SIEMENS

Press

Nuremberg, 13 April 2023

Industrial Operations X brings cutting-edge IT and AI to industrial automation

- **Siemens expands Siemens Xcelerator open digital business platform with launch of Industrial Operations X**
- **Uniquely combining the real and digital worlds, Siemens continues to strengthen its technological leadership in automation and industrial software**
- **Production processes to become more efficient and highly adaptive**
- **Includes launch of first fully virtual controller**

Siemens introduces Industrial Operations X, an open and interoperable portfolio for automating and operating industrial production. The new portfolio is part of Siemens Xcelerator, the open digital business platform comprising a portfolio of software and connected hardware, an ecosystem of partners, and a marketplace.

Industrial Operations X is the solution for production engineering, execution, and optimization in the new world of IT/OT convergence. It focuses on integrating cutting-edge IT capabilities and proven methods from software operations in the world of automation: low code, edge, cloud computing and artificial intelligence (AI) are combined with industry-leading automation technology and digital services. The result: plants and production lines become more flexible and modular so customers can react to changes at the click of a button.

Bringing cutting-edge IT and software capabilities into automation

A single Industry 4.0 factory generates an average of 2,200 terabytes of data every month. Industrial Operations X solutions make this data actionable, for example, by leveraging AI analysis capabilities. Independent studies suggest that a digitally

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Reference number: HQDIPR202304126681EN

enabled factory delivers production increases of up to 30 percent. To unlock this potential, Siemens is showcasing several world premieres at Hannover Messe:

- **Virtualizing automation: Introducing a fully virtual controller**
  Based on proven functionalities of the SIMATIC S7-1500, the virtual programmable logic controller (PLC) is hardware-independent, allowing applications to be centrally managed and flexibly modified to meet changing customer needs. PLC projects can be scaled with virtual control and easily integrated into other IT offerings through open data interfaces.
- **Making automation programmable with IT code: Simatic AX**
  Simatic AX provides IT professionals with a familiar development environment based on Visual Studio Code and version control via GIT and others. Simatic AX is cloud-based and is available as a service.
- **Visualization for the Industrial Edge environment: WinCC Unified for Industrial Edge**
  With Industrial Edge, administering software in machines is easier, more flexible, and more secure. A variety of apps is already available, focused on acquisition, preprocessing and analysis of machine or plant data.

Siemens will continuously integrate the latest technological IT advances into existing automation solutions (like our SIMATIC S7, SIMATIC WinCC, SIMATIC PCS neo, SINUMERIK). Industrial customers will also benefit from a wide spectrum of interoperable offerings from Siemens and a large community of partners.

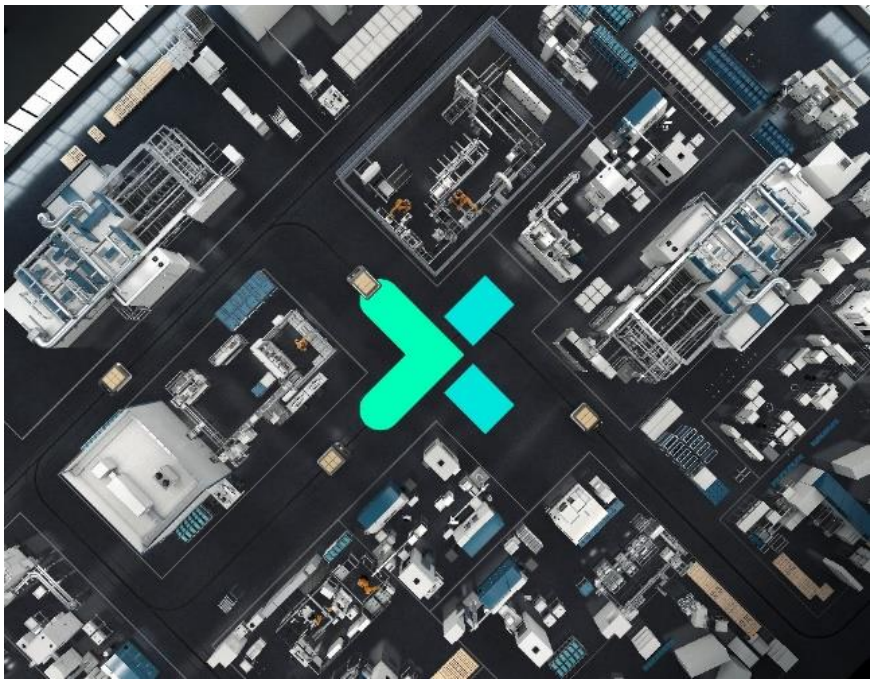
"With Industrial Operations X, we make OT adaptable at the speed of software," says Cedrik Neike, Member of the Managing Board of Siemens AG and CEO Digital Industries. “And by deploying AI on the shop floor, we enable manufacturers to access the terabytes of automation data locked inside their factories so that they can ultimately become more sustainable.”

Insights Hub: Turning Industrial IoT into actionable insights

Siemens will integrate MindSphere in the core of our operations software portfolio with an even stronger focus on delivering business value from IoT data. To emphasize our commitment to application value from industrial IoT, Siemens is evolving MindSphere (including partners and developers worldwide) into Insights

Hub as part of Industrial Operations X and the Siemens Xcelerator ecosystem. Insights Hub highlights the focus on empowering smart manufacturing to generate actionable insights from asset and operations data, by analyzing data locally or in the cloud, and transforming it into value. With Insights Hub, Siemens gives its customers proven industrial IoT solutions that include a variety of applications, like Insights Hub Quality Prediction for improving quality inspection and rework processes.

