JOIN: Perfact and Yokogawa join hands

Perfact Group and Yokogawa have joined forces in JOIN, an approach and solution which enables companies to implement Industry 4.0- in their manufacturing environment. "These solutions have become more accessible in terms of time to deploy, costs, effectiveness and ease-of-use."

By Lucien Joppen

JOIN has conducted several pilot projects in the area of instrumentation/valves, pumps, compressors, conveyor belts and so on.

Maurice Jilderda, business manager at Perfact Group, has been active in smart asset management for years and therefore has extensive experience with Industry 4.0 strategy, sensoring, montoring and predictive modelling for maintenance purposes.

"The technology behind Industry 4.0 clearly has evolved which has resulted in relative cheap and easy-to-implement technologies. There are also various (enabling) technologies that are coming together, such as cost-friendlier data storage options, computing power, the accessibility of complex machine learning algorithms, wireless sensor technologies, 3D-printing, drone development, VR/AR, blockchain and so on. By bringing together several of the above technologies, new business cases have emerged."

Open to change

According to Jilderda, the demand in the industry for Industry 4.0-solutions is growing. When asked about statistics to support this statement, he points out the early adapters that have paved the way by conducting many pilot projects. "We are also getting calls and mails from laggard companies that are interested in setting up projects in this field. It is also true that many companies are not ready for Industry 4.0. Some don't see the benefits yet which - of course - is a prerequisite. The belief has to be there and the company culture has to be open towards change. And some haven't got sufficient data or only have low-quality data."

Instead of embracing Industry 4.0 as a general concept, Jilderda and his partner in JOIN, Frank Knobbe (IIoT improvement leader at Yokogawa), advocate a problem-solution approach. "The possibilities, as with Lean 6 Sigma, are endless", says Jilderda. "Best is to start with a specific problem or issue such as unplanned shutdowns or increasing worker/environmental safety at specific points in the production line."

Not a one-size-fits-all solution

JOIN's modus operandi is based upon best practices that are translated into so-called templates. Knobbe: "We have developed these templates (predefined models with dashboards, ed.) for

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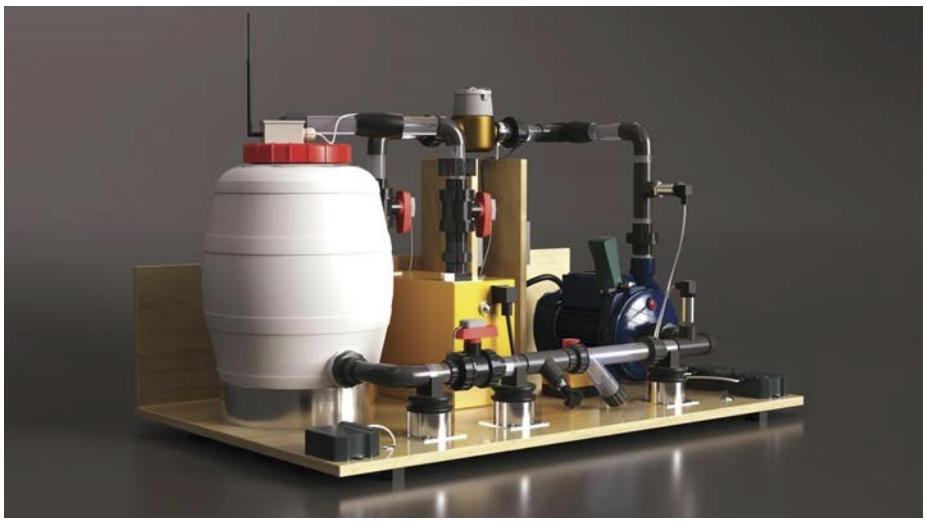

JOIN's Portable Living Lab can be used to simulate process phenomena such as cavitation.

many use cases and problems and for the different layers of an implementation such as sensors and connectivity deployment and management, algorithms, dashboards, master data, Lean 6 Sigma, coaching, et cetera. Depending on the problem or issue, we are able to use several of these templates in conjunction. From the client's perspective, it becomes more interesting when a solution can be scaled up, which makes it more interesting to invest."

