Closed Loop: Simulating, planning and managing the digital factory

Wednesday 24 May, 2023

The factory of the future is digital and relies on integrated, rather than isolated, solutions. The software companies DUALIS GmbH IT Solution (www.dualis-it.de) and iTAC Software AG (www.itacsoftware.com) developed a holistic digitalization approach for greater efficiency, flexibility and quality in manufacturing. In the closed loop model, simulation, APS and MES/MOM are closely interlinked and interact with each other. This means, for example, that manufacturing processes can be optimized end-to-end. At the same time, costs and risks can be minimized.

One element of the holistic digitization approach is the digital twin. Using the 3D simulation platform Visual Components, which is supplied by DUALIS, users can create digital twins of their entire production and simulate material and process flows. This allows systems, components, and processes to be tested before they are used in practice, "what-if" scenarios to be run through and errors to be minimized.

Based on these simulation results, a model for realistic production planning can be generated with the GANTTPLAN advanced planning and scheduling system (APS) from DUALIS. The APS carries out planning across departments and takes the entire value chain into account.

At the same time, the data from the digital twin is transferred directly to iTAC Software AG's iTAC.MOM.Suite manufacturing operations management system. This forms the necessary interface between production and IT systems and enables real-time monitoring of production processes. If the MOM knows the current state, the APS can precisely calculate the future.

This marks the closed loop approach: the real data from the MOM and APS system is sent back to the simulation for continuous optimization of the process flows. Changes in key figures and throughputs can then be viewed and evaluated.

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