Fig. 1: Arburg injection moulding machines with integrated embedded OPC UA server developed on the basis of Softing's OPC UA Toolkit. The benefits for Arburg's customers: reduced installation and commissioning effort and simplified integration of the machines into higher-level applications. (Photo: ARBURG)

OPC UA Series − Part 8

Outlook on OPC Technology

In the seventh part of the OPC UA Series (SPS-Magazin, Issue 8), we took a look at toolkits for the development of OPC UA components. The eighth and last part provides a summary and gives an outlook on the future of OPC technology.

The widespread acceptance and rapid adoption of OPC technology in the automation industry is one of a kind. The success story of OPC has led to a de-facto standard and to an international industrial standard (IEC62541). After more than fifteen years, it is hard to imagine the automation world without it. The classic COM/DCOM-based OPC Specifications today are used in a vast variety of applications from fast data transfer (Data Access) and the processing of large amounts of historical data (Historical Data Access) through to the acquisition and

acknowledgment of transient and critical events (Alarms and Events). The release of OPC XML-DA has opened the door to additional application areas in terms of vertical integration, on the basis of peer-to-peer concepts, or as embedded solutions under UNIX or Linux.

Unlocking the Potential of OPC UA

With the release of the OPC UA Specification, the OPC Foundation has presented a brand new OPC generation that leverages the possibilities of a platform independent implementation, and extends the existing OPC industrial standard by adding important new properties such as platform independence, scalability, security, reliability, Internet capability, and high-performance communication links. Platform independence and scalability, in particular, open up many possibilities for completely new and cost-saving automation concepts. All kinds of embedded devices, such as embedded controllers, intelligent field devices or drives can comprise lean OPC UA products ported directly to the operating system in use. This eliminates the need for a separate Windows PC for the OPC server. Vertical integration is achieved by cascading embedded OPC UA servers at the process level via OPC UA servers at the automation level up to integrated OPC UA clients in ERP systems at the enterprise level. While it was initially the UA early adopters – OPC Foundation members such as toolkit manufacturers – it is today a wide range of providers of automation and integration solutions who have launched or will soon launch their products with OPC UA support. Among them are not only renowned manufacturers of process control systems, PLCs or HMI/SCADA systems, but also providers of ERP, MES, monitoring or MSR solutions. What is particularly remarkable are the products with OPC UA embedded in machines, like the Arburg injection moulding machines, or in devices, like the Siemens motor management system Simocode with integrated OPC UA server.

Coexistence of installed base and new technology generation

“Classic” DCOM-based OPC products and OPC UA products will coexist for many years, if not decades. However, the trend will gradually shift to OPC UA implementations especially for the embedded market and for the MES and ERP levels. The OPC Foundation and OPC vendors offer wrappers that allow a smooth migration from the installed classic OPC product base to new OPC UA products. Toolkits, such as the OPC UA C++ and/or OPC UA .NET Toolkits from Softing, facilitate the process of getting started with OPC UA technology and accelerate the time-to-market for developing OPC UA servers and clients.

Unified Architecture increases influence of OPC technology on the industry

OPC technology is well positioned through the many opportunities of collaboration between the OPC Foundation with other consortiums (e.g. PLCopen, MES Dachverband, ODVA, MIMOSA, FDI, ADI). This form of working together was unheard of ten years ago, but now it has become the norm as organizations are looking for the best way to achieve adoption of their respective specifications and technologies. The ever increasing level of data integration and the growing networking of automation components in factory and process automation, building automation, security, safety technology, smart grid, etc., drive a strong trend towards cross-organizational concepts. There is no room in this global economy for reinventing products and technologies just for the sake of reinventing. End-users are looking to purchase products from suppliers that truly allow them greater degrees of information aggregation and exchange to maximize and monitor their resource and asset utilization. The OPC Foundation will continue to provide both a backward and forward migration plan to facilitate a complete communication infrastructure providing full integration and interoperability of multi-vendor components as well as long-term investment protection.

With its Compliance Testing and certification program, the OPC Foundation ensures that the OPC products from multiple vendors will seamlessly work together supporting secure reliable

interoperability. Here, too, consortiums are collaborating to define greater levels of reliability and certification.

With OPC UA the OPC Foundation has met its goal of global interoperability. The required information can be provided to any authorized person anywhere and anytime, regardless of which operating system platform the applications are running on.

Combining ease of use with maximum interoperability – what has long been standard in consumer electronics should also be adopted by suppliers in industrial automation. The focus of the OPC Foundation strategy and vision over the next few years will be to look for opportunities to facilitate vendors achieving this standard. Then end-users in industrial automation will be able to install and deploy highest quality products that are truly plug-and-play.

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