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Mauro Tassistro,
Applications Team Leader,
Infineum.

Plant Operational Excellence is Increasing Thanks to Wonderware Mobile Solutions

by Invensys Operations Management

Goals

- Increase plant's availability by anticipating any potentially damaging situations;
- Optimize operators' efficiency and reliability during inspection activity;
- Limit production downtimes to scheduled maintenance only.

Challenges

- The proximity of the plants to inhabited areas makes it essential for the sites to be safe and reliable at all times;
- Detection of critical indicators, e.g. vibrations or the presence of foreign particles, which automatic instruments do not usually detect effectively;
- Maximize the value of the time and experience of the field operators.

Solutions and Products

- Wonderware IntelTrac.

Results

- The Wonderware solution has allowed a plant availability factor of over 90% to be achieved;
- The system has allowed the operational procedures for visual inspections of equipment to be optimized and standardized, thanks to the removal of paper reports and the intuitive nature of the handheld devices;
- Wonderware IntelTrac's features now allow operators to identify potential problems which were previously neglected, thus avoiding the need for any emergency intervention.

Vado Ligure, Italy – Every time we start the car our gaze falls, almost without fail, to the fuel gauge, since fuel is the essential element for making a vehicle work. We only remember about oil, instead, when the indicator light comes on, and we rarely stop to think about additives which can optimise engine function. And yet, engine oil and additives are fundamental elements in ensuring that the cars and other means of transport we use to travel around everyday are working properly.

The production of these additives for lubricant oils is the Infineum Group's core business. Infineum was established ten years ago through the merger of Paramins (the additives division of what was then Exxon Chemical) and Shell Additives. In Italy, the factory in Vado Ligure (near Savona), created in 1966, is the Infineum Group's main European supply centre for additives for lubricant oils.

The Value of Human Input...

When working in the petrochemical sector with some plants established close to inhabited areas, it becomes essential to combine safety and productivity by anticipating any potentially damaging situations. In addition, any unforeseen problems have immediate and financially significant repercussions for production and therefore for the business.

Inspections carried out by company management in the years following the merger showed an average plant availability, calculated using the Manufacturing Efficiency Index, of 80%. This is not an acceptable value for a firm looking to the future and using a lot of automated equipment.

In response to this, in 2004 the Global Manufacturing Excellence Programme was launched, with the aim of maximising plant reliability and achieving availability of over 90%, limiting production downtimes to scheduled maintenance only. Efforts have therefore been concentrated on two specific fronts: preventive maintenance and operational management.

In this context, it is easy to understand the importance of maintenance above all at large scale plants. Seemingly less important, however, is the periodic monitoring of the plant carried out by field workers.

But these professionals, thanks to their regular rounds, are in fact the people who know the site best. Using parameters which cannot always be measured with the usual instruments, they are able to recognise abnormal or potentially dangerous situations, either in terms of availability or safety.

The entire production process is constantly monitored by electronic instruments which, feeding all the information back to the DCS in real time, detect any deviation from the ideal working parameters. However, certain specific factors such as noise, vibrations or the presence of dirt or small internal leaks, are not efficiently recognised by automatic instruments, and the implementation of such tools would lead to higher costs and pointlessly overload the DCS. So even in an industry which is becoming more and more automated, human supervision remains fundamentally important.

Traditionally, operators used simple paper forms for reporting, with the risk of making basic transcription errors, considering also sometimes the difficult conditions on-site. These readings, without any data to correlate into important decisions, then had to be transferred, therefore increasing the amount of time required to obtain informative reports that could actually be used. Moreover, some inspections were not carried out from the correct position, thus limiting the accuracy of the observations.

... Enhanced by the Software

As part of the Global Manufacturing Excellence Programme and in order to increase plant availability and optimize operators' work, the Infineum Group decided to equip its staff with



Field operator.

devices capable of collecting all the critical operational information in a quick and efficient way. The group therefore needed to identify, within the market, a reliable tool which could be used to optimise direct inspection activities.

