

Vision plus Motion

Engineering - Saving costs during engineering must not occur at the expense of quality: Integrated solutions on a PC-basis enable short development times combined with low hardware expenses and can easily be expanded - so much for the theory. But what does the practice look like?



The integration of hardware and software components into their solutions in the field of SoftPLCs is a problem for many mechanical engineers and control manufacturers. In this context, KW-Software GmbH from Lemgo, Germany, provides an adaptable and flexible system: The PC-based software package ›MULTIPROG Suite‹ is ready to use as a complete system which can be expanded by further components if required.

The solution is composed of the programming environment MULTIPROG (PLC programming according to IEC 61131), the machine visualization ProVisIT and the fieldbus configurator SyCon.NET. The integration of individual components results in many advantages: Data has to be entered only once and is then available for all involved tools. Furthermore, objects can be created which include programming and visualization data. Regarding the machine visualization it is not necessary to assign all elements separately: It is sufficient to select the corresponding function block instance via the OPC server in order to connect all object ›tags‹ automatically. For more complex visualizations containing many tags this considerably reduces error probability.

The programming system MULTIPROG supports all five languages defined by the standard IEC 61131-3: Depending on the current requirements the user can choose between textual (IL and ST) and graphical (LD, FBD and SFC) programming.

It is possible to mix the languages FBD, LD and SFC within one worksheet and to change the language during code development. Additionally the software supports the programming language ›MSFC‹ which is mainly used in the automotive industry and unites cross-system diagnose capability with easy operation. Many helpful features such as the Edit Wizard or the cross references list facilitate the application development. The Edit Wizard, which can be used in all IEC editors, allows to select and insert all declared data types, operands, keywords, functions and function blocks. The cross reference list gives you an overview of all data used in the project, such as function blocks and local or global variables.

Commissioning is made easier and faster due to a large number of debug functionalities and the extensive possibilities to apply online changes. Furthermore, programs, function blocks and functions can be changed or added and parameters can be changed while the control is running.

The adaptable associated runtime system Pro-ConOS (Programmable Controller Operating System) allows the use as embedded system and as SoftPLC under Windows with the integration of customer-specific software and hardware components into the kernel. The system allows real-time operation with reaction times of less than 50 microseconds.

The newly developed motion control solution ProConOS Win RT MC additionally includes the kernels provided by the companies Eckelmann and ISG and thus enables a complete motion solution based on PLCopen motion blocks. These blocks are standard function blocks for all motion controls. The standardization of these blocks includes single drive motions and multi-axis motions. Moreover, controlling via the Sercos interface is possible in conjunction with a Windows XP expansion board.

ProVisIT is particularly well suited for the visualization of processes running within a machine. This "easy-to-use" solution is compatible with all types of IPCs, Operating Panels and PDAs running under usual Microsoft operating systems which are commonly used for automation tasks. A graphical editor with an OPC client interface enables fast and easy development of visualization solutions according to the requirements of mechanical engineers. Visualizations are designed in the graphical editor which provides numerous standard objects such as lines, rectangles and bitmaps, different types of edit boxes or buttons, bar graphs, sliders, analog displays and clocks. All these objects can be used in various colors, sizes and positions.

The solution communicates with all controls and devices which provide an OPC-Server. Visual Basic Script and ActiveX Controls allow the integration into the world of Windows and the adaptation to own applications.

Due to these standards the solution is an open and flexible tool for the most diverse visualization tasks.

The integration of the fieldbus configurator SyCon.NET provided by the automation system vendor Hilscher represents a solution for the configuration and diagnosis of field buses. The software is based on the open standard FDT/DTM and allows to connect variables and I/Os in a simple way via drag & drop. Apart from variable names the PLC standard IEC 1131 also provides signal names. This way existing connections between I/O modules or terminals and variables are already visible during programming. Thus it is no longer necessary to switch between different applications. Fieldbus diagnosis can be done using special function blocks which display possible bus errors within the machine visualization. Furthermore, the FDT/DTM technology integrates further intelligent modules into the software package.

"Our system joins vision,
motion and communication"



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