Decentralized servo technology without language barriers

KOLLMORGEN develops a multi-language interface for Profinet, Ethernet/IP, EtherCAT & Co.

Thanks to the multi-language interface, decentralized servo axes with stainless-steel motors can be incorporated very easily into different control systems.

Although machinery and plant engineering certainly has international characteristics, there are still some continental- specific features that need to be accounted for with technical equipment. These include in particular the selection of control systems, as well as the language spoken in the bus. These regional practices mean that manufacturers supplying both regions need to equip their machinery with the relevant control systems as required.

Since the issue of communication automatically arises with selection of the relevant automation, KOLLMORGEN has now made it easier to connect the relevant control system to the decentralized servo technology in the form of the decentralized AKD-N series using a multi-language interface.

Benefits of Modularization

Space savings, increased energy efficiency and lower installation and assembly costs are just three of the benefits of using decentralized servo technology in mechanical engineering. First of all, the positioning of the control engineering in the immediate vicinity of the actual drive task creates space in the control cabinet. These can be smaller as a result, allowing them to be integrated more easily and in a more compact manner in machine racks. Aside from a more efficient operating surface, the AKD-N devices also provide greater freedom to development departments for constructing new machines with less spatial restrictions through their robust design and IP 65 degree of protection.

Another effect of moving the servo drive technology to the machine: the thermal losses are no longer concentrated at one spot in the control cabinet, which in turn saves money by eliminating air conditioning and thereby reducing operating costs over the long term. As a result of derating, KOLLMORGEN has made a conscious decision to develop the AKD-N decentralized servo controllers as an offset solution. This way the devices provide full power. With the hybrid "piggyback" solution the thermal discharge from the motors can result in more than 30 percent power loss. The "next door" approach also creates more freedom in selecting a motor compared with having everything in the center.

Structure of KOLLMORGEN's decentralized servo system with the AKD-C feed-in module and the decentralized AKD-N servo controller.

Motors Selection: Maximum Freedom

Standardized synchronous motors, customer-specific special motors, hygienic premium steel motors in protection class IP69K, linear and rotating direct drives and asynchronous machines: decentralized AKD servo controllers can cope with whichever motor you are controlling! This makes it so easy in practice to use the best system for the relevant drive task, without having to get bogged down in the multiple versions available. Since the decentralized controllers also use the same functional AKD platform, mixed forms of centralized and decentralized controllers can also be easily implemented within the same application. All in all, KOLLMORGEN supports designs for perfect-fitting solutions with a high degree of standardization, which ultimately reduces storage, documentation and purchasing costs.

The features of the decentralized servo technology outlined briefly can be used independently of the higher-level control system thanks to further developments in communication. Profinet, Ethercat, Ethernet/IP: machine and plant manufacturers no longer need to worry about the language of their control system thanks to the multi-language interface. As communication in KOLLMORGEN's AKD-N system is ultimately now just a question of the software settings, the actuators can be adapted "at the touch of a button" if the PLC changes based on market differences. This way manufacturers have the benefit of being able to design their machines free from country-specific features or their customers' special plant regulations. It is also much easier to modularize the whole ensemble – an aspect for which decentralized servo technology, in particular, is able to demonstrate its full performance capacity.

No loss of power through derating: KOLLMORGEN's decentralized servo technology is positioned directly at the motor as an offset controller.

Parameterize using a few movements

For Silvester Tribus, CEO of TBM Automation AG in Switzerland, this independence forms the basis for integrating machines into an existing plant network more easily and quickly. "We deal with very special requirements and needs related to functions or data logging on a daily basis. If we are open in terms of the protocols, we are able to meet these requests with every control system." What is specified and in what format differs greatly in the experience of the Swiss CEO. "Some customers specify the control system, some the entire technology, and for others it doesn't matter. They want their machine fitted out in such a way that they achieve the required performance and quality – the exact way that this is done is left to us." In terms of communication the full-service partner for industrial automation from Widnau, south of Lake Constance, always states that machinery and plant engineering is in great shape when programming a control system, but regarding the field bus the matter "is be-

coming more difficult". As a result KOLLMORGEN has written the finished software modules for the multi-language interface and collated these in a library that reproduces at least 80 percent of the basic functions. "The remainder can be adjusted in just a few parameterization steps", says Tribus.
The multi-language interface is integrated into the enclosure for the central AKD-C supply unit. The decentralized servo controllers are connected to the control cabinet unit with just one cable – arranged in a line rather than in awkward star wiring. The AKD-C feed-in module can be used to connect up to 16 decentralized AKD-N servo axes via the grid-bound DC supply. The system cables are just 11 millimeters thick and therefore require less space. The eight-pin structure on the inside draws the DC supply of the decentralized AKD-N drives, provides the 24V supply, the bus communication, transmits signals and brake management.

The Bottom Line

With the new multi-functional communication interface which is unique in the drive technology market, KOLLMORGEN provides an option for switching between control systems with just one "click" with decentralized drive architectures. This makes it possible to design machines free from restrictions on the PLC side. The multi-language communication module supports the entire ensemble with local logic for extremely rapid reactions at the servo axis in micro seconds. The new communication module thereby opens up closed systems, enabling completely new and open designs.

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About Kollmorgen

Kollmorgen is a leading provider of integrated automation and drive systems along with corresponding components for machine builders all over the world. With more than 70 years of Motion Control Design and application experience and profound knowledge of constructing standard and special solutions, Kollmorgen supplies solutions time and again that stand out in terms of performance, quality, reliability, and ease of use. As a result customers can achieve a market advantage which is beyond question. For further information please contact think@kollmorgen.com or visit our website www.kollmorgen.com/uk