



OPC UA integrates Automation and MES

Finland's largest milk and dairy processor decides for OPC UA as central integration platform

Background

Valio Ltd has 15 production plants in Finland, two in Estonia and a Customer Service Center including production facilities in Moscow. At these different production sites several MES and automation systems from various vendors are installed. Process control systems from Honeywell, Siemens, Metso and ABB are connected to discrete automation provided by Siemens, Omron, Mitsubishi and many others. And this is just one plant; however each of the 15 plants uses different set of equipment. Interoperability issues and incompatibility of many different proprietary protocols are big challenge at this kind of environment. On **Production Level** harmonized communication on the field and production level using 'Classic' OPC is already a standard and is successfully used in process control, production and packaging at Valio. However, Classic OPC is not a very good solution when there are commu-



nication needs to other company networks. On **Enterprise Level** Valio was facing similar interoperability issues due to many different protocols and proprietary solutions. The centralized applications need to collect data from process control, packaging and warehouse control. MES, Track & Tracing, OEE, LIMS, and database connections into the IT network require firewall friendly, cyber secure and reliable standardized protocol.

Challenge

The direct connection of MES into the production was discarded because the configuration efforts are enormous in terms of administration and security configuration. High implementation and maintenance costs of a customized integration solution lead to the decision of evaluating industry proven standards. The connection of production and enterprise must be done during daily operations; therefore a seamless migration without any impact on the running production was needed. Only OPC UA could be identified to be capable to fulfill all requirements. Each subnet in each area of the production has its own security constraints and requirements and is well protected by gateways and firewalls. Valio was looking for a data concentrator, a central point of access within each subnet. This single machinery entry point should be cascaded or aggregated with installed Classic OPC servers in a chain without losing information or weakening security.

Solution

Valio has decided for OPC UA which best meets their requirements. Without changes to the existing communication at production level OPC UA integrates - as a centralized data backbone - all existing down stream systems and enables access to this information from the IT network. This OPC UA backbone forms the infrastructure for all vertical communication. The plant level MES uses a .NET based UA client interface developed by Prosys is getting secured access to the plant data and the enterprise level Overall Equipment Effectiveness system can even exchange information across different production sites. For migration of plant floor data to OPC UA the UaGateway, a ready to install product provided by Unified Automation GmbH, was tested in a prototype scenario and was finally chosen for this task. Based on the success of this solution, Valio decided to stepwise integrate OPC UA into all of their 15 production sites.

OPC UA Background

OPC UA is the successor of the well known 'classic' OPC standard. UA replaces the old DA, A&E and HDA interfaces and adds platform independence, authorization and authentication using X509 certificates and SSL encrypted transmission. The migration from legacy OPC to UA systems via wrapper/proxy components adds se-

veral advantages: it enables a stepwise integration, it introduces a single point of administration and configuration, and it can be done in an unchanged network infrastructure without impact on the existing communication. Especially the single point of access for a production site or operational subnet shows the capabilities of OPC UA

in terms of server chaining and aggregating information. Building up data hubs or data concentrators on a single node and passing the data through firewalls to the enterprise IT network has minimized configuration efforts and license costs by keeping the existing cabling and network structures. The system integrator Prosys used the

UaGateway as a system component in Valio's vertical integration solution. Additional UA clients developed by Prosys can communicate with legacy OPC servers via UaGateway. The investment made is future proof as it integrates with upcoming new automation systems supporting UA services directly.

Used Products of Unified Automation

UaGateway

Vertical integration with highly reliable, highly performant wrapper and data aggregation.

The UaGateway is a ready to install product for migrating the 'classic' COM/DCOM based OPC servers to the new OPC Unified Architecture. De-

signed as a high performance wrapper/proxy it is programmed in C++ based on the industry proven C++ OPC UA ServerClient SDK from Unified Automation. The UaGateway is fully configurable through OPC UA Methods. It complies with the OPC DI Specification (Device Integration) and offers standardized diagnosis and configuration capabilities. This

Windows 32Bit application can be installed on standard Windows (XP, Vista, Win7) and can also run on 64Bit Windows (WOW64). The UaGateway can connect multiple underlying COM DA Servers and multiple underlying UA Servers at the same time. Connections to underlying servers can be added during runtime without restarting the UaGateway.

„With the highly qualified support from Unified Automation and their Finnish reseller Prosys the stepwise migration was a straight forward task.“ says Jukka Peltola, Development Manager of Automation Systems, Valio. “Even really old and non-compliant legacy systems were connected and enabled for UA communication.“

About Valio

Valio Ltd is the biggest milk processor in Finland by net turnover at 1.9 billion euros. Valio also commands global sales in food ingredients. International operations including licensing encompass 65



countries accounting for one third of turnover. Valio is the market leader in all key dairy product groups in Finland and a world class pioneer as the developer of functional foods. Valio is a company owned by Finnish dairy farmers that secures milk production in Finland and the vitality of the nation's countryside by processing milk into tasty products that promote health and well-being.

About Unified Automation

As a leading supplier of OPC UA software Unified Automation provides UA-enabled products, cross-platform toolkits and development-frameworks in different programming languages (ANSI C, C++ and C#.NET) and for different platforms. The target market of OPC UA products starts from manufacturers of embedded devices up to developers of enterprise applications.

About Prosys

Prosys is a provider of premium OPC and OPC UA software and services with over 10 years of experience in the field. The flagship product of Prosys is OPC UA Java SDK, which brings full Client, Server and Application development capabilities to the standard Java environment.