

More than control

Smart instruments enable the combination of controlling and managing

Nouryon

Nouryon Functional Chemicals

At the location in Herkenbosch, Nouryon produces chemical substances - chelates - for decalcification and cleaning, for example for detergents and dishwasher tablets. In addition, these chelates are used to add micronutrients to food supplements or to enhance plant growth in agriculture. Nouryon operates from nine locations in the Netherlands and is the global market leader in the field of essential chemistry, supplying products for a wide range of daily needs such as paper, plastics, building materials, pharmaceuticals, and personal care products.



At Nouryon in Herkenbosch, smart instrumentation based on HART technology has been in use since 2007. But until now the possibilities of the intelligence were not fully unlocked. The signal from these smart instruments was only used for control, not for the management.

Now, because of a change in the production process, a new factory is being built and the wish for modernisation became explicit. Since the same approach is used at all sites, the project immediately became a sizeable undertaking. The instrumentation in the installed base was ready for it, but the ecosystem, digital, physical and for the employee, had to be set up and prepared.

The insight into the health status of the instruments allows the end user to identify wear and avoid the unplanned and unnecessary downtime because of

it. Instruments with Heartbeat Technology deliver standardised diagnostic messages for efficient maintenance, significantly extending the time between verification cycles. These verifications take place directly at the measurement point, without any process interruption. The monitoring data facilitates predictive maintenance for further process optimisations. Heartbeat technology enables easier and better control of the measuring points, offering an easily accessible overview of the availability and reliability of production facilities - thanks to the fact that the information is available 24/7.



Guido van den Hombergh,
Maintenance Specialist E&I Nouryon Functional Chemicals



Field Xpert SMT70 industrial tablet for Mobile Device
Configuration Management

Challenge All the intelligence in the HART instrumentation had to be unlocked using a digital ecosystem that made it possible to exploit its full potential and acquire new findings. Based on the Netilion IIoT cloud based ecosystem, different digital services such as Netilion Health can provide insight into the status and health of each connected HART instrument. Guido van den Hombergh of Nouryon: "We wanted to prevent interference between the installed and new control systems, and we wanted to be verifiably safe. To this end, we constructed a bypass system based on the Fieldgate SFG250 HART Ethernet gateway as a fundamental building block to digitally unlock all relevant maintenance and management

information from the HART instruments."

Human effort To be able to optimally unlock this added value, not only digital unlocking is needed, but also a change in behaviour. "That's why we involved all parties concerned in the set-up. Because in the end Industrial Internet of Things (IIoT) comes down to human effort and it requires a change in the mind set of those involved, to use it optimally. The hardware was already there, but the software combined with the working procedures ultimately makes it work."

To make full use of the HART instrumentation and make the data

accessible as information, the complete Netilion IIoT cloud-based ecosystem was set up according to NAMUR Open Architecture, where the data is accessed via a certified cloud ecosystem. The data model is completely structured and can be approached via REST API en OPC UA communication services. Nouryon owns the data and determines through authorisation which users have access to what data.

In the technical workshop, the status and health of the connected instruments is displayed in real time and one can also intervene immediately by online connecting to an instrument directly - via the Field Xpert Industrial tablet and the maintenance network. Finding the cause of an instrumentation problem is possible without having to access the installation - with the necessary work permits. This is how you create real situational awareness: are my assets healthy?

Realisation Several steps were required to set up the Netilion IIoT cloud-based ecosystem in the desired way. First, a communication resistor had to be installed on each of the existing sites, to enable the digital HART communication. Secondly, a HART Ethernet gateway was needed to realise the bypass, unlock the data and share this data on the maintenance network with the various industrial tablets. Finally, to unlock local data for the Netilion IIoT cloud-based ecosystem, a Field Edge device was needed and industrial tablets were introduced to configure an automatically upload the instrument



Asset Health Monitoring from the central Plant Asset Management system

parameters and configuration statuses to the cloud. "The main shift we had to make was that we had to stop thinking exclusively in terms of automation and start thinking in terms of maintenance and management.

Insight in reliability "Because we have used a bypass to get the access, we do not disturb the control, which is the strength of the solution. You don't notice anything at all in the control system. Together with Endress+Hauser, we engineered and implemented the entire project. Including the hands-on Run & Maintain training. For the user,

the Field Xpert industrial tablet is the most important tool. The software is work process orientated and super intuitively to use. We now have insight into the availability of all connected HART instrumentation, and it is no longer necessary to dismantle it for calibration purposes because automated inline verification is done periodically. The results are uploaded and shown in the Netilion IIoT cloud-based ecosystem. Together with Endress+Hauser we are now taking the next step on the path to predictable reliability: detecting anomalies in an early stage and further optimising the calibration intervals."

Parts Field Xpert SMT70 with a link to Netilion IIoT cloud-based ecosystem and the various digital services (apps); Analytics, Library, Health, Value and Predict.



Results

Smart instruments deliver data that provides insight into status and health. The time between calibration cycles has been significantly extended and maintenance is done based on condition. In addition, it is no longer necessary to disassemble instruments for calibration; verification can now be done inline and automated. All functionalities and intelligence that was already present in the instruments is now no longer just used for control, but also for managing and maintaining the assets.

Testimonial

Guido van den Hombergh

"The new ecosystem does not interfere with the control; it is a completely separate system. That is the strength of the solution, and everything works intuitively. We have a very pleasant working relationship with Endress+Hauser. They are the source of 90% of our measuring equipment. It is interesting to see how they relate their measurements to physics."

"I have taken many courses at Endress+Hauser and believe it is a remarkably capable organisation. Their strength is that they have an incredibly open attitude in collaboration. The company is very accessible and approachable, and I am really satisfied with the cooperation."

Nederland

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