With the launch of Industrial Operations X, Siemens makes industrial production processes more adaptable, autonomous, and resilient so that they can react fast to changes. This enables customers large and small to become sustainable digital enterprises.



Industrial Operations X is a continuously growing interoperable portfolio of products and services for product engineering, execution, and optimization. This offering brings more information technology (IT) and software capabilities to automation and production operations, making industrial operations more adaptable and people centric.

This press release and press photos can be found at:
sie.ag/press-hm23

For more information on Industrial Operations X:
www.siemens.com/industrial-operations-x

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LinkedIn Newsletter (EN only): Digital Enterprise – Accelerating the digital transformation

Siemens Digital Industries (DI) is an innovation leader in automation and digitalization. In close cooperation with partners and customers, DI is driving digital transformation in the process and manufacturing industry. With its Digital Enterprise portfolio, Siemens offers companies of all sizes end-to-end products, solutions and services for the integration and digitalization of the entire value chain. Optimized for the specific requirements of each industry, the unique portfolio enables customers to increase their productivity and flexibility. DI is continuously expanding its portfolio through innovations and the integration of future technologies. Siemens Digital Industries is headquartered in Nuremberg and employs around 72,000 people worldwide.

The **Siemens AG** (Berlin and Munich) is a technology company with a focus on industry, infrastructure, mobility and health. Resource-efficient factories, resilient supply chains, smart buildings and power grids, low-emission and comfortable trains, and advanced healthcare – the company supports its customers with technologies that deliver tangible benefits. By combining the real and digital worlds, Siemens empowers its customers to transform their industries and markets, improving everyday lives for billions of people. Siemens is the majority owner of the listed company Siemens Healthineers – a global leader in medical technology that is shaping the future of healthcare. In addition, Siemens holds a minority stake in the listed Siemens Energy, one of the world's leading companies in power transmission and generation.
In fiscal 2022, which ended on September 30, 2022, the Siemens Group generated revenue of €72.0 billion and net income of €4.4 billion. As of 30.09.2022, the company had around 311,000 employees worldwide. For more information, see www.siemens.com on the Internet.

Background

A number of use cases at the Siemens booth at the Hannover Messe will demonstrate how the Industrial Operations X portfolio effectively solves a wide variety of industrial challenges:

- An urban farming company has automated its globally distributed greenhouses – including lighting and nutrient supply – with classic OT solutions (TIA Portal for engineering S7-1516). But regularly changing the seedlings means changes in automation. However, the company cannot invest indefinitely in large automation packages.
  Industrial Operations X: With the **first virtual controller from Siemens** that will be introduced at Hannover Messe, the company can optimally select what it needs for each specific purpose. If it needs more functionalities later, they can simply be deployed remotely across all greenhouses via Industrial Edge. The company is now prepared for all eventualities without having to immediately invest in a complete software package or comprehensively dimensioned hardware controls. Easy-to-use engineering tools that are based on methods from the software world (like **Simatic AX**) also allow the company's personnel with increasingly varied OT and IT qualifications to collaborate intuitively in the automation world.

- To engineer a process plant, project participants from different departments, disciplines, and locations need to be able to work together.
  Industrial Operations X: With **SIMATIC PCS neo,** users can collaborate entirely on the Web right from the start. In the future, this will be made even easier with cloud-based access to engineering data in the project, if required. The software will be available as a service and will enable plant personnel to collaborate in real time and with consistent data. This means that the engineering environment will be ready to go in a few minutes. The parallel collaboration of several users enables optimal engineering workflows with low entry costs, and system administration can be managed centrally.

- At a manufacturing company, the operators on the factory floor know their machines inside-out. This allows them to detect when a machine is no longer

running smoothly and maintenance is needed – but they don't have an overview of the entire plant.
Industrial Operations X: **Senseye Predictive Maintenance** offers an AI-based solution with algorithms and data analyses specifically for predictive maintenance (automatically displays across entire plants where the parameters are changing and therefore a failure can be expected). This lets employees – even those with no automation experience – to recognize where measures are required. And this can be implemented across entire plants and locations: in other words, "at scale." The solution uses data from existing automation technologies so that no intervention in the operating production systems is necessary.

- With **Analyze MyDrives**, machine operators can monitor the drive components of their machines. The application collects and evaluates all operating data. In the application, you can evaluate and visualize all parameters and define threshold values. By continuously monitoring current consumption, torque, and frequency, the actual need for maintenance can be identified. The machine operator is informed about critical operating states in the drive train of the machine, and the machine builder can offer his service as required: Maintaining machines at fixed intervals is no longer necessary. This increases machine utilization and productivity and reduces maintenance intervals and downtime. Analyze MyDrives Edge contains the basic functionalities of the cloud-based application and other intelligent features based on a high-frequency data exchange. Machine learning and AI algorithms underlying the edge application identify patterns and recognize anomalies and their causes, and this provides timely indications of potential maintenance needs. The app also contains a feature that ensures that the energy consumption of the entire drive system is transparent: It shows how efficiently the system is running, its energy consumption and operating costs, and its CO2 footprint. Drive settings can therefore be optimized to meet the customer's precise needs.