PRIMETALS TECHNOLOGIES

ASSET LIFE EXPERT (ALEX)

YOUR INTELLIGENT ASSISTANT FOR SEAMLESS PLANT AVAILABILITY

primetals.com

DIGITAL ASSISTANCE FOR YOUR STEEL PLANT
SUPPORTIVE, CONNECTED, & LEARNING

THE CHALLENGE

The last few decades have seen steel plants add more and more sensors and systems so that more and more data can be collected and analyzed. The objective is clear: by gathering more data, plants can gain more valuable insights about the current "health status" of their systems, and as a result production can be optimized in terms of quality, productivity, and flexibility. It's all about remaining competitive in the global steel market.

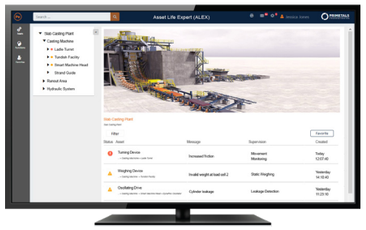
The collection of "big data" has been facilitated by a dramatic drop in the cost of hard drives and solid-state drives. But the wealth of systems, information, and alerts can no longer be handled by humans alone—not even by experienced operators or maintenance engineers. The growing connectivity of different aggregates in a steel plant also increases the complexity of collected information and adds unseen interdependencies between data sets.

THE SOLUTION: ASSET LIFE EXPERT (ALEX)

Primetals Technologies has developed an intelligent digital assistant called Asset Life Expert (ALEX) specifically to assist operators and maintenance engineers in the proper management of the sea of data and alerts within a steel plant.

ALEX can assist at:

- Blast furnaces
- Converters
- Electric arc furnaces
- Continuous casting machines
- Plate and hot strip mills
- Cold rolling mills
- High-speed rod, wire, bar and section roling mills
- Process lines
- Dry dedusting systems
- and more



ALEX from Primetals Technologies is a smart, centralized expert system that provides your operators with digital assistance and increases the availability of your steel plant.

WHERE ALEX CAN ASSIST YOU IN YOUR STEEL PLANT:

- Monitoring mechanical equipment, like a looper, coiler, or edger in a hot strip mill, influencing material quality
- Monitoring hydraulic systems, like a wear of servo valves or loss of pressure in the accumulator, ultimately influencing product quality
- Monitoring control loops which can lose their dynamic behaviors and cause a drop in product performance
- Monitoring of slow-rotating bearings, e.g. as used for steelmaking converters and ladle turrets, that can significantly influence productivity
- Supervising smaller drives of bearings such as those in processing lines by analyzing the motor current
- Classical vibration monitoring for rotating parts, automatically monitored or via input of manual measurements
- Monitoring of process KPIs such as strip thickness deviations caused by work roll eccentricity
- Monitoring of automation equipment such as CPU load, memory space, run time, bus system check, and so on
- And many others

ASSET LIFE EXPERT (ALEX)
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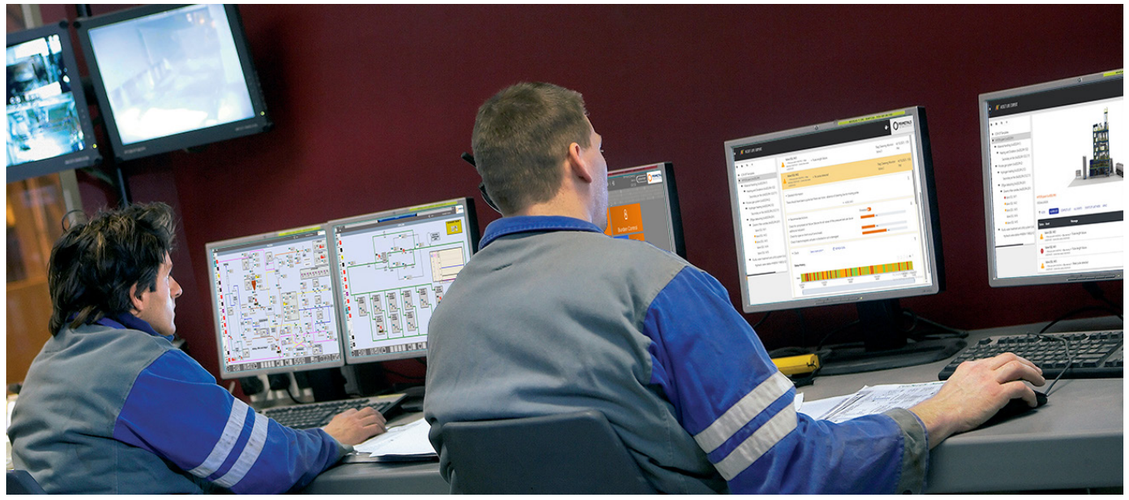


Asset Life Expert (ALEX) from Primetals Technologies helps operators to manage the huge amount of alarms and warnings in a steel plant.

