Convenient monitoring and cybersecurity

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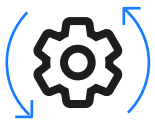
Aprotech digital service for SMK machines



AO StankoMashKompleks (SMK) manufactures and delivers metal cutting equipment with computerized numerical control (CNC) of varying complexity and adaptation. The company provides a wide assortment of products ranging from lathes and milling machines to multifunctional processing centers.

SMK makes extensive use of cloud technologies. As early as the solution commissioning stage, the company strives to provide customers with a comprehensive approach that is capable of connecting industrial machines to a cloud-based digital service. This enables real-time monitoring of equipment operation from any mobile device in any part of the world.

Objective

Current customers of SMK are predominately small- and medium-sized businesses. They normally manage one or more production facilities including a fleet of industrial machines and a diverse assortment of products involved in production.

To maximize effective use of their own industrial assets, these companies must **track and control the operational state of their equipment in real time**. However, this task is complicated by the **lack of relevant production data**. In this case, even everyday tasks require additional meetings or requests for reports on equipment workload and downtime.

There are two approaches to resolving this problem.

1

The first approach is to equip their fleet of machines with local automation tools and software. This takes a lot of time and involves huge expenses toward creating an expensive infrastructure, and creates difficulties for maintenance and operation.

2

For this reason, more and more customers are trying to avoid this approach. Instead, they prefer the second approach, which is to use **cloud-based digital services** that handle monitoring tasks much more effectively. A cloud application simplifies access to data from the entire fleet of devices connected to the service. Based on this data, a business can get a real-world picture of their entire production situation.

However, despite all its advantages, connecting equipment to clouds also poses some information security risks. High-quality cybersecurity is needed to eliminate the risks associated with compromised information transmission and potential external impacts on devices.

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Solution

Customers of SMK can purchase a machine with a preconfigured digital service to remotely track operation of the equipment and use the acquired data to promptly make production-related decisions.

The service provided by Aprotech looks as follows.

A machine securely connects to the cloud through the **Cyber Immune industrial gateway known as Kaspersky IoT Secure Gateway (KISG) 100**. It was developed by Aprotech in collaboration with Kaspersky based on the **KasperskyOS** operating system and the Siemens SIMATIC IOT2040 hardware platform.

The Cyber Immune KISG 100 with its built-in resistance against existing and currently unknown threats protects any information that traverses the gateway and ensures that its critical gateway functions are carried out under any conditions. Connected equipment is protected against external access by potential cybercriminals thanks to its unidirectional data stream (from the field level straight to the cloud).

Kaspersky IoT Secure Gateway

Kaspersky IoT Secure Gateway 100 directly communicates with an industrial machine to collect a multitude of previously unavailable operational data, preprocesses that data and forwards it over the universal OPC UA protocol to the industrial IoT platform **Siemens MindSphere**. This platform also lets you use three types of services:

- **Preconfigured services based on the MindSphere IIoT platform** prepared for quick startup and primary analytics of industrial data
- **Professional services** for industry-specific solutions
- **Custom development** services for a turnkey solution tailored to a specific customer

The **digital service for monitoring industrial machines** developed by Aprotech for the company SMK was a custom development for promptly tracking the operational state of equipment. This service consolidates data from the entire fleet of devices into one workspace and helps obtain an overall picture of the operational situation. Visualization of parameters on dashboards and diagrams helps users analyze production information more conveniently, and notifications quickly warn about an unfulfilled order or malfunction.

