

IOT CONNECTIVITY: 5 TIPS TO

MAKE LEGACY EQUIPMENT SMART

Open Internet of Things (IoT) operating systems are a game changer for manufacturers looking to digitalize their plants, connect their legacy equipment, and keep up with the competition.

Legacy equipment may not have the digital capabilities that are designed into today's smart machines, but that doesn't mean it's impossible to extract high-quality, meaningful data from these assets.

Many manufacturers are not realizing the full benefits of the industrial Internet of Things (IoT) because they have older machines. These machines don't have the needed sensors to track data or the necessary capabilities to easily connect the assets to a central repository. Survey respondents, from a report by consultancy firm Oliver Wyman,¹ cited difficulty connecting older equipment and a lack of skilled workers as the most common barriers to IoT implementation.

In today's world, this should no longer be a problem. There are industrial IoT platforms, such as MindSphere, that enable you to modernize your old machines. By retrofitting legacy equipment with sensors and connectivity devices, quality data can be extracted that will help you optimize the machine's productivity, as well as boost its performance and life span by introducing predictive maintenance.

Manufacturers can ease the transition to IoT-connected machines by creating a digital implementation strategy. Industry experts and consultants recommend that manufacturers consider these five tips when digitalizing their legacy equipment.

1

IDENTIFY EQUIPMENT TO MONITOR

Gaps between operational technology (OT) and information technology (IT) groups within an organization can impede the deployment process. Each function plays a critical role in the retrofitting process, but they have much different requirements. For instance, IT's top security concern typically involves the protection of data, such as intellectual property and private customer information.² OT's top priority is usually availability of the equipment or technology to ensure that production yields are not impacted by any network changes. Executive alignment on key business objectives for IoT deployments, cross-functional teams and pilot programs can help organizations ensure that IT and OT are working toward a common goal.³

2

DECIDE WHICH MACHINES TO RETROFIT

"A plant modernization using industrial IoT technologies is a multi-year journey, not some magical event," writes Stephan Ihmels, director of business development for Siemens MindSphere Americas. Ihmels recommends starting small and prioritizing the greatest pain points. Manufacturers can gain a better understanding of which machines to include in the initial deployment by conducting an audit of machines on the plant floor. The process should reveal any dormant or deactivated equipment and identify which machines are generating valuable information.⁴ Many machines produce volumes of data that organizations have never utilized. Consultancy firm Deloitte suggests working with data scientists to determine the value of different types of data.

3

WORK WITH A RECOGNIZED IOT PARTNER

Select a proven IoT solutions partner who can help launch pilot projects quickly.⁵ Established IoT providers and integrators will help you realize quick wins and minimize downtime during the implementation process. In addition to expertise and experience, Christoph Inauen, vice president of strategy for Siemens MindSphere, suggests that organizations evaluate IoT providers based on the following criteria:

Commitment: Evaluate how much of their business is related to IoT and digitalization to ensure they're committed to it for the long term.

Connectivity: Ensure their communication protocols will support the organization's production requirements.

Openness: Does the provider use global standards so machines from different vendors can communicate?

Cybersecurity: Providers should explain which security standards they're using to protect the integrity and privacy of data in motion and at rest.

Methodology: Make sure the vendor uses proven project-management and development methodologies.

4

SEEK SIMPLE CONNECTIVITY

Traditional human-machine-interface (HMI)/supervisory control and data acquisition (SCADA) software solutions often operate on limited operating systems and use proprietary technology.⁶ This lack of openness can create compatibility issues and limit flexibility.⁷ That's why it's important to seek an open solution that can communicate with various systems. For instance, MindSphere, the cloud-based IoT operating system from Siemens, uses open standards and interfaces, enabling data collection from various types of equipment from different manufacturers. This includes the OPC Unified Architecture (OPC UA) standard, a machine-to-machine communication protocol for industrial automation interoperability developed by the OPC Foundation industry consortium.

5

PRIORITIZE SECURITY

Security is the most significant challenge when connecting operational technologies to IoT networks.⁸ The addition of sensors and other smart, connected devices opens new security vulnerabilities. "Don't assume IT cybersecurity covers OT cybersecurity needs," writes Ihmels. "Anti-virus malware used in offices, for example, can interrupt precision timings that control systems need-to-function." Technology solutions should align with industry standards for communication networks and automation systems for manufacturers. For example, MindSphere employs a multilayer concept for security. All communications between different connectivity layers within MindSphere and the system platform are encrypted.



THE RETROFIT ADVANTAGE WITH MINDSPHERE

MindSphere allows manufacturers to seamlessly bring IT and OT systems together into a single platform. The open, cloud-based architecture is scalable, so manufacturers can add devices and systems to the platform as they grow. One Siemens customer in Indonesia uses MindSphere to monitor multiple legacy diesel generators in geographically dispersed facilities for potential failures.⁹ MindSphere allows the company to convert data communicated using older industrial protocols to Modbus TCP/IP. The company uses this information to optimize its maintenance schedule and minimize potential downtime.

Similar IoT initiatives often stall because manufacturers struggle to connect older machines to the digital world in a secure, seamless way. A cloud-based, open IoT operating system removes these barriers, allowing manufacturers to connect their products, plants, systems and machines without undergoing a complex, lengthy deployment process.

Cloud models "can break down informational and functional silos to provide 'single sources of truth,' and greater collaboration opportunities," writes Ihmels. "Consider, too, how cloud models can make spanning multiple plant sites possible and much easier. This helps companies not only to benchmark performance within a facility but also across sites, which can facilitate shared learning and healthy intra-company competition to improve performance."

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