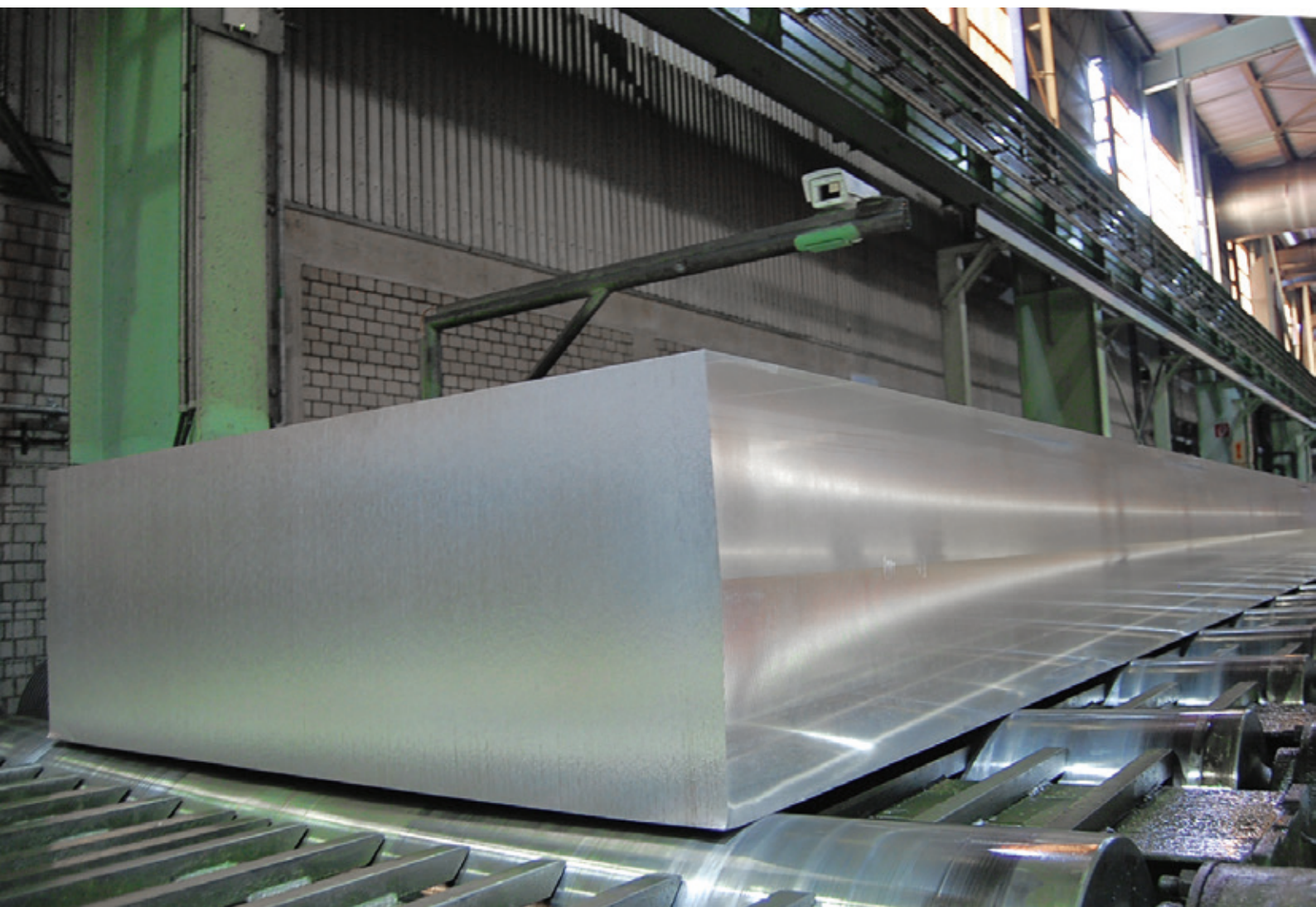


Voith in the world's largest aluminum rolling mill OnCare.Health ACIDA



Automated real-time monitoring of production processes

Almost all industrial applications have one thing in common: they have drives that power processes, move mass or convert energy. The same is true of the rolling mills at the aluminum rolling plant Aluminium Norf GmbH (Alunorf). The company relies on Voith's OnCare.Health ACIDA system to ensure that its production assets achieve optimum results. By continuously evaluating sensor signals the system enables real-time monitoring of production processes.

