Web portals play a crucial role in monitoring IIoT devices such as industrial printers, providing a user-friendly interface to track, manage and analyse data from connected sensors and machines

ADDING CONNECTIVITY TO INDUSTRIAL PRINTING

Eric Worrall, Vice-President of Products and Services at Global Graphics Software, explores the ways in which industrial printing is improving through Industry 4.0 connectivity

Eric Worrall, Vice-President of Products and Services at Global Graphics

These days, the industrial printing sector needs to connect safely with other parts of the larger production system and online cloud services. For the printing industry, getting on board with Industry 4.0 is really important. This change helps printing businesses to run more smoothly, make better decisions – based on real-time information – and even manage and fix problems from afar. This can keep companies ahead in a fast-changing market.

Industry 4.0, also known as the Fourth Industrial Revolution, represents a significant shift in the way that the industrial printing market operates. It emphasises the integration of digital technologies such as artificial intelligence (AI), robotics, cloud computing and the Internet of Things (IoT), into traditional manufacturing and industrial practices.

IoT and IIoT (Industrial IoT) are revolutionising industries – including industrial printing – by connecting physical objects with sensors and technology to share data over the internet. In industrial environments, IIoT enhances processes, using smart machines and analytics to boost efficiency, lower downtime and increase production.

For industrial printing, this translates into predictive maintenance, optimised operations and reduced waste. It also creates adaptable, efficient production lines ready for changing demands.

DIGITAL INTEGRATION STRATEGIES

Software offers different ways to connect and communicate, which can be useful for various users and purposes. One common method is through a RESTful API. This allows other companies' software to 'talk' to the
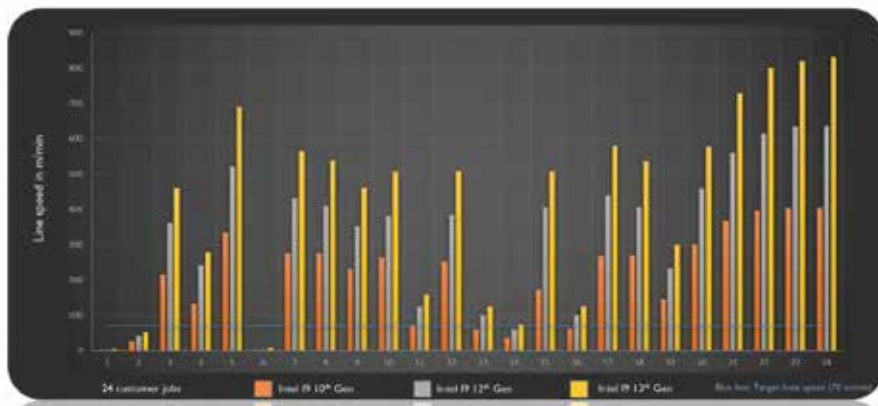
Colossus, Global Graphics Software's internal performance data system: data, shown on colour-coded dashboards, shows ongoing tests. It accelerates research and improvements, crucial for evolving Global Graphics Software's RIP performance

original software. However, using a RESTful API usually requires hiring programmers because it involves coding and understanding technical documents and examples.

Another way to connect software is by using standard, secure communication methods – widely recognised in general industry – such as Open Platform Communications Unified Architecture (OPC UA) or MQTT. These standards are part of Industry 4.0, which is about making industries smarter and more connected. While one might still need a programmer to set things up, these standards are easier to use because they often come with ready-to-use components. These components simply need to be connected or configured, as opposed to building from scratch.

"Colossus's performance is carefully tracked and shown on an Ignition SCADA system"

For example, in controlling industrial machines, specialised software, Supervisory Control and Data Acquisition (SCADA) – for overseeing and controlling processes – web portals (for displaying data) or HMI (for interacting with machines) are used.

SCADA
SCADA software is crucial in many industries for controlling equipment and overseeing processes smoothly. It allows operators to manage operations – both nearby and remotely – watch over activities as they happen and collect essential data. Interestingly, SCADA lets people interact with devices such as sensors and motors through easy-to-use screens. These can often be set up without the need for any programming.

IGNITION
Ignition by Inductive Automation is a prime example of such software. It is known for being flexible, easy to scale up as required and is simple to use direct from a web

browser. Ignition covers a wide range of tasks including controlling processes in real time, storing past data, handling alarms and generating reports. This makes Ignition a complete solution for managing industrial operations.

COLUSSUS
Global Graphics Software uses a special system called Colossus, powered by six high-end Intel i9 CPUs of various models, to measure the company's Raster Image Processing (Harlequin RIP) performance. With the help of OPC UA, Colossus's performance is carefully tracked and shown on an Ignition SCADA system. This setup offers engineers clear, colour-coded dashboards that present real-time information on tests and how effectively the AI system is learning. This helps the team to speed up its research and quickly make improvements. The process is important for advancing technology and performance.

The management decided to use a SCADA system because it helped get things started quickly and efficiently without taking developers away from their main work. This method was important for ongoing research. By using OPC UA, the team could easily choose the best ready-made solution, from many available options.

INDUSTRIAL PRINTING EFFICIENCY
Web portals play a crucial role in monitoring IIoT devices, such as industrial printers, providing a user-friendly interface to track, manage and analyse data from connected sensors and machines. These portals are essential for businesses looking to harness the power of IIoT for real-time insights and decision making. Amazon SiteWise and Microsoft IoT Hub are two prominent platforms that offer these capabilities. Both are designed to integrate seamlessly with industry-standard communication protocols, OPC UA and MQTT, right out of the box. This means they can easily connect with a wide

range of devices and sensors, collecting data for analysis without needing complex setup procedures.

These platforms excel at predictive maintenance, using data from IIoT devices to anticipate equipment failures. Analysing data trends, these devices can forecast potential issues, allowing proactive prevention of costly downtime and repairs. Early alerts from web portals minimise disruptions, ensuring operational efficiency. This proactive approach not only boosts industrial printer reliability but also saves time and resources.

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Although there are general industrial web portals, such as AWS SiteWise, print-centric systems from companies such as SpencerMetrics, specifically cater for the unique needs of industrial printing. SpencerMetrics develops solutions such as CONNECT and LYNK for real-time monitoring and analysis of print devices. These support predictive maintenance and operational efficiency. Their platforms are designed for seamless integration, with protocols including OPC UA, optimising performance and minimising downtime in print operations.

CONCLUSION
The principle 'If you can't measure it, you can't manage it', underscores a critical aspect of modern digital inkjet-printing technology. Adding connectivity to digital inkjet printers is not just a matter of convenience – it is a necessity for precision, efficiency and innovation. Through connected systems, operators can monitor real-time data on printer performance, ink usage and output quality. This connectivity enables the collection of detailed metrics, which are indispensable for making informed decisions, optimising operations and predicting maintenance needs. In essence, by ensuring every aspect of the printing process is measurable, connectivity empowers operators to manage and improve their systems with unprecedented accuracy and control. Ultimately, this can lead to enhanced productivity and reduced waste. ■

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