



Interview about the new multi-axis servo system

„We Simplify Complexity“

Performance enhancement and cost reduction are a must for machine builders. With the new MDD 2000 multi-axis servo system, SIGMATEK wants to address exactly these needs since drive technology plays thereby a deciding role. In an interview with A&D, CEO Alexander Melkus explains the additional benefits for machine manufacturing provided by the solution from SIGMATEK.

INTERVIEWER: Christian Vilsbeck, A&D **IMAGES:** Sigmatek

For which applications is the new drive solution particularly suited?

With its modularity, compactness and high power density, the new MDD 2000 multi-axis servo system is ideal for many applications. This ranges from the packaging and food industry, to handling and robotics, to metal working or textiles. Wherever a lot of servo technology is used – and the demand for servo axes continues to steadily rise. With our system, we also support more Safety functions to provide machine builders with even more Safety.

Which technical tricks have enabled you to achieve this high power density?

We built all essential functions into one module, i.e. supply, filter, DC-Link circuit as well as ventilation – and that for one to three axes. With many competitors, components are implemented externally. In addition, simple expansion options are included. In particular, applications in which continuous power is not always applied to all three axes – with 3- or 6-axis robots for example – profit most from this solution. We also installed a new generation of IGBT modules, which have a considerably higher power density. Combined with a few “tricks”, we could realize a leading power density on the market.

At the beginning, you also mentioned the modularity of the drives. From your experience with customers, how important are flexibly adaptable and as needed, expandable drive systems?

Extremely important! Because many machine builders have a standard machine with, for example, six axes that can be implemented with two modules with us. In the expansion stages however, additional axes must be added according to customer requirements. Here, it is crucial that an additional servo module for additional axes can be easily connected or replaced with a higher performance class – with the MDD 2000 series this is possible via Plug & Play. Our modules, with varying width, always have the same height and depth. The modular concept provides each servo module in different variations. This means that I can use 1-, 2-, and 3-axis modules, including supply and network filter or simply connect axis expansion modules without needing tools. The machine builder can tailor the fitting solution from a toolkit and easily scale it any time.

Your drives are connected via the real-time VARAN bus. Are there any further developments and technology security?

Yes, to both! We are completely committed to the VARAN standard, because the real-time Ethernet has clear advantages over other technologies, especially with motion applications with many synchronized axes. VARAN-based systems react within microseconds instead of milliseconds. That can make a major difference when errors occur, as a tool can be quickly damaged because it travelled a few millimeters too far due to the cycle time. It is not that we, as early supporters of VARAN, cling to the technology. Other bus systems simply do not meet our requirements. VARAN is also not a “frozen” technology, the standard is continuously developed and has a strong commitment to the members of the VARAN User Organization. The implementation of other bus systems is included in the concept.

„Combined with the engineering suite LASAL, our multi-axis servo system MDD 2000 simplifies complexity for the machine builder considerably.“

Even the best servo technology is useless without software. As the central component of SIGMA-TEK's LASAL engineering suite, you offer ready-to-use motion modules. Does this address the core problem of many machine manufacturers, who are not software experts?

Exactly, since the complexity of machine control is continually increasing; including Safety technology. Machine builders are absolute mechatronic specialists and have less and less in-house programming capacity – mostly due to the shortage of skilled personnel. Therefore, with LASAL, we reduce the complexity for the machine builder and provide fully functional software components. With these, we reproduce entire machine components and motion tasks. The customer works on a graphic interface and must only enter information such as the axis length, moving masses and similar parameters – and the basic function is already operational. The MDD 2000 system has an autotuning function to tune the servo controllers and motors to the mechanics. In Expert mode, fine tuning can of course be performed manually. With LASAL however, we want to simplify as much as possible and reduce complexity for the user.

Why should machine builders choose SIGMATEK as a solutions provider for drive technology?

Because an automation system is only complete when all the main components are from a single source and interact perfectly with each other with a maximum of reduced complexity. In addition to the drive technology, we enable complete machine control including Safety – via simple configuration and ready-made software functions, thanks to our previously mentioned LASAL engineering suite. Our automation components are very compact, which is what SIGMATEK is known for. The machine builder therefore has the option to reduce the control cabinet size and thereby better integrate it into the machine design or eliminate it completely. In addition, one of our major strengths is being a customer-oriented development partner at eye-level for machine manufacturers. If a customer needs specific modifications despite our comprehensive and modular automation toolkit, then we are also the right partner. “Combined with the engineering suite LASAL, our multi-axis servo system MDD 2000 simplifies complexity for the machine builder considerably.”