SOLUTION

ALEX acts as a smart, centralized expert system for intelligent condition monitoring including e.g. also classical vibration monitoring.

ALEX digitalizes know-how based on plant operation practice, so that users benefit from Primetals Technologies' automation, production process, and metallurgical expertise.

ALEX guides and assists operators and maintenance engineers through their daily tasks, offering clear status information and recommending intelligent actions.

ALEX can be integrated with various traditional condition monitoring systems and other data sources.

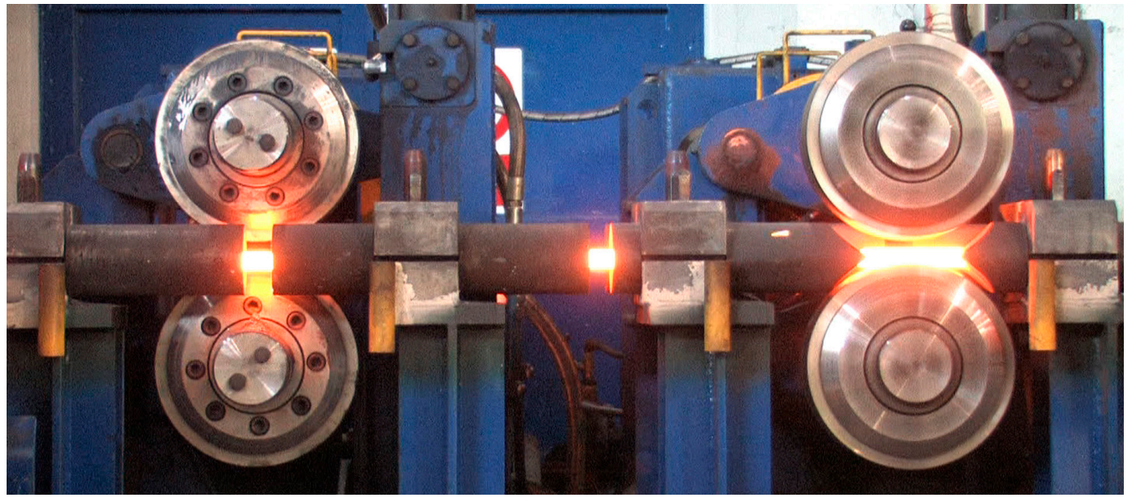
CHARACTERISTICS

- **Intuitive:** provides status information in a clear, user-friendly way, including online plant health status and full mobile access
- **Connected:** interconnects different steel plants and visualize information in one central system
- **Communicative:** offers standardized interfaces to other systems, e.g. ITR vibration analyses or 3rd party systems
- **Supportive:** recommends intelligent actions and provide information that combines the plant operation experience and expertise of Primetals Technologies based on advanced analysis techniques
- **Learning:** allows users to contribute their own know-how
- **Reliable:** intervenes only when needed
- **Scalable:** based on a modular concept with functionalities that can be continuously updated and extended by Primetals Technologies

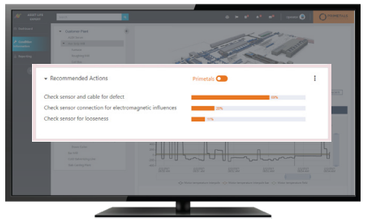
BENEFITS

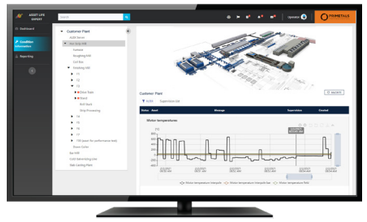
- **Fast and easy access** to information about the condition of one or more plants via one central system
- **Direct access to numerous condition monitoring evaluation packages** from Primetals Technologies and other data sources
- **Precise and validated status information** about monitored equipment and processes
- **Intelligent support for defining fast actions** to properly handle alarms and warnings
- **24/7 available digitalized know-how** of experienced senior operators and Primetals Technologies
- **Quick document access** linking monitoring functions to relevant information
- **Attractive benefit-cost ratio** with flexible expansion options

