



Hydropulsor AB, based in Karlskoga, Sweden, develops and produces cutting machines for a wide range of metals. Based on previous experience with Beckhoff control systems designed for presses that handle high-speed compaction of metal powder, Hydropulsor was well aware of the benefits and now uses Beckhoff PC controllers for the company's new generation of metal cutting machines.

## EtherCAT for ultra fast metal cutting

With the new controls development, Hydropulsor intended to launch a fast, simple and compact machine. The control system of the previous generation was considered too slow: the hydraulic system had to be controlled with additional costly modules.

The Hydropulsor HYP30-08 can achieve 600 to 700 cuts per minute for metal wires and up to 40 cuts per minute for bars with diameters as thick as 80 mm. Through its patented cutting technology (adiabatic soft annealing) the cutting machine has a further significant advantage: maximum precision. The machine can cut with an accuracy of two hundredths of a millimeter, which usually makes finishing after cuts unnecessary. This high speed accuracy requires a control system

that meets the requirements for material feed and positioning of the hydraulic axes.

"We decided to use the Beckhoff control system because it is simple, flexible, and PC-based. All hardware solutions are combined in one system, which is fundamentally suitable for advanced hydraulic control applications. Our programmers do the rest", said Rolf Lahn, one of the Hydropulsor developers.

### Control system with built-in PC and TwinCAT

The Beckhoff control system in the cutting machine consists of a C3640 Industrial PC with built-in TFT display and TwinCAT software.



Beckhoff Panel PC C3640



The HYP30-08 metal cutting machine

“With EtherCAT as our fieldbus, we can achieve extremely high speeds, which is very important in highly dynamic hydraulic control systems”, said Rolf Lahn and continued: “Customers always want to increase their production speed. The faster our machines, the more competitive we are and our customers are. We already offer market-leading speed, but in the past we have only utilized a small part of the available resources of the control system.”

“The limits of the machine in terms of performance are determined by other system components – the control system, by contrast, has plenty of reserves. If we had faster non-control system components, we could easily make the machine even quicker”, said Rolf Lahn.

#### Increased production speed

The newly developed HYP30-08 is a very compact machine, because the control cabinet was drastically reduced in size due to the smaller number of components. Cycle times and costs could be reduced through the application of EtherCAT instead of conventional fieldbus

technology because a fieldbus master is no longer required and EtherCAT slaves are much more cost-effective. With Beckhoff controls, Hydropulsor has a control platform that meets the current requirements of the machine and leaves sufficient room for future developments – because in terms of EtherCAT processor power and cycle times, only a small amount of the available resources is used.

→ Hydropulsor AB [www.hydropulsor.com](http://www.hydropulsor.com)

→ Beckhoff Schweden [www.beckhoff.se](http://www.beckhoff.se)