PROSYS

CASE STUDY

EXCELLENCE IN ENGINEERING

NESTEJACOBS

ADVANCED PROCESS CONTROL [APC]
system benefits from the new OPC UA technology

About Neste Jacobs

Neste Jacobs is the Nordic region's leading provider of technology, engineering and project services for the oil and gas, biorefining, petrochemicals and chemicals industries, including also the utilities and life science sectors. Neste Jacobs has more than 20 years experience in large plant automation and information system projects utilizing DCS, process computers and other computer systems.

Prosys has worked with Neste Jacobs to add the new OPC UA communication protocol to NAPCON real-time process database. NAPCON is Neste Jacobs' proprietary advanced control technology, which uses a model-based multivariable multistep technology including adaptation, disturbance estimation, online calculations, general constraint handling, online analyzer support and recipe integration. NAPCON was originally developed for optimizing control of polyolefin reactors and polymer product properties and was rapidly generalized for oil refining and petrochemical plants. It has proved to be valuable in improving plant operation management and in providing substantial improvements in product uniformity, yield, throughput and on-spec production. NAPCON software products utilize an integrated NAPCON real-time database and historian, with several external interfaces to other systems.

Agile methods for customer value

The initial assignment from Neste Jacobs was to develop an OPC UA server based on C# .NET technology to enable use of the NAPCON database via OPC UA. Agile methods were used in the project to maximize the customer value for each iteration. After feasibility study and a complete system design phase, and through development of the software Prosys and Neste Jacobs held regular review sessions to examine recent developments and focus on next step improvements. This way, on each step, the features most valuable to the customer were added to the system.

The developed OPC UA capabilities are used e.g. in exchanging data between the NAPCON real-time database and a DCS. The DCS provides an OPC interface, which is wrapped to enable OPC UA communication. Special OPC UA client software then exchanges data between the NAPCON database and the DCS as required. The new OPC UA software integrates with existing solutions and special care has been taken to minimize the need for manual configuration, which has been seen as the main reason to faulty configurations. A special configuration utility was developed to address the issue.

The use of OPC UA offers NAPCON an improved connectivity technology to be used in the various external connections. OPC UA also enables application design improvements by providing a communication protocol which can be used for internal communications between different application modules. Some of the benefits of OPC UA include easier and more flexible deployment to different computer and network environments (network firewall configurations, for instance), secure communications and an unified interface and information model for current data values, alarms, commands and references between data items.

Further development

During 2010, collaboration of Prosys and Neste Jacobs continues in further development of the system. A new OPC UA related innovation has been the development of a browser-based user interface. It can be used either as a stand-alone HMI or in conjunction with a DCS HMI, where it can supplement existing displays. This user interface uses the latest web technologies such as Web Services and AJAX.

> *"Prosys provides us with flexible, highly productive expert resources. They have innovative ideas, top technical skills and the required understanding of our application area – the company has proven to be an added-value partner in our systems development."*
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> **Andreas Frejborg**, *Lead Design Engineer at Neste Jacobs*

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