

DIGITAL SHOP FLOOR MANAGEMENT

THE INDUSTRY 4.0 ENTRY-LEVEL DRUG

Shopfloor Management is the central management tool in the context of Lean Production. Extended by digital technologies, it not only increases transparency and accelerates on-site problem solving, but also provides the ideal starting point for the transformation of the manufacturing system into a Smart Factory.

THE TIME OF EXCEL LISTS IS OVER

Lean is classically an analog culture. It uses notes, handwritten records and employee observations to optimize processes at the shop floor level. But with the increasing networking of machines and the availability of process-relevant data in real time, there are completely new possibilities for process control and accelerated problem solving within the framework of the PDCA cycle. This includes, among other things:

Improved process control and faster detection of deviations in the process based on real-time data and automatic alerts to employees.

Improved target cascading through system-supported and stored KPI pyramids with the ability to provide aggregated metrics in real time and share them with relevant stakeholders at all levels.

Detection of micro faults and fault patterns that would not be detectable by manual readout and rigid limit values alone as a prerequisite for predictive fault management, especially in OEE-sensitive areas.

Optimized measure management with the help of measure or cause libraries, which support the employee in the elimination of faults or the evaluation of fault patterns or cause analysis in the sense of prescriptive logic.

Storage of workflows for adjacent, manufacturing-related areas, such as maintenance or logistics and tracking of measures.

Support of the global knowledge management by comparability of the process key figures over common system and sharing of Best Practices and problem solution measures over common digital platform.

CREATE ANALOG AND DIGITAL PREREQUISITES

Despite extensive feature sets, Digital Shop Floor Management should not be misunderstood as a turnkey tool. Rather, it is an extension of classic shop floor management with the integration of digital technologies. This has two implications: On the one hand, the prerequisite is an already functioning analog SFM and a corre-

spondingly high degree of lean maturity. Only if key performance indicator systems, measure management and shift plans are defined uniformly, they can be transferred to a digital system. On the other hand, the provision of the required technical infrastructure and architecture, consisting of sensors, retrofit elements, edge elements, gateways, intermediate layer, which collects data, etc., can also be integrated.

USER CENTERING AS A SUCCESS FACTOR

A decisive factor for the success of the solution is the close involvement of the users within the framework of an agile development process. For example, user stories can help to optimally adapt the systems used to the requirements and problems of the shop floor employees. This includes, for example, the provision of process-relevant key figures at the right time in the process. An information overload is to be avoided as well as the wrong focusing on target figures that cannot be influenced by the employee on site. However, the system should be flexible enough so that the displayed process data - e.g. via wearables or data glasses - can be adapted ad hoc depending on the current focus of the process optimization (e.g. OEE optimization or quality assurance).

ENTRY INTO INDUSTRY 4.0

If the prerequisites are met, digital shop floor management offers the ideal framework for the digitization of manufacturing processes in the sense of a Smart Factory. Nowhere else, the path from data acquisition to data use in the sense of process improvement is as short as in shop floor management. In addition, the possible applications within the framework of digital shop floor management are freely scalable and can "grow" with the further development of digital technologies in the company: from the pure provision of data to increase process transparency to the preparation in the form of aggregated key figures to prescriptive solutions for the automation of action management. The special: From the very first stage of digital expansion (see diagram), digital shop floor management can contribute to increasing productivity.