ScholleIPN's Gateshead, UK plant

ScholleIPN
Gateshead, United Kingdom

Scholle IPN

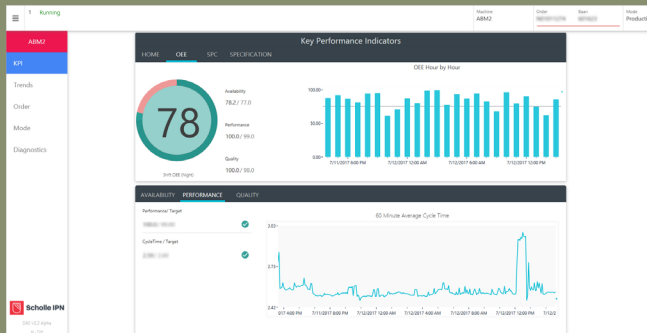*Figure 1: Availability, OEE Hour by Hour and Performance Overview Metrics*

> "One of the two pillars of lean manufacturing is Jidoka, the other being Just-in-time (JIT). The underlying principle of Jidoka is about empowering your equipment, through technology, to detect anomalies in the process autonomously. By harnessing the ICONICS software and their domain expertise, our equipment now tells our associates where the problem is and the impact it is having. We can now decouple our operators from the actual machine functions, focusing more on our passion—process control improvement. We have enhanced our ability to pro-actively analyze quality and mechanical data nurturing faster response times and even elements of prediction through SPC. This is the essence of the lean journey we at ScholleIPN are on. The mantra we follow "Reactive moves to Proactive and eventually to Predictive", is underpinned and supported by ICONICS."

Martin Molloy
Global Continuous Improvement Manager

Synopsis

With swift precision through auto configuration tools, ScholleIPN selected ICONICS software for the deployment of mobile-responsive OEE, SPC, Scrap and Downtime dashboarding system across all twelve of their global production sites within just two years, based on ICONICS software. Each site has language-aliased HMI screens for regional operators, while local ICONICS data samples are natively pushed to Microsoft's Power BI service in Azure for corporate reporting. Apple iPads now replace manual scrap data entry and every plant has clear automated control and visualization of its assets.

Introduction

ScholleIPN serve millions of people every day by delivering safe, natural and sustainable packing solutions for a diversity of manufacturing brands. ScholleIPN have standardised on and are near the completion of globally rolling out ICONICS' software solution across all 14

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of their global sites with mobile-responsive (HTML5-integrated) production interfaces. The local site GENESIS64™ systems deliver OEE, Scrap, Downtime and SPC dashboarding and alarming for an aggregated 100+ machines worldwide.

ScholleIPN has a vertically integrated value stream which allows them to control the quality and delivery of their subcomponents.

• **Film extrusion** – involves extruding a tube of molten polymer through a die and inflating to several times its initial diameter to form a thin film bubble. This
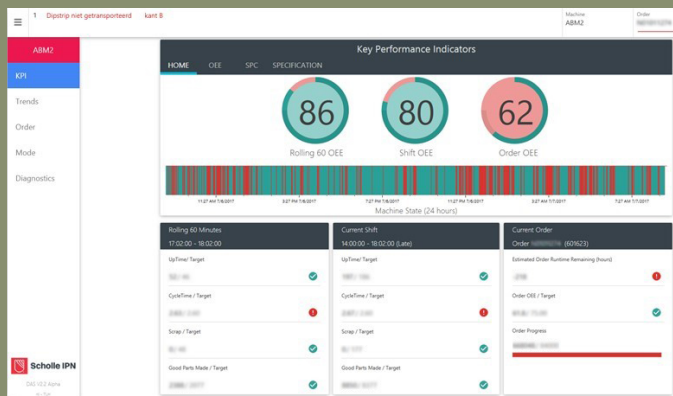
• **Local Site Production Challenges**

ScholleIPN found themselves in a position that is typical of many multi-site organisations with a global footprint. The management of their data was disparate and hundreds of data islands have emerged.

At each local site, line operators were manually calculating asset performance and quality metrics. When rolling these values up, the global team also found that each local site calculated these metrics slightly differently creating even further inconsistencies. If Overall Equipment Effectiveness metrics were not always known or available for each site/asset. Finally, for

Figure 2: Operator Machine Interface on each Machine

Figure 3: Departmental Overview of Shift OEE, Machine Status and Order Status Running on a Raspberry Pi

bubble is then collapsed and used as a lay-flat or can be made into bags.

• **Injection Molding and Assembly** –is a process that injects material into a preformed mold. This procedure is the most common method of manufacturing plastic parts, especially in thermoplastic and thermosetting polymers. It is ideal for producing high volumes of the same component.

• **Bag and pouch-making.**

Challenges
Historically for ScholleIPN, there have been both local production and global IT challenges with managing such a complex and high-output production process:

sites that did have an automated system, they were either homegrown or of varying software platforms. So, cross-site performance comparisons were out of the question and thus, collaborative idea sharing was often rejected, delaying improvements and limiting their ability of Just-in-Time (JIT) or production sharing proposals.

