

**XFC technology increases profitability and improves the ecobalance**

## German chancellor Angela Merkel visited Beckhoff at Hanover Fair

On her round tour of this year's Hanover Fair, to mark the opening of the industrial trade fair on 21 April 2008, the German Chancellor Angela Merkel visited Beckhoff at the booth in the Application Park. Managing Director Hans Beckhoff explained the trendsetting "eXtreme Fast Control Technology" to Dr. Merkel.

The graduate physicist Hans Beckhoff presented the XFC fast control technology to the German Chancellor as a technological highlight. Angela Merkel was accompanied by Annette Schavan, German Minister of Education and Research; Christian Wulff, Prime Minister of Lower Saxony; and Sepp D. Heckmann, Chairman of the Board of Directors of Deutsche Messe AG.



Hans Beckhoff demonstrated PC Control technology – made in Germany – to the German Chancellor Angela Merkel.

"Beckhoff is the world leader in the field of high-speed machine controllers. The XFC technology introduced by Beckhoff currently allows an improvement in the reaction rate of a machine controller by a factor of 10", explains Hans Beckhoff.

German Open final at Hanover Fair 2008

RoboCup – Beckhoff sponsors Eindhoven University of Technology

## EtherCAT Robots win German Open and come second in the world championship in China



Equipped with EtherCAT, the soccer robots of the Dutch Team Tech United Eindhoven won the RoboCup German Open in Hanover, Germany. In the semi-final they defeated the acting world champion of the Middle Size League, the Brainstormers Tribots from Osnabrück, Germany; a team that had not been beaten since 2004. In the finals it took a penalty shoot-out to beat the current number 3 in the world ranking, the CoPS Team from Stuttgart. At the RoboCup World Championship from 14 to 20 July 2008 in Suzhou, China, the Tech United team was beaten by the Portuguese Cambada team in the final. The Tech United Robots use EtherCAT for interfacing to drives, sensors and actuators.



The TechUnited team of the Eindhoven University of Technology at the RoboCup at Hanover Fair 2008. Right: Thomas Koslowsky, Sales Manager at Beckhoff headquarters in Verl, Germany. Third from left: Jos Out, managing director of IAL, Beckhoff distributor in the Netherlands

Six players form a team in the Middle Size League, the largest and fastest division in the RoboCup competition. Top speed is approximately 4 m/s. Each of the three-wheeled robots weighs around 35 kg and acts autonomously without

remote control. The robots have different roles such as goalkeeper, defender or striker and cooperate with each other in a team effort. Communication with the other team members is established through wireless Ethernet. Vision is provided by a camera pointing upwards towards a parabolic mirror, thus creating a 360° view of its surroundings. Using this image, the robot is able to determine its position. A feature that distinguishes Tech United of the Eindhoven University of Technology from other mid-size RoboCup teams is the active ball-handling mechanism. With two levers equipped with motor-driven wheels, the ball can be pulled as well as pushed. The kicking mechanism device can produce flat shots as well as lob shots – a feature that proved to be very effective in the semi-final. The robot controller is a mini PC with an EtherCAT Open Source master. EtherCAT was chosen for its superior performance at low CPU load while not requiring any hardware extensions on the mini PC. Furthermore, it was easy to implement; and all required devices and components were available.

The ultimate goal of the RoboCup project is to develop a team of fully autonomous humanoid robots by 2050 that can win against the human world champion team in soccer.

→ RoboCup [www.robocup.org](http://www.robocup.org)