Overview of the sandwich panel welding line. The plant is controlled via TwinCAT CNC. Programming was done by Beckhoff Automation Oy, Finland.

Until now the latency time of serial buses has prevented fast servo controls based on fieldbus platforms. Beckhoff's new Ethernet-based EtherCAT real-time fieldbus now boosts data transfer speeds to ten times that of conventional systems. EtherCAT combined with PC-based TwinCAT CNC control, which is already fast, raises serial bus performance to an entirely new level.

EtherCAT enhances efficiency of laser welding systems

The Finnish company Laserplus Oy, based in Riihimäki, operates in two main laser technology sectors. The company designs, manufactures and repairs modular laser materials for processing and materials handling systems. Laserplus also acts as a laser machining contractor using its own 2D and 3D laser cutting and welding equipment. The company's strategy is to use lasers to enhance product quality, reduce manufacturing costs and speed up manufacturing times.

The EtherCAT fieldbus is largely incorporated in the sandwich panel welding line manufactured by Laserplus Oy, which combines extensive experience in laser materials processing, specialized expertise in machine construction and Beckhoff's modular control system. The complete machine is controlled via TwinCAT CNC. The user interface – also from Beckhoff – was written in Visual Basic (G-Code) and communicates with the CNC via TwinCAT ADS.

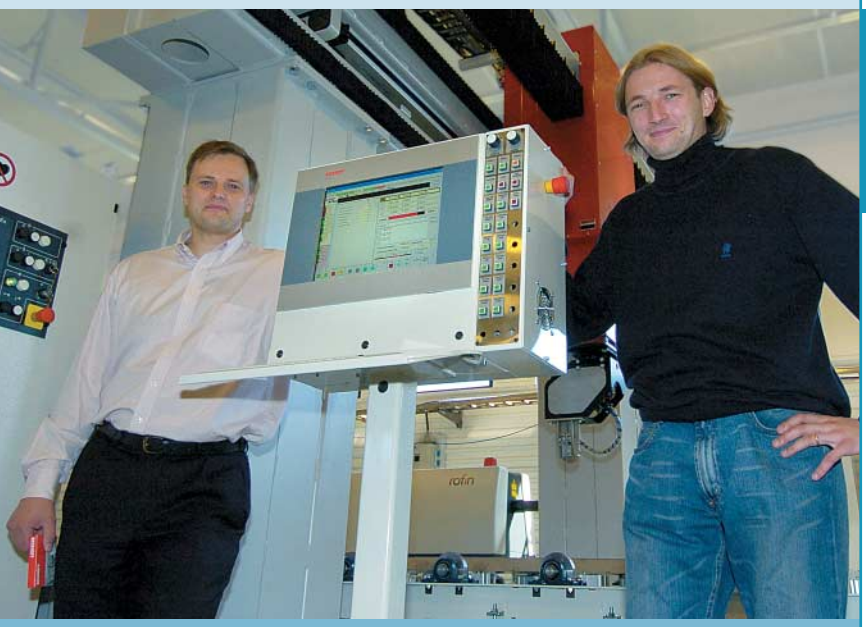
The result is an innovative machine concept that can be tailored to the customer's production needs. Even an existing welding line can also be easily upgraded as the customer's production needs change.

The laser welding system developed for Kennotech Oy produces 3 x 14 m steel sandwich panels that are used in a wide range of sectors such as transportation, construction, shipbuilding and the process industry. Heikki Saariluoma, Manager in charge of Laserplus laser materials processing systems, says that the essential part of the machine is the control system. "The pioneering technology and cost-efficiency were important factors in the decision to implement EtherCAT," Saariluoma explained. "The basic features of fieldbus technology are exploited in this technology. The main requirements for the control system of the machine were modularity and scalability. Beckhoff's control platform with the C6340 Industrial PC as master computer and EtherCAT as fieldbus met both requirements to our full satisfaction."

→ Laserplus **www.laserplus.net**
→ Beckhoff Finnland **www.beckhoff.fi**
→ EtherCAT **www.beckhoff.com/ethercat**
→ TwinCAT CNC **www.beckhoff.com/twincat**

Universal control technology

Laserplus demonstrates the universal applicability of Beckhoff control technology. Not only the welding lines are equipped with Beckhoff technology, but also the building automation system of the new company building currently under construction at Hämeenlinna, where the company will relocate to in the spring of 2006. Beckhoff components control the heating, ventilation and lighting systems of the new building. The intelligent building control is based on BX9000 Ethernet Bus Terminal Controllers. The web server is used as user interface, so Internet Explorer can be used anywhere across the network for changing controller parameters. The user interfaces are assigned different user rights: Maintenance personnel, for example, is allowed to change controller parameters, whereas other users are only able to adjust their office comfort levels.



Heikki Saariluoma, Director of Laserplus Oy, said (left): "The hardware was selected based on demanding requirements, and that is why we decided to use the Beckhoff IPC C6340. The Visual Basic .Net-based user interface was developed by Beckhoff according to our requirements." Right: Petri Lämsä, Head Designer at Laserplus Oy.

I/O and drives are integrated in the control system via EtherCAT for high-performance positioning.

Mikko Uuskoski, managing director of Beckhoff Finland

"Automation in Motion" seminar series

The "Automation in Motion" seminar organized by the Finnish Beckhoff subsidiary in Hyvinkää took place for the 5th time in February. The event featured presentations on Beckhoff TwinSAFE safety technology and EtherCAT, as well as seminar workshops where customers had opportunity to present and discuss topics of their choice from their special areas of application.

Another interesting and welcome aspect of the day was the option of talking to other users of Beckhoff components. "Our seminar forum offers opportunity for discussions with colleagues from other companies. This often leads to new ideas that can be applied to system development activities in their own company", said Mikko Uuskoski, Managing Director of the Finnish Beckhoff branch, and continued: "Our customers represent a wide range of applications, including fast machine tools and building automation systems."

Beckhoff's Finnish clientele has expanded significantly over recent years, with the focus shifting from component customers to users of system solutions. "This development makes the quality of our service and support all the more important", said Uuskoski: "In addition to high-quality products, our customers require high-quality service. Our sales, technical support and training activities therefore have to be coordinated and tailored to the requirements of our customers, so that they can implement automation systems into their plants exactly according to schedule."