Traditionally, line staff manually calculated shift metrics at the end of an order or shift with clipboards and paper, again delaying performance communication and being subject to human error. ScholleIPN collect large amount of data. Volumes of data measurements per product could range somewhere between 85 and 140 data points. Some of the larger SPC machines, such as their finishing assets, now have the capability to register up to 1500+ process points!

The Continuous Improvement (CI) Team within ScholleIPN identified a business need to replace the culture of local individualism with global collaboration, while still supporting certain local autonomous needs.

- **IT Challenges**

For ScholleIPN's corporate IT team, the principle issues revolved around the fact that each regional site had as many different SCADA vendors as software versions. Secondly, there were some, mainly legacy assets, that weren't connected to their global reporting
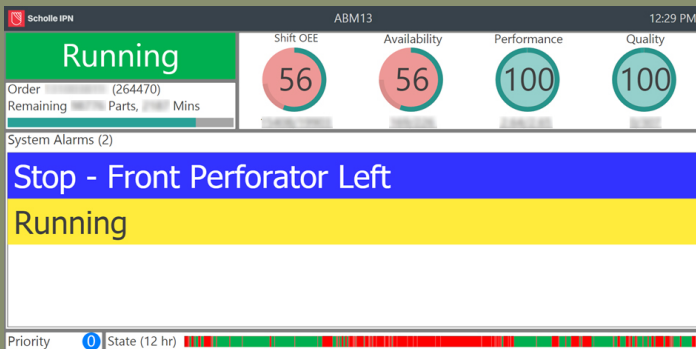
Figure 4: Machine Overview Screen Running on Raspberry Pi

Figure 5: Machine Packer Screen Running on Raspberry Pi

systems. The management of such a network was difficult at best, and without a consistent platform, system improvements were not scalable across the globe.

The Selection of ICONICS

ScholleIPN had extensive preview sessions with competitive software vendors, but ICONICS was selected for the speed and quality in which they released version updates and innovated. It was noted that they substantially outscored their competition in the innovation field. ScholleIPN combined ICONICS' unmatched pioneering agility with their closeness to Microsoft's technology (on premise and Azure) roadmap, and selected ICONICS as their chosen vendor. It wasn't

until experiencing the excellent technical assistance during the implementation stage, that made ScholleIPN realise the additional collaborative positives of deciding to partner with ICONICS.

The Delivery

The proof of concept (PoC) from ICONICS lasted six months across three different plants. ScholleIPN took the base PoC and, using the easy-to-configure toolset, reverse engineered some calculations and began building the system themselves. This all started at their Gateshead plant in the UK. ScholleIPN's development versions and releases have been evolving ever since. The speed in which this system has been rolled out

across multiple sites across the globe is testament to the sufficiency of ICONICS Bulk Asset Configurator (BAC) tool, which has undoubtedly slashed development costs, and the working relationship between ICONICS UK and ScholleIPN's project team. ScholleIPN defined equipment classes across six machine types and over

> *"The automated Bulk Asset Configurator (BAC) tool within AssetWorX has slashed our project development and rollout time, allowing us to focus on building something very powerful for the business. It would have taken huge amounts of manpower to define tags across all 100+ pieces of our equipment. After spending a few hours defining parameters for each of our six parent equipment types, we were able to add and update new and existing machines, and all their associated objects, automatically. The impact this has had on the timescales of our project cannot be underestimated."*
>
> **Hayden Lovett**
> Global CI Engineer Specialist

100 pieces of equipment within the BAC tool, and can now role out up to seven machines per hour including Shift OEE and all their other respective metrics. This is a startling achievement and has saved many days and possibly weeks of development.

System Functionality
ScholleIPN's system functionality can effectively be split into four serviceable zones:

1. **OEE, SPC and Alarming KPI Dashboards**

   ScholleIPN have an array of Raspberry PIs that are running KPI-focused GENESIS64™ screens for data interrogation and analysis in their local offices and control rooms. ICONICS are calculating OEE statistics (availability, performance and quality) in real time per current shift, current order and rolling hour (meaning every minute the systems delivers

a calculation for the latest 60 minutes against target). The "Worm Bar" combined with ICONICS flat design dashboarding immediately indicates if a machine has fallen outside its target index.

There are display screens designed for department and shift overview metrics. The system also integrates with non-production data while interfacing natively to an existing ERP system.

2. **Scrap Mobile Data Collection**

   ScholleIPN have gone electronic with all of their paper-based data collection. MobileHMI, an ICONICS app that runs on any device, now provides an electronic platform to collect and store scrap / waste statistics at the end of each shift.

3. **Touchscreen HMI Displays for every Machine**

   Certain screens, specifically the HMI and TV display dashboard screens dotted around ScholleIPN's twelve plants, are built fully on mobile-responsive HTML5 technology through ICONICS' MobileHMI™ app. Dashboards screens will scale according to the device being used.

4. **Power BI Integration**
   For corporate and local reporting, ScholleIPN are taking local datasource samples from each regional ICONICS GENESIS64 Server and pushing data into a Microsoft Azure server that runs Microsoft's Power BI.

Next Steps
As all their sites have now been configured, ScholleIPN look to connect more of their machinery, and connectivity to the ICONICS platform is standard while integrating new assets and technology.

ScholleIPN have plans to integrate this system with site energy consumption via existing Building Management Systems (BMS) in efforts to enhance the company's environmental sustainability efforts.

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