



Engineering and Integration
Services

Optimization of logistics processes based on simulation and AI

Digital Factory Optimization for Logistics

The optimization of production environments is extremely complex due to various parameters that must be considered (e.g. production logistics, shift schedules and manufacturing sequences). The physical or planned plant needs to be modeled and simulated in order to predict the optimum for best possible production based on artificial intelligence. By combining simulation and artificial intelligence, Digital Factory Optimization for Logistics unleashes optimization potential in your plant.

Convincing value-adds



Optimize plant logistics and resources

Uncover optimization potential by using a Digital Twin connected to an AI algorithm.



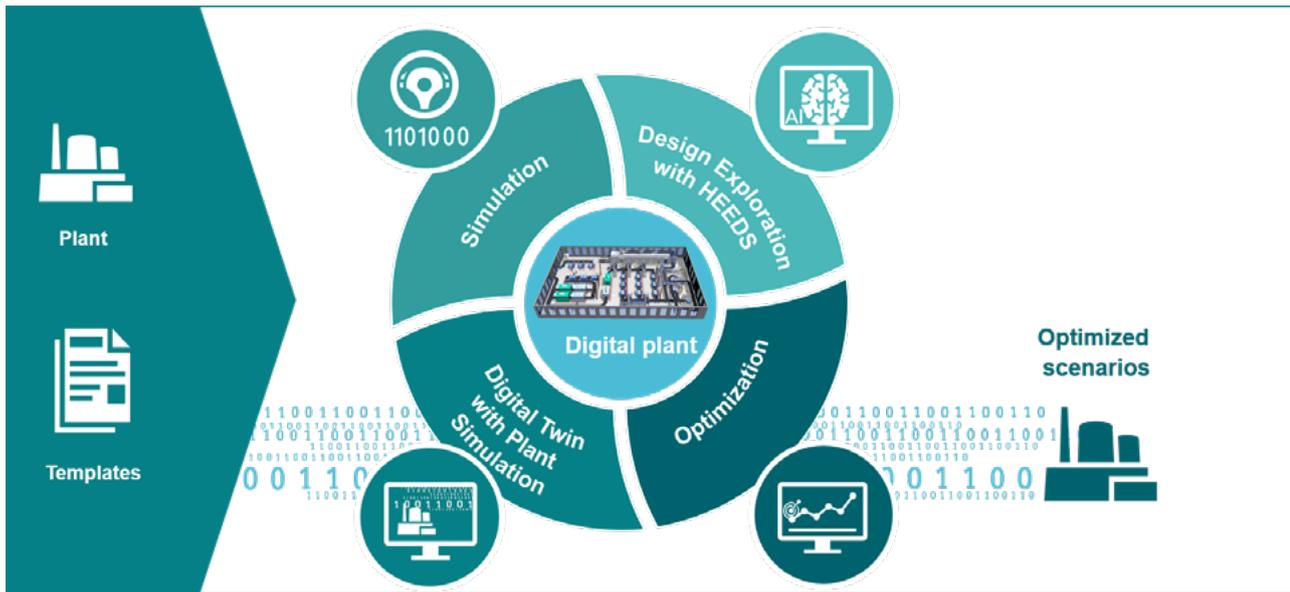
Keep running costs low

Reduce costs by optimizing logistic processes (e.g. production logistics, shift schedules and manufacturing sequences).



Increase efficiency

Increase CAPEX, optimize work in progress and purchase pattern.



Complex simulation processes for logistics can be optimized by closed loop simulation based on artificial intelligence

Project steps to optimize production environments:

Digital Factory Optimization for Logistics unleashes optimization potential in your plant by building the Digital Twin of production logistics. The solution is implemented with four steps. The sequence and number of steps may vary.

- **Digital Twin with Plant Simulation**
Workshop to fully understand your production processes and to pinpoint your challenges as basis for simulation model development.

- **Simulation**
We test and evaluate different scenarios in the virtual world.
- **Design Exploration with HEEDS**
For finding the optimal solution, multiple parameters have to be considered. To ensure that, the Digital Twin gets connected to analysis algorithms: Leveraging AI and data analytics, the software tool HEEDS generates and tests thousands of possible scenarios in the virtual world.

- **Optimization**
We set up specific optimization use cases in the software tool HEEDS to identify the best solution – the optimum for best possible production. The optimal parameter set can then be evaluated in the real production environment.

Siemens device factory Erlangen (GWE), Germany – Simulation-driven optimization of a production line

The GWE in Erlangen is a large plant for production of controls. The main objective was to uncover the full potential of an existing production line using a Digital Twin connected to an AI algorithm.



- A simulation model of relevant parts was created and compared to the reality to ensure the model is accurate.
- Optimized scenarios were identified using a Digital Twin connected to an AI algorithm.
- Facts that speak for themselves: 17% less material required at peak times, 42% less containers around the line, which both indicate a major relief for the logistics system of the plant and a possible reduction of production time by 20 minutes each day.

Published by Siemens AG

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Customer Services
P.O. Box 31 80
91050 Erlangen, Germany

For the U.S. published by
Siemens Industry Inc.
100 Technology Drive
Alpharetta, GA 30005
United States

Article No: DICS-B10064-00-7600
DA 0421 PDF
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