SUCCESS STORY
ONE HOUR PLANNED WORK PREVENTS A SEVEN-HOUR LOSS OF PRODUCTION



The ALEX installation at a hot strip mill in Mexico warned the maintenance department of an inaccuracy in the roll force measurement, recommended to calibrate the measurement system and prevented a production loss of seven hours.





Scenario
ALEX warned the maintenance department of an inaccuracy in the roll force measurement. By automatically analyzing the sensor readings in ALEX, an abnormal offset in the force signal was found. ALEX provided the correct recommendation to calibrate the measurement system.

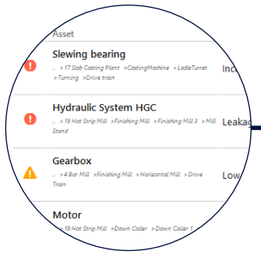
The work was scheduled and completed during the next planned maintenance stop. One single hour of planned work prevented a production loss of seven hours.

Results
- Detection of incorrect motor behavior caused by a broken temperature sensor
- Bearing abnormalities of a newly installed work roll, which caused problems controlling strip thickness
- Memory overflow error in a server was detected early—meaning that the server remained in a healthy state.
- A logical error was found in the existing automation and fixed after an analysis.

Added values
What the operators of the hot strip mill valued most about the installation of ALEX:
- Easy to use and intuitive
- Useful monitoring functions
- Immediate warning and recommended actions when problems are detected

HOW ASSET LIFE EXPERT (ALEX) CAN HELP YOU

TO INCREASE PLANT AVAILABILITY AND REDUCE MAINTENANCE COSTS



ALARMS AND WARNINGS
As a steel plant operator you might be frequently overwhelmed by a steady stream of alarms and warnings from various sources.

SMART CENTRALIZED EXPERT SYSTEM
ALEX evaluates these alarms and warnings using advanced analysis techniques, factoring in additional signals and information such as operational practice know-how, and provides a clearer and faster overview of the condition of your plants.

DIGITAL ASSISTANCE
ALEX provides a fast overview of the status of your plants, with precise and validated information. ALEX recommends intelligent actions that help you to avoid unplanned downtimes and achieve consistently high product quality.

IMPROVED LIFE QUALITY OF YOUR ASSETS
ALEX increases your plant availability, reduces maintenance costs, provides online information about the health status of your plant, and helps you to optimize equipment lifetime.

DATA ACQUISITION

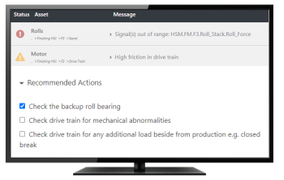
- Raw data
- Quality information
- Manual offline data input
- Process models (level 2)
- Technological controls (level 1)
- Dedicated sensors
- 3rd party systems
- CMAS (Condition Monitoring and Analysis System)

EXPERT SYSTEM

- Long-term data storage
- Advanced analysis & evaluation
- Dashboards and reporting
- Know-how management
- Recommended actions
- Prescriptive maintenance
- Modular and scalable
- m.predict (expert analysis and reporting service)

EFFICIENT DATA ANALYSIS, VALUABLE INSIGHTS, & INTELLIGENT RECOMMENDED ACTIONS

Intuitive visualization and mobile access
to preprocessed information

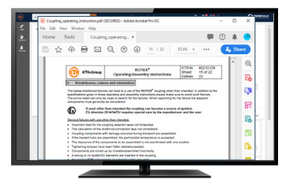


Recommended actions
to handle alarms and warnings based on operational practice

Know-how management,
combining your know-how with that of Primetals Technologies

Easy and fast analysis
via charts, tip boxes, zoomable timeline and data picker with snap function

Direct link to process data acquisition systems
to visualize detailed information



Additional information
via direct links to the technical documentation

ASSET LIFE EXPERT (ALEX)

Primetals Technologies Austria GmbH
A Group Company of Mitsubishi Heavy Industries

Turmstrasse 44
4031 Linz
Austria

primetals.com

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