The Great Migration Project

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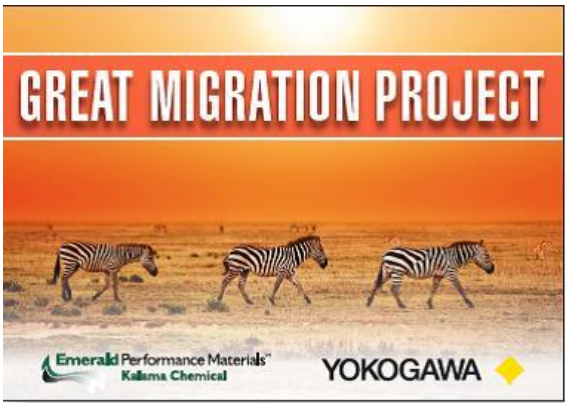
1 The Project



In March 2016 Emerald Kalama Chemical started their "Great Migration Project" in the Botlek, the industrial area in the port of Rotterdam. The project includes, amongst others the replacement of an obsolete non-Yokogawa Distributed Control System to a Yokogawa CENTUM VP DCS. Yokogawa was awarded this DCS and safety migration project by Emerald. The collaboration between Yokogawa and Emerald Kalama Chemical, for this DCS migration project, started in early March 2015 and will continue until the end of 2016. A total of 4200 I/O's will be migrated during the DCS migration project.

The old DCS in the Emerald Kalama Chemical plant had reached the end of its useful life and needed replacement. In order to minimize production downtime, the migration needed to take place during online process conditions. Therefore Emerald required a so-called *hot cutover* for this DCS migration project. Replacing the obsolete DCS for the new Yokogawa CENTUM VP DCS requires a well-planned strategy and time schedule. At this part of the project Istec International was involved. The first online migration to test the concept has taken place in March. The migration of the remaining I/O's takes place from April to December of 2016.

1.1 Emerald & Yokogawa

Emerald Kalama Chemical plant is located in the Botlek, the industrial area of the port of Rotterdam. With about 165 people Emerald produces and sells benzoic acid and derivatives, used in food, products for personal care and pharmaceuticals. Emerald Kalama Chemical is part of Emerald Performance Materials LLC, which produces technologically advanced specialty chemicals for a broad range of food and industrial applications worldwide.

Founded in 1916, Yokogawa's global network of 88 company spans in 56 countries, Yokogawa is a major industrial supplier in the industrial automation and control, test and measurement, aviation, and other business segments. The company plays a vital role in a wide range of industries including oil, chemicals, natural gas, power generation, iron and steel, pulp and paper, pharmaceutical- and food.

Yokogawa has contacted Emerald in an early stage of the project to present Yokogawa's brownfield experience and their customer commitment. Also, Yokogawa uses a "value-added migration" approach. This approach is part of Yokogawa's answer to market challenges such as increasing productivity, operational efficiency, human reliability, safety and reduction of emissions and energy consumption. This approach caught Emerald's attention and led to a close collaboration. Read Yokogawa's report.

1.2 Istec's contribution

Istec International was involved in this project with the IST-203 Hot Cutover Tool, a tool designed to support online DCS migrations by taking over active control loops during the migration. After a costs and benefits analysis the tool proved to be the best choice amongst other options, as it is very cost-efficient, safe and easy to operate, while minimizing human errors and risks. Therefore, Emerald and Yokogawa have decided to use this tool during the DCS migration project. A total of 1750 I/O's will be migrated with the support of the IST-203 Hot Cutover Tool.

One of the main reasons for Yokogawa to use to the tool for this DCS migration project is the minimization of time pressure during the migration. The tool temporarily takes-over a loop, which ensures keeping control and a stable process. Whereas without the tool there is a very limited amount of time the loop can be out of operation in order for the process to remain stable.

Another main reason for Yokogawa to use the tool for this DCS migration project is their previous experience with the Hot Cutover Tool during similar migrations. Previous success has proven the tool to be a very good option to perform an online DCS migration.

As expected, the use of the tool has been successful and is received well, with positive reactions from both Emerald and Yokogawa. Istec is proud to contribute to the success of the DCS migration project at Emerald Kalama Chemical with the support of the IST-203 Hot Cutover Tool.

2 IST-203 Hot Cutover Tool

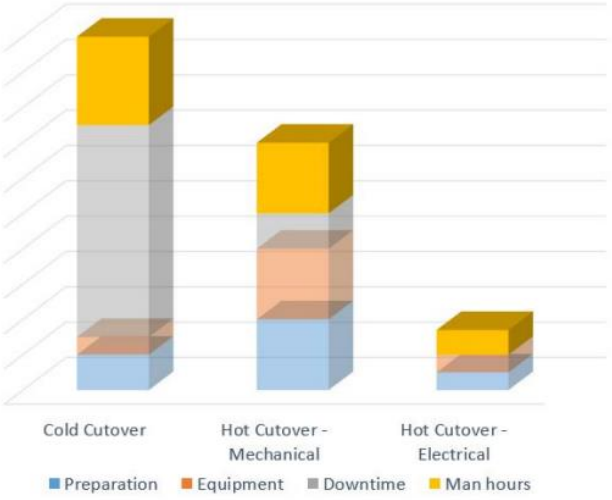
In many process plants the DCS is reaching the end of its technical lifespan. When a new DCS has to be implemented the I/O's have to be migrated from the old DCS to the new DCS. For some I/O's an online migration can be problematic because of their critical nature to the process. Disconnecting these critical control loops can result in unstable process conditions. In these situations the IST-203 Hot

Cutover Tool proves its value; it can take-over even the most critical loops, while maintaining optimal control of the process. The tool facilitates a 0(4)-20 mA electrical loop take-over to help perform a DCS migration without interrupting the active production process in just 5 simple steps. Read more about the application flow.

2.1 IST-203 Advantages

The IST-203 Hot Cutover Tool has many advantages over other hot cutover methods:

- The IST-203 is the only electrical loop take-over device, specially developed for DCS migrations
- Suitable for all 4-20 mA based DCS and PLC control loops
- Easy operation
- Safe and controlled hot cutover
- Maximum efficiency
- Minimization of human errors and risks
- MODBUS interface for parallel migrations
- Less preparation costs
- Less equipment costs
- Preventing production downtime
- Saving on man-hours and migration duration



More information about the IST-203 Hot Cutover Tool can be found in our product presentation.

2.2 Training prior to the project

Before the start of the DCS migration at Emerald, Istec provided training to the complete migration team. The migration team consisted of Emerald's E&I engineers and process engineers and Yokogawa's DCS specialists. It is very important that the migration team would not encounter any surprises during the migration. This training was meant to ensure that all possible outcomes were discussed and offered the opportunity for the involved engineers to discuss their concerns and rule out any remaining questions.

2.2.1 Training- and test unit

Besides training and presentations by our specialists, Istec also offers a training- and test unit. The training sessions learn users more about both use and the concept of the product, which increases safety, efficiency and confidence. The training- and test unit is designed to train migration teams, replicate field situations and gain confidence with the tool and the concept.

3 Conclusion

So far, the project proceeds flawless and at the end of 2016 it is expected to be finished. Emerald wants to minimize production downtime and loss of income as well as a DCS migration progress without any flaws. The good collaboration between Yokogawa and Emerald, with the help of the IST-203 Hot Cutover Tool from Istec, leads to good results. As mentioned before, Yokogawa had previous experience with the IST-203 Hot Cutover Tool during other projects, making it even easier to operate the tool. The tool has proven its worthiness during this DCS migration project at Emerald Kalama Chemical.