BOSCH
Invented for life

For maximum process transparency in automotive component production

With software solutions of the Nexeed Industrial Application System

Case study

About the BMW Group plant Landshut

The BMW Group plant Landshut supplies all of the BMW Group vehicle and engine plants around the world with innovative components. Each BMW, MINI and Rolls-Royce is fitted with a piece of pure innovation made in Landshut. As the center of expertise for lightweight construction and electromobility, the plant sets trends for an entire industry. Not only do trendsetting technologies for the BMW i models originate at the location. The BMW 7 Series, the BMW brand's flagship, also features innovations from the Landshut production floor.

Summary

The **BMW Group's Landshut plant** manufactures components and other products for the trend-setting BMW i models. Several software solutions of the **Nexeed Industrial Application System (Nexeed IAS)** make sure that the manufacturing process is just as innovative as the product itself: with the help of this software solution, parameters related to cockpit production can be monitored in real time, making it possible for the cockpit and equipment technology department to establish standards for the plant-wide introduction of this Industry 4.0 solution.

For example, the maintenance staff at the punch press need all the punch pressure sensor and slide characteristic values to monitor the condition of the machine. The applications of the Nexeed IAS not only clearly visualize this data. Using self-configured rules, the **Nexeed IAS** also immediately reports any deviations, preventing unnecessary interruptions and minimizing downtimes. Moreover, the system facilitates easier scheduling of maintenance and repair work based on long-term analyses.

The successes at a glance

Continuous process transparency

Greater transparency by providing all process data and data curves for both production and process engineering to a large number of terminal devices in a user-friendly way

Increased efficiency

Faster responsiveness thanks to automatic output of error messages according to predefined rules

Higher system availability

Shorter downtimes due to predictable, individually tailored maintenance and optimized intervals based on trend analyses

Background

The BMW Group's Landshut plant is the center of expertise for electromobility and lightweight construction within the BMW Group. This is where innovative components for all vehicles, such as the BMW i models, are produced. Customers have high expectations for their vehicles: safety and quality are just as important as comfort, features and customization. The Landshut plant banks on a high level of manufacturing expertise to fulfil these demands. The applications of the Nexeed IAS are used to further develop the required degree of digitalization.

The plant initially focused on the vehicle interior. Through greater transparency in production processes, an improved system availability and faster responsiveness in the event of process fluctuations were achieved. Cockpit production marked the starting point of the software implementation. Together with experts from Bosch Connected Industry, software solution requirements were identified:

- Simple live process monitoring, independent of location
- Faster responsiveness within processes
- Optimization of maintenance intervals for maximum system availability

The software meets these requirements: the solution provides more than just simple live monitoring of all relevant machine parameters and process data. By providing clear cross-machine visualizations and by recording historic data, the software also offers a prepared data basis for potential production optimization.

Solution

Thanks to predefined rules, which issue automatic warnings when limit values are exceeded, potential disruptions can also be detected early on and eliminated.

A sophisticated solution package from Nexeed IAS provides a systematic production improvement. The software helps staff in charge of process engineering and maintenance to make decisions quickly and easily based on simply accessible, harmonized production data. The first decision was made during a „starter kit“ phase in which the cockpit production punch press was selected as the pilot system.

