

The comprehensive digital twin for intralogistics

- **Digitalization in intralogistics as decisive competitive advantage**
- **Leveraging the full potential of data from combining the real and digital world**
- **Using the Digital Enterprise Portfolio for machine builders and plant operators along the entire intralogistics value chain**

The intralogistics industry is facing new challenges: The Covid 19 pandemic has changed markets and requirements within a short period of time and the industry must cope with a rapidly growing e-commerce. Growing inventory turnover rates with ever-shorter storage periods, small order quantities with fast delivery times, increasing return rates, and increased delivery quantities on short notice all require flexible, scalable intralogistics processes. The new demands can be met with the help of digitalization and automation. Siemens brings together the data generated in the process in a continuous loop between the real and digital worlds. This enables intralogistics companies to better understand and use data. Traditional silos between previously separate areas break down and new opportunities for sustainable and flexible processes are created. Accordingly, employees in intralogistics companies can make appropriate decisions based on data and react faster to changes.

The digital twin

With the Digital Enterprise Portfolio, Siemens supports machine builders and operators of logistics centers on the path to digital transformation. The end-to-end portfolio consists of software-based, seamlessly integrated automation and drive systems that can be used to equip central logistics center technologies such as automated guided vehicles (AGV), conveyor technology and automated storage systems. In addition, the concept of the digital twin provides a closed loop between the digital world of planning and the real world of operations and performance. For example, the digital twin of a logistics center's operation can be designed, simulated, and verified with Tecnomatix Plant Simulation, allowing all intralogistics processes to be optimized before the physical

realization begins. It allows the simulation of the entire value chain of a logistics center, which can thus be designed efficiently. With a digital twin of material transport systems - be they manual, automated or a combination of both - they can also be digitally planned, simulated, predicted and optimized. For this purpose, Siemens offers solutions such as Tecnomatix Process Simulate, NX Mechatronics Concept Designer, Automation Designer or the TIA Portal including drive integration with Sinamics Startdrive. The seamless interaction of the real and digital worlds thus consistently increases the efficiency of the building and operation of machines and plants, minimizes error rates and downtimes, shortens development times, and enables sustainably increased competitiveness.

Automated guided vehicles

AGVs play an important role in making logistics centers scalable and dynamic. The Simove AGV system platform combines automation and drive components from Siemens with modular and pre-tested software. It enables machine builders and operators of logistics center to automate their AGV application "out-of-the-box". Simove supports the integration of third-party applications through standardized and open interfaces. AGV manufacturers thus benefit from reduced planning and engineering efforts as well as shortened commissioning times. Operators can use Simove to easily configure different AGVs for their specific requirements. Thanks to standardized automation and drive components, Simove can be seamlessly integrated into existing logistics and production environments.

Automated storage systems

Integrated automation solutions based on Simatic controllers and Sinamics drives enable higher system efficiency for automated storage systems. In addition, compact servo motors with high power density allow a lean, future-proof system design with higher payload. In addition, energy recovery options, multi-axis drives with shared DC bus, energy storage options, and energy-optimized motion and high-efficiency IE3 and IE4 motors and gearmotors reduce the energy requirements of automated storage systems. Speed-controlled drives with high dynamics and positioning accuracy use software-control to avoid slow-downs due to vibrations and thus optimize throughput.

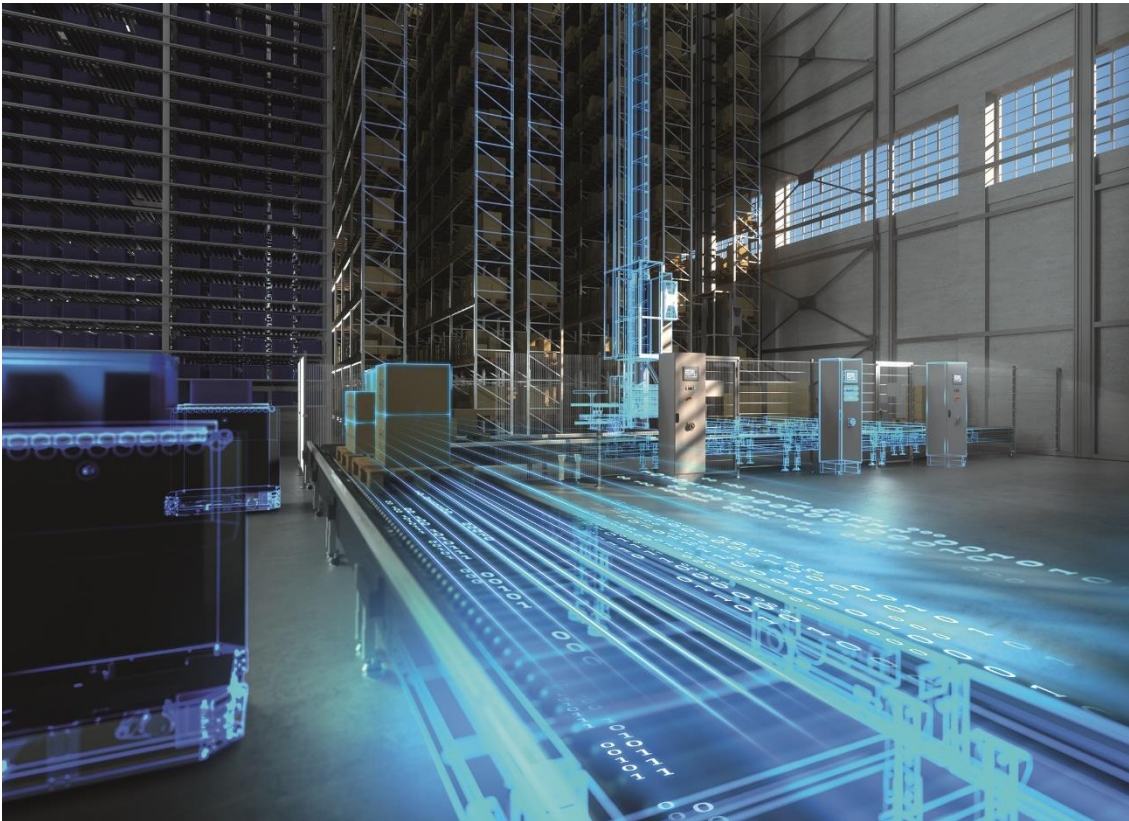
Efficient conveying and sorting systems

For the design and application of efficient conveying and sorting systems, Siemens offers central and distributed Sinamics drive systems with various mounting options

and functions. The distributed types are available motor-mounted and wall-mounted with integrated I/Os for sensors and actuators. For automation, Siemens offers a scalable portfolio for all performance and complexity requirements, for centralized use in the control cabinet or distributed in modules in the field. In addition to speed-optimized drives, there is also energy-optimized operation of the drives, optionally with energy recovery for reciprocators, as well as highly efficient IE3 and IE4 motors and gearmotors. Safety Integrated enables a reliable and flexible concept for the functional safety of machines or plants with very little effort for engineering and commissioning.

Innovations and highlights from the Digital Enterprise portfolio for intralogistics:

- **Siemens makes first industrial 5G router available** <https://sie.ag/3gjF6sX>
- **Wi-Fi 6 for industry: Siemens expands its network portfolio**
<https://sie.ag/3mpvG1u>
- **Quick and easy simulation of drives with Sinamics DriveSim Basic**
<https://sie.ag/2Q141rG>
- **New Sinamics G115D distributed drive system specifically designed for conveyor applications** <https://sie.ag/3dZF4oo>



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For further information please see www.siemens.com/intralogistics

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