Babylonian Language Mix

FDT Technology Enables Central Access to All Instruments

A Tangled Web – As technological possibilities increase the wish to implement them is always confronted with the question of how best to integrate them on site.

Wim Zomer
Head of Technical Automation, Nedmag

The installations of the Dutch chemical corporation Nedmag have evolved with the company. Over time, they have grown into a somewhat haphazard automation mix of assorted controls, process control systems, remote I/Os and field devices of any kind and origin across all levels. On top of that, the various components also use different communication protocols and device integration technologies. Vertical integration – a real challenge. It has been met by use of field device tool (FDT) technology, a highly versatile frame application and a clever gateway. The integrated solution saves money throughout the complete plant life cycle and opens up the way to efficient asset management.

The raw material processed at Nedmag Industries Mining and Manufacturing is extracted from deep inside the earth. In the north of The Netherlands, the highest-quality magnesium chloride salt deposits lie 1,500 m below the surface. About half a million tons of them are extracted by Nedmag every year. Nedmag, employer for approximately 160 people, is the leading supplier of very pure, synthetic dead burned magnesium oxide (DBM) in Europe. In 2007, sales of DBM, magnesium and calcium chloride, in solutions or as solid matter, yielded a turnover exceeding €75 million. Magnesium oxide, sintered at high temperatures, is used in steel and cement production. Magnesium and calcium chloride are put to use in oil and gas extraction, or as an animal feed additive in agriculture. They keep the streets ice-free during our cold season, while in hot places like Saudi Arabia they bind sand to the streets. Thus, their uses are numerous and varied.

A Promising Concept

When Wim Zomer, Head of Technical Automation at Nedmag, joined the company, it took two days of downtime until the plant could be restarted after any failures. "That costs so much money that it is more efficient to make investments to keep the plant running. Which is what we did here." In the last few years, the enterprise has continuously invested €8–10 million annually in new projects and the modernization of the site's automation network.

The next big target of the division manager: By the time he retires five years from now, he wants to have the inconsistent, patchy automation basis of the three individual, different production plants of Nedmag, dry and wet production and Calmag, to be harmonized and

communicating with each other. In the future, it is the company's aim to access, read and maintain all of its 4,000 intelligent HART devices from one single server and to implement modern asset management.

"At first, we decided it had to be HART. This is the technology we want to keep. Today, a third of our devices are intelligent," explains Zomer. "The big idea was to make all devices accessible from one central point. I made up a concept in my mind, and implementing it will still keep us busy for a while." To find out how they could best develop their automation structure, his team began contacting various suppliers. Eventually they evaluated half a dozen software packages for device integration and the Nedmag team decided that FDT technology would be the solution that suited them best.

Whenever someone from maintenance has to do work on site, the hours quickly pile up. According to Zomer, "The costs go right through the roof; we are spending too much money on this. There is room for improvement, and in future, we want to do a better job here. With FDT technology, we can increase availability and reduce the number of downtime periods. Whenever some plant unit fails for one day, it costs us €30,000."

Added Value from Start to Finish

In the FDT frame application it was required to establish point-to-point connections between devices and laptops, read the data on the laptop, and synchronize them on the server. Not every software enables this. Fieldmate, the Yokogawa assistant for device management, does meet these requirements – a real universal storage platform (USP). The integrated tool for device management is the first available on the market that is able to communicate with all devices. It supports FDT and device description (DD) technologies and does not fifferentiate between HART, Foundation Fieldbus or Profibus. Thus, one more reason for Nedmag to opt for this solution. With a few quick clicks, it enables unlimited access to all modern field devices and considerably more efficient maintenance services. In Zomer's words, "We, the users, would like to use a single configuration tool through which we can access all remote devices. What we do not want are manufacturer-specific and time-consuming special software packages that you only get to use once a year and which therefore no one knows how to operate."

The benefits of FDT become clear during the engineering phase. Several things can wait to be taken care of later. For example, it is no longer crucial for all the instruments to be configured. During commissioning companies also benefit from the technology. Up to now, Nedmag needed two technicians to parameterize all instruments. Today, the task is completed by only one worker in a shorter amount of time. It often happens that when everything is finished some modification of the measurement range is required. This used to require the automation team to remove the device again and re-calibrate it, "With HART communication, this has become so much easier. We are saving time and money. The higher flexibility allows us to react much better and more quickly to later requirements from process engineering," explains Zomer.

Translator Between The Worlds

In the future, staff can access Fieldmate via an Ethernet network. "The brilliant thing about the concept is that we can use the infrastructure already existing in each room," says Zomer, not without some pride in his voice. Via secure internet connection, members of his team can even connect and act at night or during weekends from home if necessary.

To access the ET200M Siemens remote I/O connected via Profibus from a central point, however, one last piece of the puzzle was missing: an Ethernet-Profibus-Interface. At an exhibition, a gateway enabling HART transparency via internet was found. However, the supplier could not provide either support for the Siemens remote I/O or a device type manager (DTM). A lot of time was lost. So the Nedmag automation team went ahead looking for an integrated solution, which is to say a gateway and driver from a single source and supplier. They found the communication specialists of Trebing & Himstedt. As part of the TH DTM Library, the DTM for the ET200M Siemens remote I/O had already been certified. "The Ethernet-ProfibusS-Interface xEPI was up and running immediately, without any problems," confirms Zomer. "Without this gateway, we could not 'see' a single Remote I/O or device in the FDT frame application. Central access would have become a very distant goal, very much beyond reach. It is key that HART over Profibus is available and accessible independent of the system provider."

Cost-Saving Data

At the moment, the Nedmag automation specialists can still only access a part of the 4,000 instruments through HART and portable PCs, but that number is growing. Because of the positive experience with device operation via FDT, further parts of the plant are to be connected step by step in the coming years. Right now, four pilot projects are running in the Dutch enterprise. The team wants to speed up things considerably and automation of the sintering furnace for the main product, DBM for example, is scheduled for early 2009.

"We can say today that we want to do Asset Management, but it cannot be done overnight. The main thing is to dare to take the first step into the future," underscores Zomer. "The detailed, comprehensive information supplied by these intelligent devices is what brings about the cost savings." For instance, parameters can be compared and cooling water consumption can be read. If the latter increases, this points to a dirty cooler which needs to be cleaned the next night. Efficient life cycle management means the right amount of maintenance work – not too much and not too little. FDT technology, the Yokogawa Fieldmate, and the Trebing & Himstedt xEPI make this possible.

Dr. Christine Eckert

▶ Contact:
Wim Zomer
Nedmag Industries
Veendam, The Netherlands
Tel.: +31 598 651230
Fax: +31 598 651226
w.zomer@nedmag.nl
www.nedmag.nl