

## Complex automation made simple



→ Today's control technology still has plenty of potential for savings in terms of its engineering. TwinCAT 2.9 meets these requirements. The further development of the engineering tools tackles the increasingly more complex automation. New features make configuration and programming significantly easier. Existing software components are reused easier, commissioning time is shortened, costs are reduced.

### **Configuring and commissioning with configuration mode**

The new TwinCAT 2.9 configuration mode further simplifies the commissioning of I/O signals and axes. Initial commissioning can be carried out without PLC program. In configuration mode, all Beckhoff fieldbus components can be operated free running. Inputs can be read and outputs set in Force mode. Faults can be detected and rectified at an early stage. In addition to determining the existing fieldbus cards in the PC, it is also possible to read the individual nodes and existing Bus Terminals for all fieldbusses. Configuration errors can thus be prevented.

Version 2.9 of the TwinCAT System Manager can also be operated remotely. This means that a TwinCAT system that can be reached via TCP/IP can now be programmed and commissioned not only via the PLC control, but also with the TwinCAT System Manager. Systems can thus be conveniently configured remotely, using the familiar configuration and diagnostic tools of the System Manager.

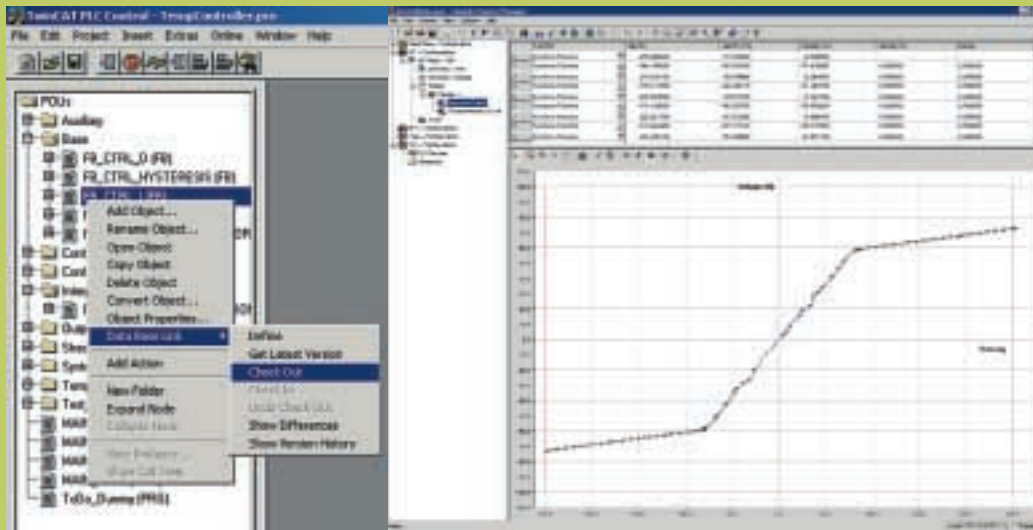
### **Engineering Interface**

In cases where several programmers work on a PLC project, in the past the question kept recurring of how to integrate the work of the different programmers in a single project. Up to now, this was only possible by comparing, importing and

copying. In version 2.9 it is possible to co-ordinate the work via a source code management system. To this end, the Engineering Interface (ENI) Server is installed on a central server. It provides a shell for a variety of source code management systems. Under this shell, Microsoft Visual Source Safe or MKS Source Integrity may be operated. The creation of individual drivers for other tools is possible. In the PLC development environment, a certain version of a project or a component can be called up from the database. For processing the component, the object must be checked out. This means that it is locked for all other users. Once processing is complete, the object is checked in again. The history of all formerly generated versions of an object can be called up at any time. Comparisons of different versions are possible.

### **COM interface for software PLC**

All commands that were previously made available via the batch interface are now also accessible via a COM interface. These commands can thus be executed from a Visual Basic program, a Delphi program or simply via a Visual Basic script. Some additional commands make the use of the batch interface even more convenient. Within a batch, wildcards now exist for the current project and for various paths.



Source code management via Visual Source Safe or MKS Source Integrity

TwinCAT Valve Diagram Editor

### TwinCAT Valve Diagram Editor

In order to linearize non-linear characteristic curves of hydraulic valves, a velocity curve that has been measured for the output voltages has to be read in and approximated by a characteristic curve. The measured characteristic curve is displayed in the TwinCAT valve diagram editor and can easily be linearized graphically. Only a few reference points are required. A straight line or a 5<sup>th</sup> degree polynomial are placed between these reference points. The determined characteristic linearization is then loaded into the TwinCAT NC real time and taken into account when the voltages are output in the drive. Online monitoring is possible at any time.

### External set value generation for TwinCAT NC PTP

Thanks to the new external set value generation option, from TwinCAT version 2.9, it will be possible to superimpose own set value generators, written in the PLC, or different set value generators with the standard set value generator of the NC PTP. This opens up a variety of new applications. On the one hand, special set value generators that are optimized for a certain application can be written in the PLC. On the other hand, interpolating movements of several axes can be combined with NC PTP features such as the flying saw. CNC machining of moving workpieces can thus be realized. The handling of the new function is supported by a number of new PLC components.

### Motion laws in real-time

The increasing performance of PCs means that the complex motion laws described in VDI 2143 can now be calculated directly at NC runtime. This has numerous advantages. On the one hand, only very few reference points have to be transferred into the TwinCAT NC real time. While previously several thousand reference points had to be transferred, today a few are sufficient. Existing points can be modified online, or the laws associated with the points modified. This enables very flexible cam plate applications.

### TwinCAT NC I news

If, for example, the saw blade is found to be blunt and has to be replaced during a sawing process, the new NC-I emergency stop is activated. After the saw blade has been replaced, the axes are repositioned, and the part program continues where it stopped once the stop function is released. The emergency stop can stop with parameterizable, even high decelerations. After the stop function has been released, the part program can continue to be executed immediately. The retrace function interrupts the execution of the current part program, and the program is processed in reverse order back to the start, if necessary. If, for example, a thread breaks in a sewing program during the execution of a part program for sewing clothes, then the path needs to be partly retraced and the program restarted at the right position.