With a workforce of more than 2,200 people, Alunorf is the largest aluminum rolling and smelting plant in the world. At its headquarters in Neuss, Germany, the company processes around 1.6 million metric tons per year of aluminum on two hot rolling mills and five cold rolling mills. To achieve this the smelting plant casts more than half of the rolling ingots from molten metal from its own recycling furnaces. Alunorf's core area of expertise is producing hot and cold-rolled strips in a wide range of aluminum alloys. These strips are used to produce a wide range of products such as food cans and all other types of packaging, chassis or structural parts for the automobile industry, components for shipbuilding, or facades and ceiling panels.

OnCare.Health ACIDA

Alunorf is relying on Voith's OnCare.Health ACIDA system to monitor its production processes. The system offers customized, integrated monitoring solutions for almost all industrial applications. Thanks to the continuous evaluation of sensor signals, process data and machine parameters, the system provides real-time monitoring of the two hot strip mills.

“In the background, the integrated report generator conducts automatic analyses of the recorded sensor signals. It monitors peak loads and irregularities during operation and evaluates them in real time.”

Thomas Bastian, Measuring and diagnostic expert at Voith Digital Ventures

In this context, the diagnostic algorithms are extremely versatile. As well as vibration monitoring in the time and frequency domain, the system also offers the option of a fatigue and residual service life analysis. Alunorf and Voith have been cooperating successfully for more than 16 years. Prior to the switchover to the Voith OnCare.Health ACIDA solution, software developed in-house was being used.



“Before OnCare.Health ACIDA was used it was not possible for production to continuously monitor the load level at the main drive spindles of the two roughing stands. Only some temporary measurements and regular visual inspections were conducted.”

Uwe Gorzny, process engineer at Aluminium Norf GmbH

Continuous monitoring of rolling mill trains

This process was not just imprecise but was also very time-consuming and resource-intensive. In consultations with the customer, the experts from Voith presented a concept for the automation of monitoring processes. This concept is based on the OnCare.Health ACIDA system in a server-client structure for the two rolling mill trains.

The OnCare.Health ACIDA server is particularly suited to stationary industrial applications designed for continuous operation. The included EventVIEWER basic module visualizes the time and frequency domain online and offline. The data is collected via the OnCare.Health ACIDA client, which extends the performance of the server by adding signal input channels or increasing computing power. This creates a flexible monitoring network with a virtually unlimited number of distributed signal input points.



“A crucial factor was the integration of OnCare.Health ACIDA into the existing automation environment. Our systems are based on the latest industry standards and feature a large number of conventional interfaces, so we were able to easily integrate the system.”

Thomas Bastian, measuring and diagnostic expert at Voith Digital Ventures

To allow the system to carry out automated analyses the first step was to fit the facilities with sensors. This was done by mounting an OnSense.Torque sensor to the upper and lower spindles of the drives of the two roughing stands that perform the first pass within a hot strip mill. These special sensors are designed to be mounted on existing drive shafts or spindles and can even be used under the harshest operating conditions.

From the very beginning of the integration process, Voith engineers were in constant contact with the respective staff in charge at Alunorf. Step by step, the existing measuring system was converted to a highly reliable automated system that meets all customer requirements. The staff at Alunorf responsible for the system were also given in-depth on-site and online training in the new system and can also access remote support from Voith at all times.



Diagnosis of potential process optimizations

The system can already point to its first successes: “By analyzing the sensor data we determined that for a certain material the torque load peaks are much higher than in normal operation,” Uwe Gorzny reports. “Accordingly, we modified the pass schedule for this material so that instead of 23, we now perform 27 passes to roll the material to the desired final thickness. Although this has extended the production time somewhat, in return we are reducing the stress on the drives of our work rolls. Thanks to Voith’s recommendation we can significantly increase the availability and service life of our production facilities.”

The new technology from Voith also reduces unscheduled downtimes and considerably improves system transparency. Due to its positive experience with OnCare.Health ACIDA, Alunorf is planning to install the system in the finishing train in addition to the roughing train. Moreover, an upgrade of the software and hardware is planned for the near future.

“Thanks to Voith’s recommendation we can significantly increase the availability and service life of our production facilities.”

Uwe Gorzny, process engineer at Aluminium Norf GmbH

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