blades replaced around once per shift
  - High saw blade consumption and costs
- **Digital opportunity, to:**
  - monitor blade health in real time, without stopping production
  - predict the optimal blade change point before critical damage occurs

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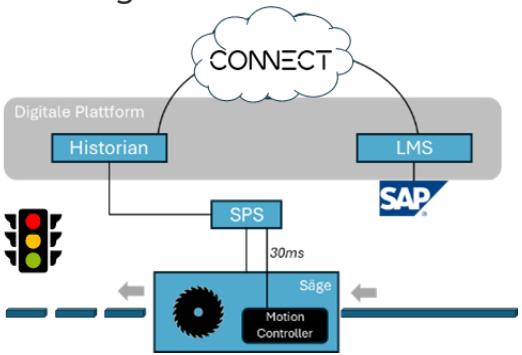
Saw Machine RWRS120: Data Flow

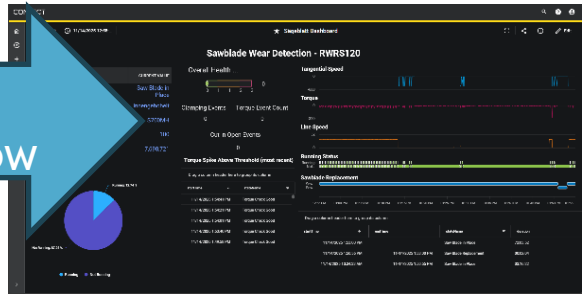
Connection of the saw PLC to the Digital Manufacturing Platform
» seamless integration into existing architecture



Access to high-frequency saw signals
» enables advanced data analytics beyond standard automation insights

Process Know-How

Business and operational impact:
» Predictive maintenance based on actual condition
» Blade reconditioning
» Reduction of cutting burrs,



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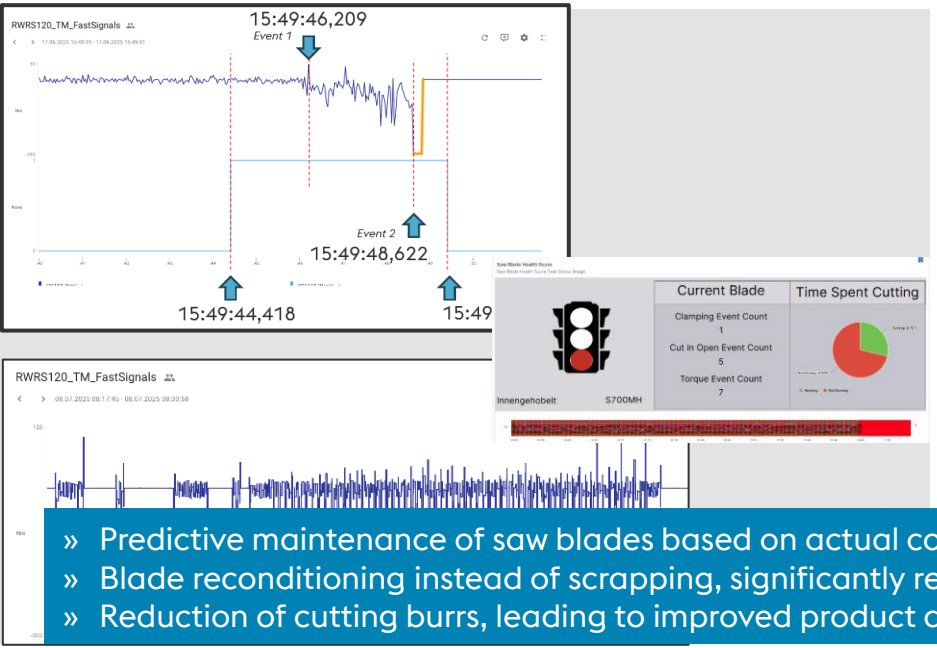
Saw Machine RWRS120: Challenges & Opportunities



- **Initial setup**: Manual data collection via USB / CSV
- **Industrial challenge**: Historian connection and 30 ms torque data
  - Required for high-precision metal forming
- **Early value:**
  - Thresholds enabled early anomaly detection
  - AVEVA Advanced Analytics classifications:
    - Clamping
    - Cut-in-open (not welded pipe)
    - Torque > 200 Nm (excessive blade load)
- **Next steps:**
  - Predictive maintenance of saw blades based on actual condition
  - Blade reconditioning instead of scrapping, significantly reducing material waste and costs
  - Reduction of cutting burrs, leading to improved product quality and downstream process stability

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Outlook

- **Key Use Cases**
  - Remaining Useful Lifetime
  - Product Quality
- **Architecture**
  - Cloud-based ML with Edge Execution (Next EAE Lighthouse)
  - Fabric Integration for Asset & Predictive Maintenance Analytics

Metals, Material and Mining| Austria

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Track & Trace for a steel roll forming line

Challenge

- Operators **lack unified dashboards** to visualize and interpret production-related and machine data from **ProLeiT MES** and **AVEVA System Platform**.
- To enable a **Product Passport**, a robust **Track & Trace methodology** is required to link product-specific quality information to production processes on roll forming line PA610.
- Frequent faults on the saw machine of Line RWRS120 lead to **excessive saw blade wear**, resulting in **high replacement costs** due to insufficient real-time awareness.

Solution

- Deployment of the **CONNECT SaaS platform** integrated with **AVEVA Advanced Analytics**.
- **Seamless integration** with voestalpine Krems' digital ecosystem (Digital Platform), including ProLeiT LMS and AVEVA System Platform.

Results

- **Contextualized Visualization:** MES data from ProLeiT combined with operational data from AVEVA System Platform within CONNECT for a unified operator view.
- **Track & Trace Evaluation:** Implemented a methodology leveraging time-series data for length- and product-specific insights using the CoilDNA concept.
- **Proactive Asset Monitoring:** Introduced predictive monitoring for the saw machine, reducing unplanned downtime and potentially saving up to €18,000 annually in saw blade costs.

Our Project Team

Success comes through collaboration

Andreas Stadler

» voestalpine Krems GmbH

» Digitalization

Felix Karlein

» ProLeiT

» Solution Architect

Hans Otto Weinhold

» AVEVA

» Solution Architect

Dr. Johannes Koppensteiner

» voestalpine Krems GmbH

» Research & Development

Alex Borland

» TwinThread

» Manufacturing Consultant

Fabio Dani

» AVEVA

» Research & Development

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Thank you!

Linus Kohl
Andreas Stadler
Florian Mayer