Case Study

Programming machine movement without PLC code
Open Core Engineering translates programming languages for machine control

When people of different nations work in a team, they must first agree on a common language. Only then, they can coordinate tasks and come to mutual agreements. The same applies for machines and IT systems. For the first time, high-level language based applications on external devices have access to all the functions of the control units and drives. Thus, applications based on C/C++, for example, can run in the real-time environment of the control unit. That is why the new Open CORE Engineering (OCE) software portfolio includes interface technology through which Bosch Rexroth now brings together the worlds of automation and IT. The Open Core Interface (OCI) automatically makes a variety of programming languages available to the control unit. The result: Machinery manufacturers can program with modern higher level languages without having to write a single line of PLC. This reduces the programming efforts by up to 50 percent as one of the first OCI applications shows.

How long is the life cycle of a component, which stress does it withstand and how exactly is it manufactured? The answers to these questions can only be given by special measuring and testing machines. Not only do they test prototypes. In large-scale series production, they test series components over and over again in order to guarantee 100 percent quality.

In the software of these machines, the program LabVIEW has been established worldwide. It is designed exactly for the requirements around the industrial measuring and testing. The only disadvantage until now: In addition to LabVIEW, the machine manufacturers must program machine controls and coordinate the two programs with one another. There are no standard interfaces for this, which lead to too much effort. The specialists for LabVIEW and for PLC had to agree at first, then write their respective programs and then test them to see if they would actually work hand in hand.

OCI has considerably facilitated the work of the programmers. A programmer now uses LabVIEW to produce the software for the tests and the movement processes of the machine without needing to write a single line of PLC code. This eliminates double-work and error-prone interface programming. Rexroth is providing libraries with more than 550 virtual instruments. They “translate” the LabVIEW commands for the PLC controls.
Case Study

First machinery manufacturers such as Kraus Automatisierungstechnik GmbH from Hassfurt are already using OCI to their benefit, to reduce engineering efforts and to reduce their delivery times. With the same team, the company can now program twice as many machines.

As the first pure software solution, Open Core Engineering from Rexroth was distinguished in 2013 with the renowned technology prize- the HERMES AWARD. Open Core Engineering connects the previously separate PLC and IT worlds by offering an integrated solution consisting of open standards, software tools, function toolkits, and the Open Core Interface. To achieve this, Rexroth has opened the control core to provide expanded access. Now, with a variety of high level languages and operating systems, machinery manufacturers can create independent individual functions, which run parallel to the firmware directly on the control unit or on external devices. With this capability, machinery manufacturers can now, for example, also fully integrate smart devices into automation and take advantage of their operational interface capabilities.