Knobbe stresses that the above templates are by no means a one-size-fits-all-solution. "Some algorithms don't work for particular clients. Some of the underlaying reasons can be the dynamics in the processes and in the data, the availability, variety and speed of the data, the quality of the data, et cetera. In some cases, the client wasn't prepared to invest as the projected improvements were not sufficient enough to warrant further investments."

'Absolute beginners'

Jilderda states that JOIN has the capacity and expertise to assist both companies that are more advanced in Industry 4.0 as well as 'absolute beginners'. "We have developed an Industry 4.0-scan to quickly assess what the client's needs. If a company doesn't have sufficient data to begin with, due to the lack of sensors in the field, we can offer various IIoT-options that are cost-friendly and easy to install. Apart from the technology, we also evaluate if the company is ready for Industry 4.0 in terms of company culture, skill- and mind sets of employees and work processes. For example, if the system gives an early warning, but there is no process to manage the right priority, rolls, preparation and scheduling, then the added value is negative!"

Just as there are various 'experience levels' of companies, there are also various levels in implementing IIoT-concepts, Knobbe states. "Depending on the complexity of the issue, we have various options to solve this. If a straight-forward issue can be monitored with 'simple' (engine) rules, why choose for a more complex and expensive solution? An example is measuring vibrations for an asset in a stable process. In that case, the overall values can be monitored by using fixed thresholds instead of complex models."

Recurring failures

In case of more complex issues, JOIN can employ monitoring based upon various machine learning technics. One of these is detecting anomalies. Jilderda: "There are various ways to conduct this at a scalable manner. A nice example is the monitoring of quality in a plant by using various data parameters."

The final and third stage is prescriptive analytics, which can be used - for example - for predictive maintenance. "Prescriptive analytics not only anticipate what will happen and when it will happen, but also why it will happen. Further, prescriptive analytics suggests decision options on how to take advantage of a future opportunity or mitigate a future risk and shows the implication of each decision option. We use this technique especially in case of recurring failures or events. Because in that case you can automate the whole process from warning to prepared workorder and/or spare part ordering. To show this in real-time, we use our Portable Living Lab. This is a mini-plant, where we can 'manipulate' the process in a safe and economic way. One of the things we can create is cavitation. The system recognises the cavitation and gives a probability around 100 per cent. At this moment we are developing and testing more prescriptive algorithms by using a test machine, which allows us to bring in even more failure modes than our mini plant. Our goal is to make the models scalable to a wide range of situations, without or with minimum retraining."

High market potential

Industry 4.0/IIoT is also applicable to valves and actuation. Jilderda: "As mentioned before, there are solutions for manual valves that are reliable and cost-friendly. Our partner within JOIN for hand valve monitoring is Aloxy and also provides ATEX valve position sensors on LoRa technology which are demonstrated at our Portable Living Lab."

"The use of IIOT is an interesting cost-effective solution for monitoring because of the low deployment costs compared to conventional wired sensors. There are also many possibilities for control valves. JOIN has first-hand experience with monitoring and testing control valves by using IIoT sensors. This makes it possible to read the data without additional software solutions and you can combine the various data sources in one solution."

In general, the market potential for these solutions is high, Jilderda states. "Worldwide only 3 per cent of the available diagnostic capabilities in instrumentation and valves are used for analytics and asset management. Within JOIN we are able to retrieve these data and translate it into valuable insights regarding process conditions and maintenance."

JOIN

Perfact Group and Yokogawa have established JOIN, a total solution directed at Industry 4.0/IIoT. According to JOIN, IIoT has become more accessible in terms of ease-of-use and cost. "This transformation is also taking place in the world of industrial automation. We believe in the power of collaboration. When we make optimal use of each other's competencies, this not only makes ourselves better, but ultimately also our customers and environment", says Maurice Jilderda, Business Development Manager IIoT 4.0 at Perfact Group. "We offer a library with different ready-made algorithms and customers can also insert their own business knowledge or algorithms. It makes it possible to easily create predictive models for assets or process and to monitor in real-time. Multiple data types and sensors can be connected with this scalable platform. Growing to many thousands of devices is no problem. We achieve this with a number of tech partners and under the flag of JOIN Connect-Predict-Accelerate."