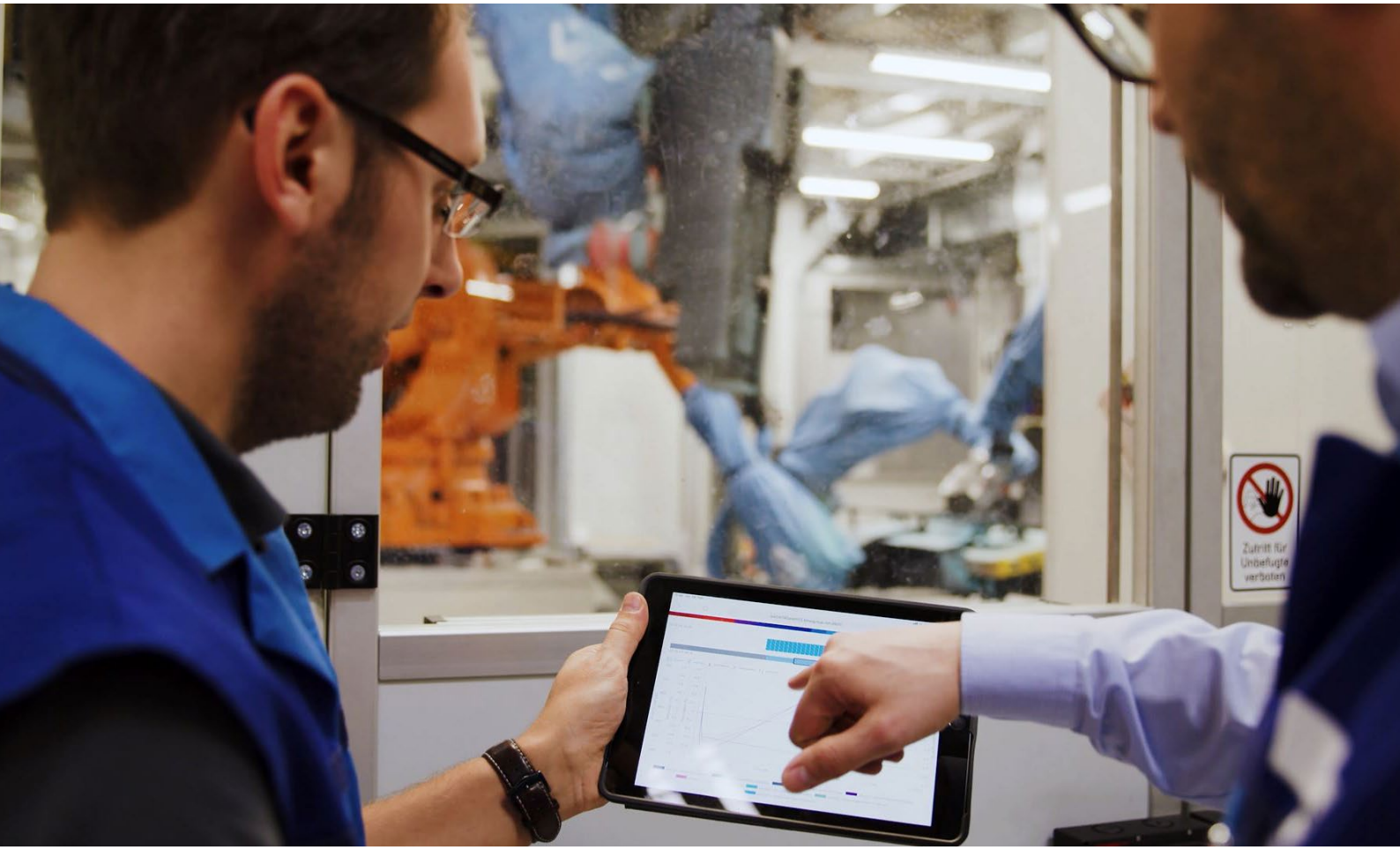
The system was connected to the software via the **Bosch Rexroth IoT Gateway**. The latter collects relevant machine data and messages and presents them in a user-friendly format. Visualization of the time required between the retraction and extension of each individual actuator is provided to the employees in charge. This information makes it possible to detect possible wear, for example by way of an increase in cycle time or load. With the help of intelligent trend analyses, the employees have better control over scheduling maintenance work and minimizing downtimes, e.g. in the case of punch knives: a broken knife would have previously resulted in an unscheduled halt in production. Now, increasing slide run times help track when a knife is becoming dull, and replacement of a knife can be scheduled for the day when it will have the least impact on production. Thanks to predefined rules, which issue automatic warnings when limit values are exceeded, potential disruptions can also be detected early on and eliminated.

The pilot system results convinced the BMW production experts: acquiring a plant license has allowed them to connect additional process steps to the software. The software applications are used in cockpit production for the intricate back-foaming process. While large amounts of data covering information such as pressure, flow rate, temperature and process time were generated in the control unit so far, they were not made permanently available in a higher-level system.

The software applications of the Nexeed IAS can now consolidate the data, analyze it and use it for specific optimization activities. In addition, the staff in charge of the process sequences can view the sequences live and in detail for the first time. The software uses the data to make predictions, for instance regarding wear. Now individual foaming processes (with assignment of variants, tools, mold carriers or segments) can be compared directly across any time intervals, making it possible to establish correlations between component quality and machine, process sequence, variant or batch.

Outlook

Since the software solution from Nexeed IAS has already proven to be successful at various stations, the BMW Group has decided to implement it in additional projects: the software is currently being rolled out to identical processes within cockpit production. Other production steps, such as adhesive application, will also be connected to the software. In the long term, the applications of the Nexeed IAS will be used not only within the vehicle interior department, but also plant-wide. Since the software can be tailored to specific requirements, it is also undergoing constant improvement in areas where it has already been deployed – for example with new rules that employees can easily define without programming knowledge.



Get in touch

Seize the opportunities offered by Industry 4.0 and begin benefitting today from our **Nexeed Industrial Application System**

Contact us – we will gladly guide you on your journey towards implementation of Industry 4.0 projects and software

---

Remark on the software solution used:
The BMW Group plant Landshut is currently using the software solution Nexeed Production Performance Manager. The individual applications Condition Monitoring, Process Quality and Ticket Management are being transferred to the Nexeed Industrial Application System, where they are developed further. The use cases described here can now be realized with the Nexeed Industrial Application System.

Corporate information

Robert Bosch Manufacturing Solutions GmbH
Bosch Connected Industry

PO Box 30 02 20
70442 Stuttgart
Germany

+49 711 811 10 900
Industry4.0.bci@de.bosch.com

www.bosch-connected-industry.com