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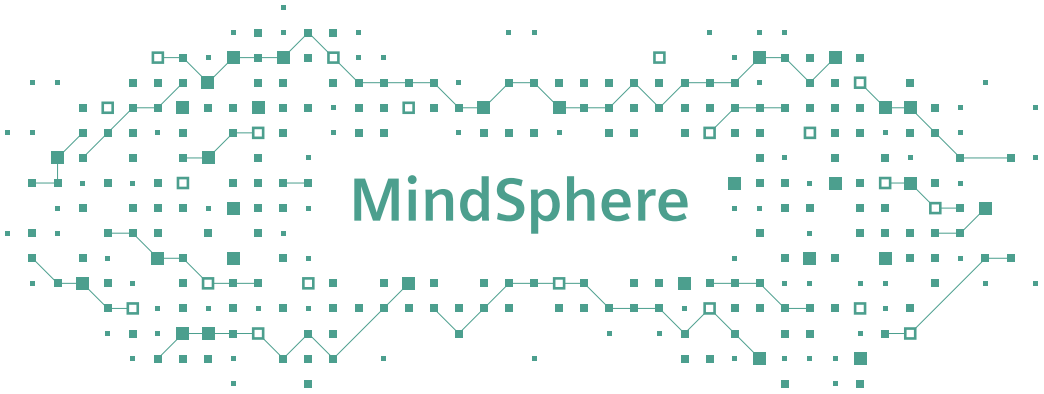
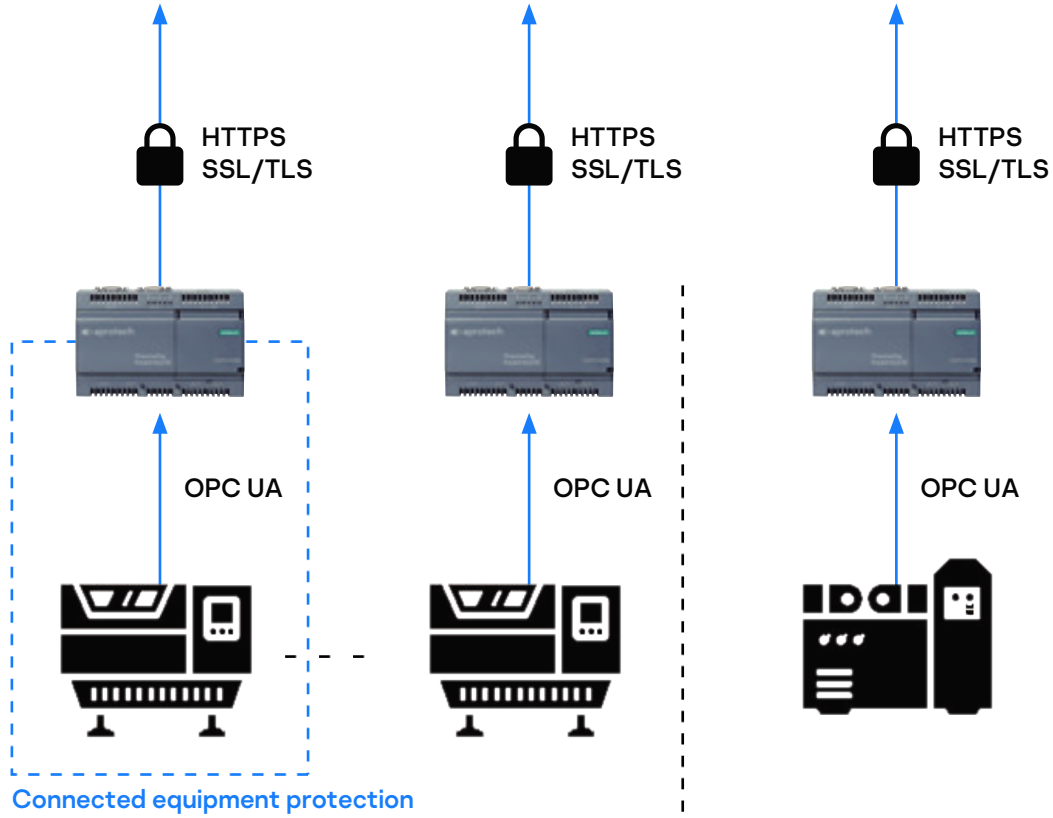
Digital services on the platform
Data monitoring and analysis



Siemens MindSphere IIoT cloud platform

Receiving and storing data in one space

Fast access to data on the platform



KISG 100 gateway
Secure transfer of data

Connection and collection of data via OPC UA

Machine tool fleet, Chelyabinsk

Lathe machining center, Tver

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Results

Connecting industrial machines to the Siemens MindSphere cloud platform via the KISG 100 gateway enables customers of SMK to increase the efficiency of their industrial processes, conveniently conduct full-scale monitoring, and better manage the operation of devices while preventing downtime and potential damage. The inherent Cyber Immunity of Kaspersky IoT Secure Gateway 100 protects data and ensures that the gateway will reliably operate even in a hostile environment.

Advantages and prospects of using this service

- High data transparency and control of the production process
- Prompt decision-making based on data in the digital service
- Scalability – flexible and planned connection of new equipment to the service. Requires minimal expenditure from the customer
- Monitoring the operation of an entire fleet of industrial machines from one app on your phone
- Building services based on collected data for various tasks
- Integration of digital services with existing internal enterprise systemsпредприятия

Project participants

AO StankoMashKompleks, or SMK (Tver Machine-tool Factory) is a leading Russian manufacturer of lathe and milling equipment with computerized numerical control (CNC) of varying complexity, dimensions and adaptations. Founded in 1999 as a company aiming to modernize heavy metal-working machinery, SMK has evolved into an industrial enterprise that ranked second in terms of quantity of produced equipment with CNC (according to the Stankoinstrument Association rating for 2018, 2019, and 2020).

R&D Adaptive Production Technology (Aprotech) is a subsidiary of Kaspersky that helps industrial enterprises effectively and securely complete their own digital transformation 4.0. This transformation is facilitated by cutting-edge software and hardware systems and vertical services based on an industrial IoT platform developed together with partners to accomplish specific production tasks.

R&D Adaptive Production Technology
(Aprotech)

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