This was not a simple search, since each plant has its own particular features, making it impossible to standardise inspection processes. The whole process was made even more complicated due to the regulations in place in each country.

For this reason, it was necessary to start by establishing a new plan for inspection activities. The operators themselves were directly involved in this task, leveraging their specific experience to identify the correct operational procedures. A winning approach, supported by the contribution of those who move throughout the plant on a daily basis, knowing the difficulties which actually arise in this work.

The organisational planning also required the adoption of instruments which use cutting-edge technology, allowing individual operators to optimise their own work and concentrate on the real added-value they provide: experience and sensitivity to specific problems.

There are various solutions on the market for facilitating operators' work, with a very wide range of functions, but these are not always suitable for the requirements of a complex set-up such as Infineum's. Software previously tested in certain real situations within the group's operations had proved to be unsuitable and unreliable.

An intense software selection process therefore began, intended to identify a single platform for all production plants but also capable of adapting to the specific needs of each. At the end of this search, only two products were found to fulfill these concrete requirements. Even when narrowed down, the choice was still a complicated and critical one, since the success of the whole project to increase plant availability would depend on the platform used.

"As we were faced with two possibilities – Enrico Bertossi, Infineum's Global Manufacturing Excellence Programme Advisor explains – the real and concrete references presented by the System



Field operators.

Integrator Rex played a crucial role in the decision-making process".

Another factor was the need to achieve integration with SAP, the business system Infineum uses for planning plant maintenance operations. The only tool able to meet these requirements was Wonderware IntelaTrac, the mobile workforce and decision support system by Invensys Operations Management.

This solution is designed to enable workflow, procedural and general task management and achieve reliable operations. These capabilities are enhanced by the tool's key feature: allowing on-site operators to input information and receive support at any location within the plant, without the need for a physical connection.

All this is completed by another significant factor: *"IntelaTrac had a decisively lower total cost of ownership (TCO) than the other supplier", Bertossi points out.*

Practical Confirmation

Mauro Tassistro, Infineum's Applications Team Leader in Italy, confirms that *"All our expectations were confirmed immediately from the application deployment, obtaining the full consent of system users after only 6 months of development".*

Tassistro himself has an overall view of the whole project, since the system architecture is centralized

in Italy, with continuous connection to the plants in France, Germany, North America and Singapore.

These plants present extremely different situations in terms of both production and staff operating methods. However, the approval of users, who appreciated the ease-of-use and maintainability of the system, was one of the critical factors in choosing the monitoring system they will use on a daily basis.

Typically, during their rounds the field operators previously used paper forms for reporting, with all the difficulties that method involved, not least the possibility of adverse weather conditions. By contrast, using Wonderware IntelaTrac installed on a handheld device is simple and intuitive, allowing operators to concentrate on the task, whilst integration with RFID technology means data relating to a specific observation can only be input when the operator is in the correct position.

Such an operational procedure is intended to prevent any possible errors, but operators may see it as a way of 'checking up' on their movements. On the contrary, the practical use of the IntelaTrac interface made these operators really appreciate the technology being developed, since they understood the benefit for their day-to-day work.

"The decision to involve users from the very start of the project, getting them to take part in strategic choices, has enhanced the advantages provided by an innovative tool like IntelaTrac", emphasises Tassistro.

Beyond the approach taken, as Bertossi confirms, *"Staff approval is the result of the usability seen in action at plants and the concrete advantages for everyday activities. In addition, installation was completed in just a few months, therefore minimising the impact on staff operations and avoiding any interference with production".*

Nothing Escapes Wonderware IntelaTrac

"Using IntelaTrac has made a major contribution to reaching a plant availability factor above 90% - Tassistro confirms - since it has integrated perfectly with the other innovations added to our equipment".

Demonstrating this, the platform developed by Invensys Operations Management has allowed the identification of certain situations, usually overlooked, which could potentially have led to the progressive deterioration of some pieces of equipment, and subsequent need for emergency maintenance interventions. Moreover, using inspection support tools has also increased on-site operators' sense of responsibility, as they feel more involved in ensuring the correct running of the entire plant.