CUSTOMER CASE STUDY

How Sentry Equipment turned its flagship sampling and analysis system into an Industry 4.0 information appliance with AVEVA™ System Platform

Sentry Equipment - www.sentry-equip.com
Industry - Manufacturing

Goals

- Extend the capabilities of its flagship sampling system into an information appliance, in line with Industry 4.0 environments
- Incorporate a new application into its SentryGuard machine to provide machine-supported guidance to operators
- Provide the ability to analyse sample data, provide alerts and guide operators to resolution

Challenges

- As process manufacturers increasingly harness data and digital processes, OEMs need to continually innovate to build smarter products with similar digital capabilities for customers
- These devices must offer the flexibility to operate as a stand-alone information appliance at the edge or as an integrated part of the plant floor's digital ecosystem
- The time to develop a suitable device in-house significantly impacted engineers' time

AVEVA Solution

- AVEVA System Platform

Results

- Saved up to 80% in engineering time by adopting an off-the-shelf solution
- The team was able to start application development within two weeks since learning how to use AVEVA System Platform was faster than expected
- Developed new solution in half the time with twice the functionality
- The new SmartAlarm product was on the market within one year

Sentry Equipment, based in Wisconsin, U.S., is a leading manufacturer of sampling solutions and analysis, providing equipment to process manufacturers in more than 50 countries. Founded in 1924, the company has continually evolved to meet customer needs and develops sampling systems used by process manufacturers worldwide to achieve accurate and repeatable product results by sampling, monitoring, and measuring product quality and operational parameters. The company's products include manual, automated, and fully integrated sampling analysis systems applied to test coolers, heat exchangers, and other equipment in process manufacturing.

The company wanted to evolve its flagship product line into an information appliance ready for Industry 4.0 environments, and able to provide data analysis, intelligence, and decision support to engineers. The company selected AVEVA System Platform to provide a commercial off-the-shelf solution for data collection, analysis, and presentation. By using AVEVA System Platform as a foundation, the team was able to focus effort on value-add activity building decision logic and alarm codes and meeting strict U.S. Electric Power Research Institute (EPRI) industry standards.

With support from Wonderware Midwest, the Sentry Equipment team was able to begin coding AVEVA System Platform and OMI in two weeks with no prior experience of using the system. The result was a novel SmartAlarm application to guide operators on issue resolution and operate as an independent edge device or as an integrated part of the process environment.

OEM Innovation for Industry 4.0

Industrial representative sampling is the standard procedure of analyzing a small volume of material from a process stream to verify and monitor the characteristics of the lot or batch. It is a critical practice for process manufacturers to ensure product quality and operation within safe parameters.

As process manufacturers increasingly harness data and digital processes, original equipment manufacturers (OEMs) such as Sentry Equipment face the requirement to deliver similar digital capabilities. These devices must offer the flexibility to operate as a stand-alone information appliance at the edge or as an integrated part of the plant floor's digital ecosystem.

In evaluating its flagship SentryGuardSA line, Sentry Equipment identified the need to extend its product capabilities to ready them for Industry 4.0 environments.

Innovating smart sampling for plant chemistry

Based on interviews with customers, Sentry Equipment saw an opportunity to expand the value of its sampling systems by building a smart application harnessing data and process knowledge to enable knowledge transfer and time savings for operators. The company envisioned a SmartAlarm application incorporated into its SentryGuardSA machine to analyze sample data, provide alerts, and guide operators to resolution.

By developing the SmartAlarm application, Sentry Equipment sought to add intelligence to its sampling systems to guide operators to the correct alarm resolution. The product development goals were to:

- Offer a solution to reduce the amount of time operators and chemists spent troubleshooting and resolving alarms
- Implement an intelligent application to guide actions to resolve alarms and eliminate guesswork for better operator efficiency
- Create a tiered product offering for chemical production facilities incorporating Sentry Equipment's SmartAlarm

> "SmartAlarms offers tremendous potential to augment human decision making and alert response for process sampling. You may have 26 potential events that could happen - and some you may never have handled previously. When you're relying solely on your knowledge and recall, you have a 1/10 chance of error. With machine supported guidance, you can reduce the chance of error to 1/100,000."
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> **Doug Hubbard,**
> Independent Consultant

Sentry Equipment targeted power plant chemistry as the initial process environment for the new solution. In the power plant environment, operators were trained on several dozen potential events, but faced the challenge of recalling the correct response for issues that may occur only every few years. Specifically for the power plant environment, the SmartAlarm solution needed to:

- Collect sampling data and enable alerts out over a network through HMI
- Incorporate specific conditions, logic, alerts, and recommended actions
- Conform to Electric Power Research Institute (EPRI) standards

More efficient engineering time with AVEVA System Platform

Initially, Sentry Equipment spent six months attempting to build a data collection system on its own, and determined it was worth assessing availability of commercial solutions to reduce engineering hours. They turned to Wonderware Midwest, an AVEVA distributor, who guided the team to AVEVA System Platform and OMI.

AVEVA System Platform is a highly responsive, scalable solution for supervisory, SCADA, HMI, and IIoT applications that integrates the process with the enterprise. As an off-the-shelf solution with open interoperability for data collection, historization, and presentation, it significantly reduces engineering effort versus building a similar application in-house. In addition, teams gain AVEVA support and a solution used by a global user base.

"Data collection was not as easy as we thought. System Platform simplified that complexity, allowing us to focus on the value-add of our SmartAlarm application rather than figuring out how to collect data and present it. Using System Platform saved us as much as 80% in engineering time."

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Richard Alves,
Development Engineer, Sentry Equipment.

AVEVA System Platform benefits for Sentry Equipment

System Platform provided a platform for SmartAlarm design without spending the time to write the code. Critical features for Sentry Equipment included:

- Historian – ability to historize, compress, and store data
- Device connectivity and interoperability – connect to different devices including Modbus TCP
- Visual engine – easy screen navigation for operators
- Security – security and antivirus critical for industrial environments
- Open data protocols – ability to be agnostic managing data in and out, an important factor for customers
- Future proof – supported product and flexible architecture

"Wonderware Midwest helped us understand the flexibility of System Platform and OMI. Moreover, they had us up to speed faster than we expected, and we were developing on the platform in two weeks with no knowledge of the system previously. In a very short amount of time, we had two electrical engineers writing software and .net scripts – and designing a brand new software application. We were not able to get anywhere close to that support when we evaluated other software solutions."

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Richard Alves,
Development Engineer, Sentry Equipment.

A new era for smart process sampling

Within one year, Sentry Equipment built, tested, and brought to market SentryGuardSA Smart Chemistry Alarms. The result was a smart, connected information appliance ready for Industry 4.0 environments. The solution is able to operate as a self-contained edge device to take data out or as a connected device to a broader shop floor system. Importantly, the Smart Alarm application provides guidance and call-to-action to remind operators of prior training, eliminate time spent debugging, and enable faster response to events by eliminating time spent deciphering alert codes.

"What we see now from this process is that there's a whole slice of business we're missing out on – analyzing steam and water and other areas – where there's a ton of information sitting there. That's an opportunity to provide better info and service to customers. Often, the burden to get at that data from a DCS is more costly to handle in-house than for Sentry Equipment to do it. If we can tap that data and visualize it, we can provide it to service personnel with recommendations to service earlier or to predict and schedule maintenance"

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Richard Alves,
Development Engineer, Sentry Equipment.

To learn more, please contact your AVEVA representative or visit us online at aveva.com