



DIGITALIZATION BY M&M

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OPC UA SERVER.

On Embedded
Linux.

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OPC UA SERVER. ON EMBEDDED LINUX.

OPC UA has become the established communication standard for Industry 4.0 and the Industrial Internet of Things (IIoT), because it allows secure, standardized exchange of data and information among devices, machines and services.

Today's industrial controllers can no longer forego the support of this standard. Meanwhile, the standard is penetrating further and further into the field level and sooner or later will support timecritical applications as well, as indicated by developments like Field Level Communication and Pub / Sub via TSN.

Together with Lenze, M&M Software has developed an OPC UA server for the Lenze c500 and c700 family of controllers. It builds on the Cs control platform and replaces the OPC UA server, which has been standard on this platform, with a more powerful variant.



» PROJECT DESCRIPTION.

Codesys is a proprietary but widely used standard platform for industrial controllers based on IEC61131-3, the global standard for PLC programming.

The Codesys company (formerly known 3S) is headquartered in the Bavarian town of Kempten. Many well-known controller suppliers build their solutions on top of its proven Codesys Automation Platform and integrate the engineering tools Codesys provides into their own product portfolio.

With its c500 and c700 family of controllers, Lenze also relies on Codesys for its sophisticated motion controllers in compact machines. Their typical use occurs in packaging machines, and this application in particular places very high performance and functionality demands on the OPC UA server used.



» PROJECT DESCRIPTION.

The automation industry is also facing new challenges in the TSN environment due to the upcoming Field Level Communication and Pub / Sub standards. To make sure they can work with these upcoming technologies, companies will need confident mastery of OPC UA technology. Furthermore, the automation specialist's goal is to use a uniform, scalable OPC UA solution for non-Codesys-based platforms from Lenze as well. These are just a few of the reasons Lenze decided it will develop the associated OPC UA server itself as a strategically crucial component.

Due to time pressure, the company, which is headquartered in Hamelin (Lower Saxony), decided on M&M Software as an external development partner. Their reasons for choosing M&M Software included our proven industry expertise, available customer testimonials related to OPC UA and device-oriented software and our successful joint projects from the recent and more distant past.

A small but effective team made up of members from both partner companies quickly advanced the development project and brought it to a successful conclusion. The project execution followed a shared agile process model, in which M&M Software was remotely integrated into the customer's development infrastructure directly.

The solution uses the Codesys Runtime System and accesses the PLC runtime data via the

TecVarAccess C API. Unified Automation's High Performance SDK is used as the basis for the OPC UA server. The data available for exchange with the controller is read from the Codesys symbol configuration file, which was previously edited and generated in Lenze PLC Designer. As a result, the engineering remains unchanged from the standard Codesys system even once the OPC UA server is replaced.

The interesting part is how data in the OPC UA server is reused. For this, Lenze supports an additional high-performance mapping of the control data into industry-specific information models right in the "belly" of the OPC UA server. Examples include OPC UA PackML for packaging machines and EUROMAP 77 for injection molding machines. The German Mechanical Engineers Association (VDMA) has also been actively promoting such OPC UA information models based on companion specifications for some time and actively supporting them in working groups. The option of direct mapping to existing and future information models makes the Lenze controller even more promising for many industries.

This project has shown that even quite technically complex development like this can be successfully organized across different companies, as long as the necessary expertise is available on both sides.



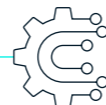
BENEFITS FOR THE END CUSTOMER.

Using this solution not only lets machine manufacturers support the information models required by their industry, but also makes it relatively easy for them to respond to customers' specific requirements by simply adapting the mapping – without having to modify the machine's actual control program. Thanks to its compatibility with the familiar Codesys environment, learning the new solution also requires negligible effort.

Sector(s): machine manufacturing, electrical automation, packaging industry

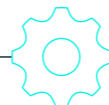
Customer: Lenze

Lenze SE is a leading German supplier of drive technology and automation systems. The company is headquartered in Aerzen-Groß Berkel near Hamelin (Lower Saxony).



TECHNOLOGIES.

- » OPC UA
- » Codesys Automation Platform
- » Unified Automation HighPerf UA Server SDK
- » C/C++
- » (Embedded) Linux
- » Automated tests using Python
- » Debian Tool Chain



» OUR EXPERTISE.

- » Industry 4.0 & Digital Twin
- » Consulting

- » Cyber & Software Security

- » Desktop, Web, Mobile
- » UX & UI Design
- » Innovation / IP

- » Cloud
- » IoT & Edge
- » Data & AI



WE

turn visions for a digital world into reality.

M&M Software offers more than 35 years of experience and state-of-the-art technical knowhow. Our almost 300 highly motivated employees at four locations across the globe are the main success factor of our projects. Together we drive the digital future.

SOFTWARE AND DIGITALIZATION PARTNER.

M&M Software is an international software and digitalization partner. We accompany companies in the digital transformation of their organizations, products and business models. We identify potential, generate ideas, derive strategies and develop tailor-made software solutions for the digital world.

The results of our trusting and cooperative collaboration are digital products or systems that are successful on the market and that we accompany throughout their entire life cycle. We consult and implement at eye level and in close coordination with our customers.

In this way, we create new business opportunities and secure competitive advantages. Our global teams work closely with partners in research, academia, and industry.

