

"THE MOST IMPORTANT BENEFIT IS TRANSPARENCY"

Interview with Thomas Kreuzer, Project Manager, Head of Corporate Industrial Engineering, Balluff GmbH

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DIALOG: *Mr. Kreuzer, you have reduced lead times on your production line for inductive sensors to three days. With over 1,000 different types of product and a production volume of 300,000 sensors a year, that has a considerable effect on efficiency and productivity. What were the decisive levers for this?*

TK: Owing to the large number of different product variants, we first evaluated a number of theoretically possible production approaches – and we did this in an open process. It was important for us to identify ideal modules and to combine them in our own concept. Two approaches proved to be especially helpful in this process. Firstly, the arrangement of the production line on the principle of directed flow where, according to lean philosophy, no return to the work steps is allowed. We combined this, secondly, with the workshop principle, which allowed us to subdivide the individual process steps into three sections.

This new concept gave us an ideal point of departure – more flexibility, greater scalability and a decoupling from work processes. This above all allowed us to accomplish implementation step by step and to tackle it while production was running. Decisive factors for the success of the project were the four fields of action of our new production concept: a new workplace and machine changeover concept, a flow-oriented layout with designated buffer areas, visual management of production orders and the stabilization of the new concept via shopfloor management.

DIALOG: *What concrete steps did you undertake?*

TK: There was a clear focus on the strict separation of value creation and waste. On the one hand, this applies to questions that arise as a general principle when designing the production workplace, particularly from the perspective of 5S methodology – how do we design the ideal workplace from an ergonomic point of view? How can we avoid unnecessary paths, and what equipment do we need to provide at the workplace?

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We introduced standardized workplaces with a high level of visualization as a basis. This means, for example, that the spaces for all the tools required were marked with photographs as placeholders. Line operatives as well as so-called line monitors, also called hanchos in LEAN terminology, can immediately see which tool or consumable material is missing for the set work order.

It is possible to implement this principle systematically right down to the smallest area. Kanban cards are used to indicate when an operative has no more small parts for assembly at the workplace. The line monitor recognizes the need for fresh supplies and replenishes the stock of consumable material. This avoids the value-adding operation being interrupted by a walk to the stores, a search for parts, etc. – it is a simple process based on kanban logic that results in significant overall time savings along the entire line.

The line monitor's tasks, however, entail much more than this. They not only take set orders to the workplace but also establish the logistical connection between the work processes of the different workplaces and recognize deviations from the defined standard. They also take part in the daily shopfloor meetings and in the weekly 5S audits.

DIALOG: *The line monitors thus play a central and critical role in your concept. But how can the line monitors retain an overview of the many details at each workplace?*

TK: We actually bundle all the waste processes into the line monitor function. This is made possible by the concept of external set-up, where the line monitor "sets up" a customer order with the required materials and equipment on a service cart, which is then used to complement the standardized workplaces. The relevant set-up status is displayed for each workplace using illuminated signs. A further element of this concept is decoupling the production order from the operative and workplace, which not only makes production more transparent but also makes the overall production process much more reliable. Production orders continue to "flow" through the system, for example when a colleague is absent – as if it were independent of individual operatives.

"Decoupling workplace and production order makes production more flexible."



DIALOG: *But this functional aspect is presumably not enough?*

TK: No, of course not. The overall process can only work in conjunction with human intelligence and problem-solving skills. And here the focus is on the hancho again. In Japanese the term stands for a "team leader" who, as process observer and coordinator, is responsible for the daily improvement process in his team. He leads using targets, solves problems systematically using PDCA and also develops and monitors standards. The role requires strong social as well as technical skills. He thus provides a central link between production line operatives and management.

DIALOG: *You introduced a flow-oriented layout in conjunction with the redesign of the workplaces. What benefits does that provide?*

TK: According to this principle, operatives produce their orders in the exact sequence dictated by the market or released by the scheduling team. The focus is on article lead time. Improvements at individual points in this process result in considerable overall time savings. For example, idle times in the process are visualized, and this encourages operatives to keep to the production sequence.

The most significant benefit of the flow-oriented layout is the transparency that is created at every step of the process. Return steps in the work sequence do not occur. The work steps are sequential in one direction only, the direction of flow. This makes the status of an order clearly visible for everyone. Free workplaces are transparent, disruptions in the production process can be identified immediately and, thanks to a defined process, result in an immediate response.

In the next step we will be extending this transparency to other areas of production. We use jointly developed indicators to provide senior managers with clear orientation about shopfloor management. In my experience, the "problems are jewels" approach is extremely helpful. It promotes open, trusting communication that identifies and eliminates weaknesses in the production process. It provides an important basis on the way to a self-learning organization.

About the Balluff Company

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