



DATA-DRIVEN PERFORMANCE OPTIMIZATION OF MANUFACTURING SYSTEMS

Current situation

The need to optimize a running manufacturing system soon becomes apparent, for example, if process times start fluctuating. Less obvious are short-time stops or synchronization delays, which are difficult to detect or track. These could impair performance and even cause a loss of availability.

Solution

To prevent this, the first step is to identify optimization potential by increasing transparency, while at the same time quantifying this potential in order to assess the cost-benefit ratio. Our data-driven process acquisition method, which automatically captures your value-adding process using both live and historical data, makes this possible. The analysis models the behavior

of the manufacturing system, which enables performance losses to be identified right down to PLC signal level and thus directly assigned to the system components causing them.

Our approach

The following two concepts are based on this approach, depending on your manufacturing system:

- **Bottleneck analysis**

The analysis focuses on interlinked manufacturing equipment and considers not only static but also dynamic bottlenecks.

- **Machine benchmark**

In this case, stand-alone machines are analyzed; these are either compared

Fraunhofer Institute for Manufacturing Engineering and Automation IPA

Nobelstrasse 12
70569 Stuttgart | Germany

Contact

Brandon Sai
Phone +49 711 970-1918
brandon.sai@ipa.fraunhofer.de

www.ipa.fraunhofer.de/en/autonomous_production_optimization

with each other over time or compared with machines of the same design used to manufacture similar products. In both concepts, all production sub-processes are captured and merged to form a best-performance combination. This combination can then be used to optimize the analyzed machine. The IPA spin-off "plus10 GmbH" evolved as a result of our long-standing expertise in this area of data-driven performance optimization.

Your advantage

With data-driven performance optimization, you can quickly identify the main causes of performance losses and fluctuating process times as well as short-term stops and synchronization losses. This is achieved with little effort and without interfering with the running system. Automated and based on your data, improvement potential can not only be identified, but also directly assigned to the components concerned. In addition, you can continuously detect dynamic as well as static bottlenecks in the system.

References

Over the past few years, we have carried out highly successful projects, among others with the following companies:

- **Freudenberg Sealing Technologies GmbH & Co. KG**
- **SCHOTT Switzerland AG**
- **Haselmeier GmbH**

Cooperation formats

We offer data-driven performance optimization content in a variety of formats:

- **Training programs**
Empowering your employees to use data-driven production optimization methods
- **Consulting**
Concept development, support in implementing data-driven production optimization methods for a specific use case defined by you
- **Pilot project / development project**
Implementation of a solution for your use case

We increase your overall equipment effectiveness (OEE).

Get in touch with us!