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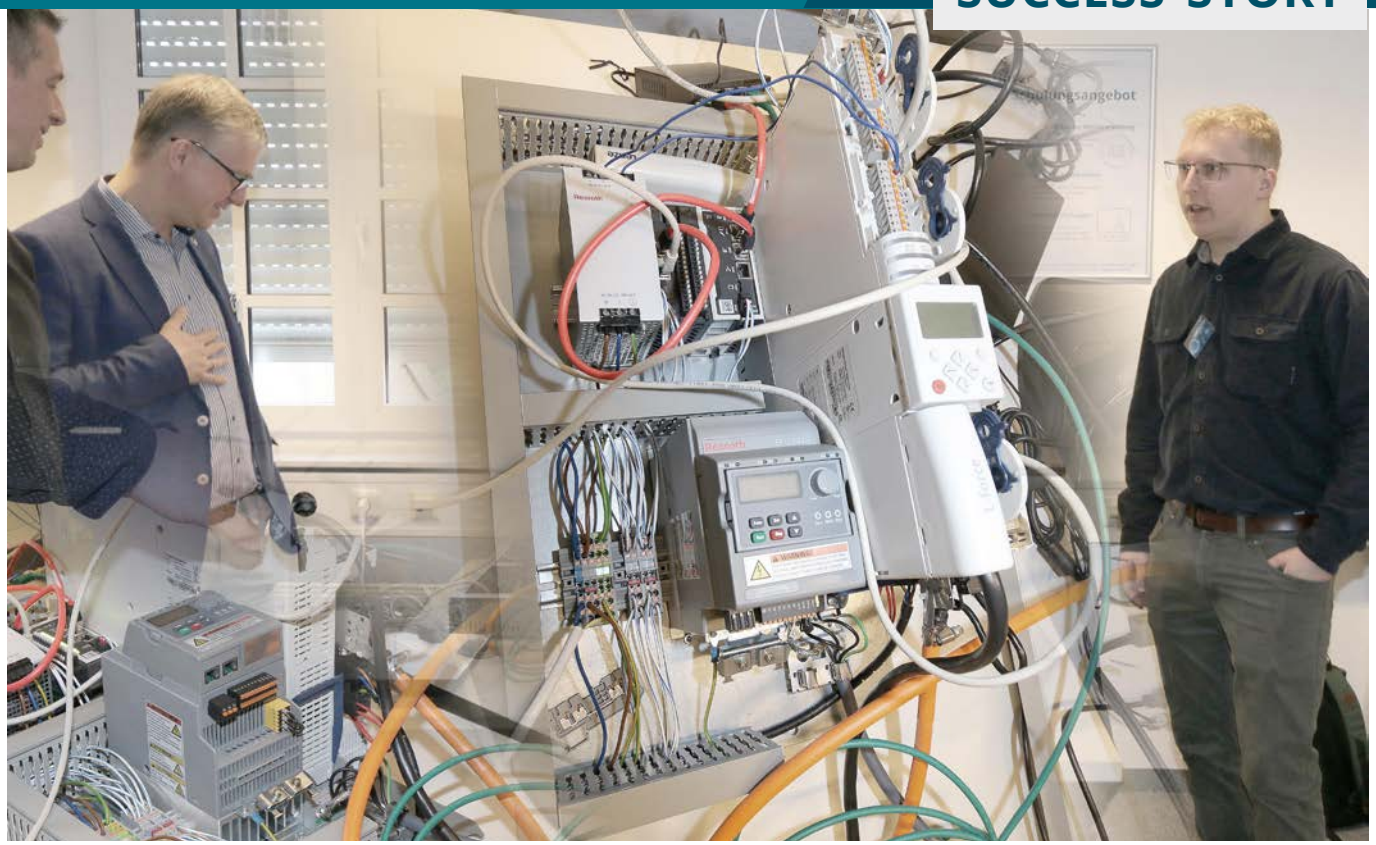
SUCCESS STORY



CONTROL OF SERVO DRIVES WITH CTRLX

As part of his bachelor thesis at the FH Aachen, Mr. Sebastian Kröbel developed a function module that can be used flexibly to control servo drives with the Bosch Rexroth ctrlX system.

