

## Ideal manufacturing of optical systems



### Auf einen Blick

- Supply chain configuration in the production of optical systems
- Status quo in the production of precision optics
- Production Planning and Control (PPS)

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**IFA | What will the production of optical systems look like in the future? In the PhoenixD cluster of excellence, scientists are not only concerned with the further development of production technology, but also with the design of supply chains and production planning and control (PPC).**

Technological innovations in production engineering fundamentally change the process workflows in production. This also applies to the production of optical systems. The Institute of Production Systems and Logistics (IFA) is conducting research within the PhoenixD Cluster of Excellence to investigate the influence of manufacturing technology advances on supply chain design and production planning and control (PPC).

Today, the production of precision optics is characterised by a low degree of automation, multi-stage processes and high scrap rates. In a first step, the scientists at IFA are therefore investigating the status quo of the production of complex optical systems. They want to identify potential challenges and draw conclusions as to how the production system could be designed in the future and develop alternative supply chain configurations.

### Influence of digital twins

In the future, the digital twin, i.e. the virtual model of a product, will be of particular importance for production planning and control (PPC). The use of digital twins can improve quality control, for example, since quality-relevant deviations can be identified during the running process without manual intervention. Digital twins also increase transparency in order monitoring. The causes of low logistical performance can thus be better checked: deviating processing times, changes in the sequence of processing production orders or

disruptions in the material flow are automatically detected and forwarded.

### **Configuration of supply chains**

The supply chain includes all organizational units of a production system. In production management, the configuration of supply chains can be divided into two parts: on the one hand, the supply chain structure must be designed and, for example in the context of the order processing strategy, the location of the order penetration point or the quantity of storage processes in the production must be determined. Secondly, the PPC must be configured and thus adapted to prevailing conditions. It is necessary to check which procedures can be used, for example, for the order generation and how safety stocks or times should be dimensioned.

The scientists at the IFA first want to develop a production control logic that takes into account high scrap rates and complex assembly processes. Their goal in the PhoenixD cluster of excellence is to enable an efficient organization of the targeted production system with regard to supply chain configuration - and thus make their contribution to the efficient production of optical systems.

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