News Overview

MotoLogix - new interface generation for robot control via PLC

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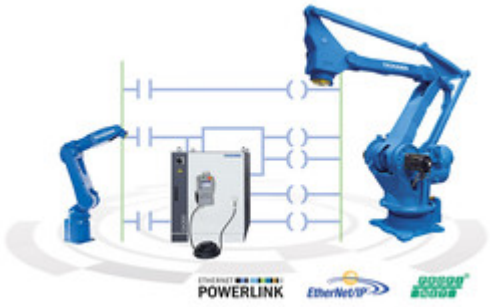
YASKAWA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The interaction between machines and robots has a vital role to play in efficient industrial manufacturing. For a long time, programming, control and error elimination for the two systems had to be carried out separately. Yaskawa now offers MotoLogix, the new generation of the well-established interface Motoman Sync. This allows robots to be integrated directly into the PLC even more simply and without previous knowledge of robots – while still providing all the benefits of a modern control system.

Both machines and robots are used in complex production facilities. Originally, the two systems were programmed and operated separately from one another via the PLC and robot control. However, while it is still technically possible, this conventional interaction between robots and machines involves a number of issues which can now be solved more simply. For example, when using the conventional method operating personnel have to be trained not just in international PLC standards but also possess skills in robot programming and control. What is more, redundant programming procedures mean that the source of failure is not readily evident. This makes it difficult to eliminate errors quickly and easily. Solutions have been put forward in the past. At the turn of the millennium, for example, the trend was towards integrating machine control systems in robot control. Given that PLCs are now high-capacity and can be expanded on a modular basis, the approach today is the direct opposite: the robot is integrated directly in the machine via the PLC as one of many elements. Yaskawa offers a highly effective solution here: MotoLogix. MotoLogix allows robots of the Motoman series to be programmed and controlled quickly and easily via the PLC, too. No detailed knowledge of robots is required.

A clear cut

MotoLogix is an innovative solution developed by Yaskawa which allows coordination of all axes of a production facility with the robot motion. It comprises a hardware unit and software for programming the robot via the PLC. The platforms currently supported are Ethernet/IP, Powerlink and Profinet. The interface has a library of function blocks already prepared in all language options, so operating personnel can work directly via the library. Bit sequences for servos are no longer required. Integration of robot control in the PLC retains the full range of benefits. The robot control calculates motion kinematics, for example, guaranteeing high motion quality. In other words, Yaskawa expertise in terms of precise motion sequences of the manipulators is still guaranteed. Whether

machine loading, picking, packaging, placing, palletizing, measuring, testing or sorting: the robots along with the relevant control systems can bring their full capabilities to bear in all types of handling. Normally, the robot is incorporated in the production facility as a *slave* and integrated as an additional axis, for example. This means that conveyor belt synchronization is also possible. The conveyor belt tracking system enables the manipulator to find objects on the conveyor belt even if they have shifted during conveyance, for example. What is more, sensors and cameras allow synchronized motions to be effected as part of complex procedure systems. Currently, MotoLogix can be used to synchronize up to eight robots.

Hook up and get started

According to the conventional method of having robots and machines interact with each other, machine were programmed and controlled via the PLC. The *teach-in*, i.e. robot programming, was carried out using a teach pendant. Here, the job structure and motion points are saved in the robot control system while a parallel operating structure and component administration has to be undertaken in the PLC. The jobs are then called up via the PLC by means of a bus. Both job creation and maintenance require expertise in operating robots, so special training had to be provided for staff.

With MotoLogix, a teach pendant is no longer required. Full and direct robot control is through the PLC: this is where movements are initiated and tracked. As a result, no knowledge of robot operation is required any more. Path control itself is via the robot controller DX200: this ensures the benefits are retained, in particular motion precision and speed stability. So nothing else is required for the initial start-up. The robot is connected and is directly embedded in the PLC and the Human Machine Interface (HMI) via MotoLogix. This means that all data is saved in the PLC without storage limit. Another particular benefit is the fact that the data can easily be displayed graphically on the HMI. It is also possible to have individual items displayed such as the company logo or application-specific processes.

Simple integration of robot control in the PLC pays off not just when operating complex production facilities. With MotoLogix, PLC skills are sufficient to be able to control robots. This means that searching for personnel with robot training or investing in retraining is no longer necessary. Yaskawa robots can be operated in the same conditions all over the world.

Conclusion

MotoLogix allows all Yaskawa robots with a DX200 controller to be integrated in complex production systems in a simple, straightforward way. The robot is programmed and operated directly via the PLC. This also eliminates error sources, which have often posed challenges in the past simply in terms of identification. The HMI can be used to create varying and individualized graphic displays, and the extensive Yaskawa library is available. A teach pendant is no longer required to carry out the teach-in at the robot. Thanks to the Yaskawa DX200 robot controller, motion precision and speed stability are fully guaranteed.