BOSCH
Technik fürs Leben

Industry 4.0 and lean manufacturing – what value is added by Industry 4.0?

How IIoT software facilitates and improves company-owned production systems

A white paper from Bosch Connected Industry

Content

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Management summary

An idea born at Toyota in the 1950s has become common practice in most businesses: lean production systems ensure waste is systematically avoided, ideally throughout the entire value chain. Bosch was involved in the early days of lean manufacturing and, as a supplier to Toyota, learned about this revolutionary method of manufacturing organization straight from the originator – and systematically adapted the production concept to suit its own operations. The Bosch Production System (BPS), which was established in 2002, has become the standard in all Bosch plants around the world. It adds striving for the best technical production process to Toyota‘s approach.

In traditional lean manufacturing, paper sets the tone; every process is documented in writing. The ever-increasing automation in production has proven both a blessing and a curse: on the one hand, it represents a quantum leap in terms of data capture and data analysis; on the other hand, it often disrupts the flow of information through inconsistent solutions or a jungle of different IT systems. Tried-and-tested processes are increasingly undermined, while the basic principles of lean manufacturing are overridden by highly praised digitalization solutions. Selective, proprietary digitalization solutions turn out to be nothing more than blunt data collection tools that make little contribution to the general improvement of processes.

This is how, in a worst case scenario, companies come to spend years digitalizing processes only to end up with an entire menagerie of individual solutions that are incompatible with each other. By developing a holistic approach of lean and digitalization, Bosch successfully bucked this trend and transitioned the digital solutions they trialled in their own plants into a standardized Industry 4.0 portfolio designed specifically to follow the principles of the BPS.

This white paper uses practical examples to demonstrate how these Industry 4.0 solutions can work in harmony with an own production system. Software developers take the principles of lean manufacturing into account from the very outset and develop suitable functionalities. Intelligent software can uncover deviations with precision, and hence represents a powerful tool for those responsible for the implementation of lean manufacturing. This is the key to implementing IIoT (Industrial Internet of Things): digitalization should not be adopted simply for its own sake. It must add value by improving processes within the production system or, in some cases, by facilitating these processes in the first place.

Fig. 1: IIoT software and lean manufacturing optimize cooperation on the shop floor

About Bosch Connected Industry

Bosch Connected Industry offers software and services for Industry 4.0 in a comprehensive portfolio under the name NEXEED. Based on the needs of its own Bosch plants and warehouses, NEXEED optimizes manufacturing and logistics processes in terms of transparency, agility, costs, quality and time and supports employees in their daily work. With NEXEED, Bosch Connected Industry enables the digitalization of the entire value chain. Employees at locations in Germany, Hungary and China are continuously developing the portfolio. In addition to the interoperable Nexeed Industrial Application System for connected manufacturing, customers also receive individual solutions for specific applications, retrofit solutions for existing plants, as well as a wide range of services such as consulting, technical support, employee qualification, and implementation assistance.

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