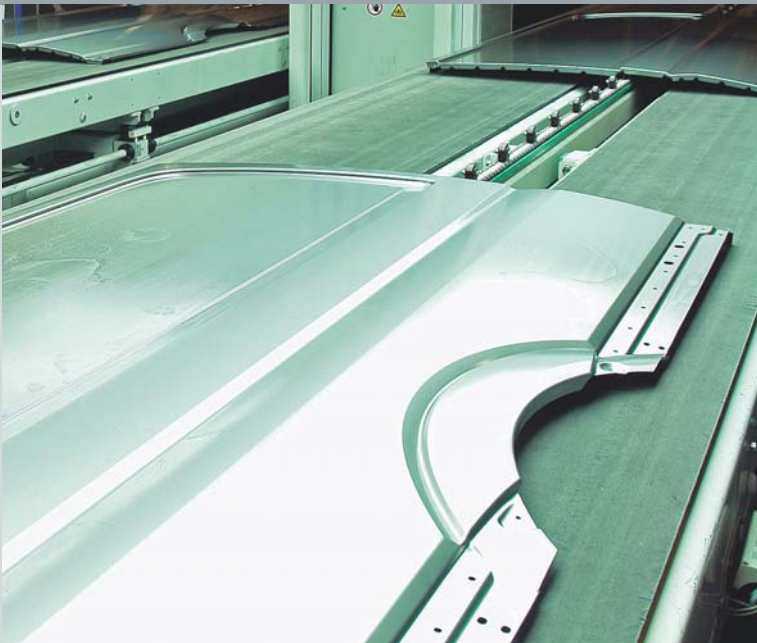




EuroBlech 2008, Germany: Hall 11, Booth G13

PC-based Control for sheet metal working



The main information at a glance:

- | EuroBlech 2008, Hanover, Germany
- | 21 – 25 October 2008
- | Opening hours: Tuesday – Friday: 9 am – 6 pm,
Saturday: 9 am – 4 pm
- | Beckhoff booth: Hall 11, Booth G13

Further information:

- www.euroblech.com
- www.beckhoff.com/forming

At the 20th EuroBlech fair in Hanover, Germany, between 21 and 25 October 2008, 1495 companies will present sheet metal working innovations. This year's EuroBlech will spread across eight halls for the first time, with exhibition space totaling 87,000 m² fully booked.

The sheet metal working industry is booming. An increasingly wide variety of products, varying batch sizes and strong cost awareness require maximum flexibility in the face of global competition. This is where PC-based control technology from Beckhoff offers a significant competitive advantage through scalable and flexible solutions with high performance and high precision.

Sheet metal components come in all shapes and sizes, requiring a wide range of machining processes including rolling, cutting, stamping, folding, drawing, joining, cleaning and finishing. Production is based on processing machines, machining centers or fully automatic production lines comprising sheet metal working equipment as well as handling devices, storage facilities, automatic material feeding and integration into the company network.

The production systems should be highly productive, precise, reproducible and, of course, cost-effective. This requires optimally adapted processes with minimum stoppage and setup times. In addition, large forces in combination with high velocities, as required for pressing, call for advanced control technology. Manufacturers of production machines demand expandability and flexibility in order to be able to meet customer requirements efficiently and cost-effectively.

The scalable and modular range of Beckhoff products enables customized solutions with regard to computing power, complexity and costs. Compared with conventional control systems, they significantly increase the productivity and flexibility of sheet metal working machines. The benefits of PC-based control technology, which integrates all processes including control, regulation, motion and HMI on a single PC, have been demonstrated in a wide range of applications in pressing, cutting, bending and



welding systems worldwide. The high processor power offered by PC technology eliminates the need for special hardware: position and pressure controllers for hydraulic valves, for example, can be replaced with software. The PC effortlessly deals with even the most complex control algorithms and offers additional capacity for other functions such as measuring tasks. Complex and expensive special controllers and hardware PLCs with limited programming flexibility are no longer required.

High performance thanks to EtherCAT

Sheet metal working processes have to be fast and precise and offer high repeat accuracy. These are perfect conditions for EtherCAT, which improves the update and reaction times by at least a factor of 10 compared with conventional fieldbus technology. Conventional fieldbus systems such as PROFIBUS or CANopen can easily be integrated into the EtherCAT I/O system via gateways. Simple and reliable connection technology reduces the cabling effort and therefore the costs. EtherCAT offers full Ethernet compatibility, maximum utilization of the Ethernet bandwidth, and outstanding real-time characteristics.

The benefits of EtherCAT for sheet metal processing systems:

- | Higher speed for punching, stamping or laser treatment, since time stamp actuators with exactly defined rate time enable switching with an accuracy of < 100 ns and axis movements with maximum reproducibility.
- | Exact determination of signal curves through oversampling for high-resolution measurements, as required for weld seam monitoring. Oversampling involves repeated sampling of process data within a communication cycle and data transfer in an array. For example, oversampling terminals sample analog values with a resolution of 10 μ s per measured value.
- | Reproducible processes through reduced cycle times, oversampling and time stamps enable a repeat and parallelism accuracy of ± 0.01 mm for press brakes, for example. Force curves can be set more exactly, thereby reducing delays and tolerances.

| Motion control with many axes, synchronized through distributed clocks, with reproducible accuracy in the nanosecond range, e.g. for bending of sheet metal involving several synchronized axes. Distributed clocks precisely synchronize the EtherCAT devices such as axes, die cushion controllers or synchronism controllers for hydraulic cylinders. All EtherCAT devices have their own local clocks, which are automatically and continuously synchronized with all other clocks through EtherCAT communication. The current distributed clock time is always available across the whole system. Distributed clocks also enable simultaneous reading of all measuring systems and synchronized outputs. EtherCAT measuring systems such as linear scales adapt to the distributed clocks and even synchronize their internal measuring cycle for position measurement.

TwinCAT – all functions integrated in one software

Precise sheet metal processing through bending, punching, stamping, cutting or joining requires synchronization of several axes with high repeat accuracy. TwinCAT NC and TwinCAT CNC replace the complete motion control hardware for all servo axes, including feed, ram or transfer components. Machine manufacturers can customize sheet metal working processes based on their system-specific control expertise. Even complex bending algorithms can easily be programmed in TwinCAT. With TwinCAT, subsequent modifications and revisions and the high degree of flexibility required for sheet metal cutting or nibbling are no longer a problem.

Comprehensive TwinCAT libraries with temperature, cam and hydraulic controllers, flying saw and cam plates simplify the programming. From the PLC drives can be programmed with the Motion Control library, cam plates, according to VDI Guideline 2143, with TwinCAT NC camming, or temperature compensation with the TwinCAT PLC Temperature Controller library in accordance with PLCopen. TwinCAT enables system manufacturers to create their own industry- and system-specific libraries, making them stand out from the competition despite the fact that identical control components are used.