

SPS 2019, Hall 11

Siemens Industrial Edge takes the benefits of the Cloud to field level

- **Siemens Industrial Edge closes the gap between local and Cloud computing and enables high-frequency data exchange at field level**
- **Edge apps for intelligent data analysis and increased productivity**
- **Industrial Edge includes a backend, Edge devices and Edge apps in Edge Management**

With Siemens Industrial Edge, Siemens offers a digitalization solution that adds machine-level data processing to automation devices, by taking the intelligence of Edge computing and thus, sophisticated analytics securely to manufacturing level. Siemens Industrial Edge offers users the opportunity to execute a wide range of descriptive, diagnostic, predictive and prescriptive analytics applications. Cloud connectivity is used in conjunction with Edge apps from Siemens, from third-party providers or from users themselves in an integrated hardware and software ecosystem for automation components.

With Siemens Industrial Edge, Siemens offers users the opportunity to close the gap between conventional local data processing and Cloud-based data processing, depending on individual requirements. With Edge computing, large volumes of data can be processed locally almost in real time. Siemens provides users with a broad spectrum of applications for this, including data processing, data visualization via web server, data transmission to the Cloud or IT infrastructure and fast innovation cycles for app development. In addition, storage and transmission costs are reduced for users because large volumes of data are preprocessed, and only relevant data is then transmitted to a Cloud or IT infrastructure. Siemens Industrial Edge supports Cloud transmission protocols for Mindsphere, the open, cloud-based operating system from Siemens as well as Message Queuing Telemetry Transport (MQTT). This makes data

transmission secure and effective.

Via the Edge Management System, users can install software apps (Edge apps) from the Edge App Store of the backend system, e.g. Mindsphere, on the desired Edge devices. Edge devices are equipped with Edge Runtime software, which guarantees connectivity both for data capture from the connected automation and for Edge Management and which features a driver toolbox for accessing device functions. Edge Runtime software also ensures a protected app environment for executing functions on Edge devices. Edge apps for Siemens Industrial Edge are provided both by Siemens and by third-party providers. It is also possible for users to develop their own Edge apps tailored to their individual requirements.

Siemens Industrial Edge: Industrial Edge Management, Edge devices, Edge apps

Siemens Industrial Edge comprises the Industrial Edge Management System, Edge devices and Edge apps. The Industrial Edge Management System can be used to manage all connected Edge devices centrally and to monitor their condition. In addition, Edge apps are always distributed to Industrial Edge devices efficiently and securely in the latest version. Applications can be installed on Edge devices regardless of the machine operating state without adverse effects. Apps for Siemens Industrial Edge can be provided both by Siemens and by third-party providers. This means that users and machine builders also have the opportunity to develop their own applications, which are tailored to the individual requirements of their machines.

With the acquisition of US startup Pixeom, Siemens has obtained components for Edge Runtime for apps as well as for Device Management as part of the Siemens Industrial Edge ecosystem. The technology developed by Pixeom based on the Docker IT standard offers open interfaces e.g. for connection to the Mindsphere App Store, for the management of third-party hardware and for the creation of apps by Siemens customers. The Edge apps are offered via a marketplace in Mindsphere. The operating system of Siemens Industrial Edge is integrated in a universal security concept. It enables the stable operation of one or more apps in parallel and also ensures a protected software environment for the execution of applications on Edge devices.

Maximum flexibility and productivity for manufacturing plants across the entire life cycle

Industrial Edge with Simatic offers Siemens users a platform that can meet the challenges of today and tomorrow. Automation components such as Simatic controllers

are additionally supported by Edge devices, enabling larger volumes of plant data to be processed profitably and providing vital information for the continuous improvement of productivity. At the same time, new applications such as condition monitoring or predictive maintenance are gaining ground in conventional automation technology. Furthermore, Edge computing offers a previously unattainable level of flexibility: plants can be kept up to date at all times via functional, feedback-free updates even for the plant life cycles expected in automation. Siemens users are supported in application development with frameworks and access to integrated connectivity with the world of automation. The following Edge apps are being presented at SPS 2019 for Simatic Edge:

- Simatic Notifier
- Simatic Assistant for Machines

Stable processes and increased productivity for machine tools

For machine tools, Industrial Edge with Sinumerik provides a machine-based platform for software apps, which captures, preprocesses and analyzes high-frequency data from the machine tool. In addition, complex tool paths can be calculated, and non-productive times or work area monitoring can be optimized. With Sinumerik Edge, Siemens enables machine tool users to improve workpiece and process quality, to increase machine availability and to further optimize machine processes. The following Edge apps have been presented for Sinumerik Edge:

For workpiece quality:

- Analyze MyWorkpiece /Capture
- Analyze MyWorkpiece /Toolpath
- Analyze MyWorkpiece /Monitor
- Analyze MyWorkpiece /Vision (AI-based)

For performance optimization:

- Optimize MyMachining /Magazine (AI-based)
- Optimize MyMachining /Trochoidal

For condition monitoring and process stability:

- Protect MyMachine /3D Twin
- Analyze MyMachine /Condition



This background paper and a press picture are available at
<https://sie.ag/2KOwdlQ>

For further information regarding Siemens at the SPS, please see
www.siemens.com/press/sps2019 and www.siemens.com/sps19

For further information regarding Siemens Industrial Edge, please see
www.siemens.com/industrial-edge

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