The goal

As a Certified Excellence Solution Partner and official system integrator of Bosch Rexroth, it is of great interest to us to be able to use the new ctrlX CORE control system in the most efficient way for our customers. The aim of the bachelor's thesis was to develop an industry standard for controlling open-loop and closed-loop drives with the ctrlX. Control and monitoring of the drives as well as interfaces to the HMI with basic functionalities such as operating modes, user administration and alarm handling were to be integrated.

The project structure

The software developed was to be used and tested in a laboratory setup at Quality Automation GmbH. The setup contains the ctrlX CORE controller with a QA base project including the newly developed function blocks, an HMI panel with a specially developed user interface in the QA corporate design and a three-phase motor with a corresponding Bosch frequency inverter (EFC 5610). In addition, a ctrlX Drive servomotor with servo inverter was installed in the laboratory setup.

The developed function module contains all the functionalities required and commonly used in industry. Switching between manual and automatic mode, reading in digital and analog inputs and set and actual values as well as resets and emergency stops are mapped.

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Project result

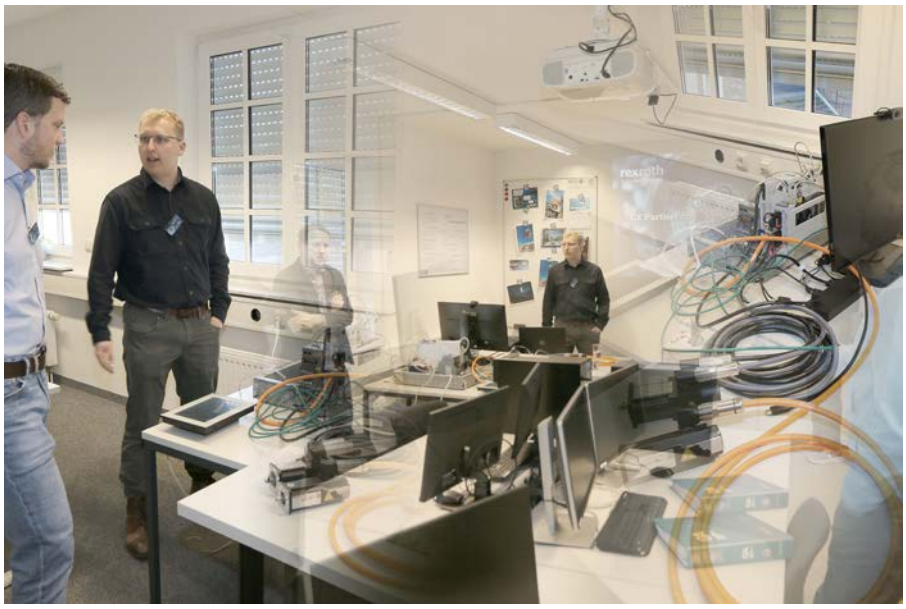
The inverter can be controlled as desired via the ctrlX controller. All variables and the FB were documented very precisely for internal purposes. The absolute positioning, relative positioning, speed control and torque control operating modes have been successfully implemented.

In position control, a target position with a ramp profile is approached after the start command. The ramp profile contains acceleration, deceleration and a maximum speed. The setpoint is specified either as an absolute or relative position offset.

With speed control, a set speed with ramp profile is approached after the start command. The ramp profile contains acceleration and deceleration. Torque control can be controlled continuously. The target torque is applied in real time. This allows torque curves to be realized.

In addition, a module was developed to use the servos to drive a linear axis. This FB in turn uses the servo FB. The axis can measure itself during initialization, which means that the axis can be positioned relatively and absolutely and a speed specification is also possible.

In addition, an HMI user interface was created with which the PLC program can be controlled and monitored. This includes various switchable menus, user administration and alarm management with acknowledgement function.



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