

EtherCAT®

Technology Group

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ETG standardizes plant-wide Safety Architecture for heterogeneous control systems

The EtherCAT Technology Group (ETG) is standardizing an open safety profile for safety-related data exchange between machine parts within heterogeneous safety architectures. The profile considers that potentially different bus systems with their own native safety protocols are used within the machine parts. The plant-wide safety related data exchange is carried out by gateway functionality within the machine parts, where the process data is standardized by the safety profile to simplify configuration and diagnostics.

"We in the EtherCAT Technology Group think the effort to replace the native safety protocols of well-established bus systems by a generic bus-independent safety protocol is not feasible. Its certification would be quite complex because conformance verifications and tools of multiple non-cooperating organizations would be required; additionally, the costs for each safety device would be quite high, because more than one safety protocol would need to be supported. That is the reason why we do not position Safety over EtherCAT (FSoE) as a generic protocol – even if this protocol is technically well-suited for this purpose because of its lean specification," explains Dr. Guido Beckmann, chairman of the ETG Technical Working Group, Safety. Instead, the ETG specifies a Safety Application Profile – thus upon the safety communication channel – to define the content of the interfaces between the components of a production line. This permits the usage of pre-defined function blocks within the safety logic to include pre- and post-located machine parts or a plant-wide activation of Emergency Stop functions.

Taking into consideration the fact that different native safety protocols are used within machine components, the plant-wide data exchange of machine-to-machine communication uses gateway functions. "In contrast to a generic safety protocol" adds Dr. Guido Beckmann "only one device within the machine needs to know the foreign language (additional protocol) and not all devices are forced to 'bilingualism.' This saves considerable costs and increases flexibility."



ETG Office Korea manager Key Yoo shows the Confirmation from the Korean Ministry of Knowledge Economy that EtherCAT is accepted as Korean Industry Standard.

EtherCAT now a Korean National Standard

The South Korean Ministry of Knowledge Economy (MKE) has announced that EtherCAT was accepted as a Korean Industrial Standard (KS) by the Korean Agency for Technology and Standards. This marks the successful completion of a two year effort driven by the Korean ETG office. Office manager Key Yoo led this vital initiative and also translated most of the 500 page EtherCAT specification.

"We are glad that EtherCAT now has been promoted to a Korean National Standard. This is a major achievement for the local ETG team- particularly for Key Yoo. He has gone above and beyond and devoted a considerable amount of his own time to accomplish this, which speaks volumes about his passion for the technology and its acceptance in Korea," says Martin Rostan, Executive Director of the EtherCAT Technology Group. "Besides being a Korean Standard, having the EtherCAT specification in Korean will further boost the acceptance of the technology in this important manufacturing and engineering country."

Key Yoo, Manager of the ETG Office Korea, adds, "EtherCAT is no longer only a system bus of the largest Korean controls suppliers, but has made an inroad in the many important industries in our country, such as semiconductor and flat panel manufacturing, ship building, and robotics. Now that EtherCAT is a national standard, this makes it even easier for other Korean vendors and users to adopt the technology."



Daniel R. Judd of Arlington Laboratory is the new chairman of the ETG Semiconductor Technical Working Group (TWG).

Semiconductor industry "Goes EtherCAT" by backing ETG Semiconductor Working Group

Supported by the market-leading semiconductor equipment vendors, the EtherCAT Technology Group (ETG) has launched the Semi Technical Working Group (TWG) in Silicon Valley. The 2-day kick-off meeting was attended by 96 influential semiconductor industry experts. The goal of the EtherCAT Semi TWG is to standardize EtherCAT usage in manufacturing equipment for chips, displays and solar panels.

Representatives from Applied Materials, Aixtron, Lam Research and Brooks Automation explained at the meeting why they selected EtherCAT and what results they expect to achieve from the TWG. They also assured support for the 14 different task groups that were established, which will elaborate on device profiles for semiconductor-industry specific devices such as mass flow controllers, RF generators and vacuum gauges. Furthermore, a task group defines common implementation requirements such as exception handling or labeling.

The TWG also nominated a chairman, Daniel R. Judd from Arlington Laboratory, a well-known semiconductor industry expert in communication technology and standards. Daniel R. Judd had already chaired the ODVA Semi SIG, which in the nineties had successfully introduced the previous de-facto standard for the industry. "The new fieldbus standard for the semiconductor industry is EtherCAT – the establishment of the ETG Semi Technical Working Group adds even more evidence to support this," said Martin Rostan, ETG Executive Director. "We consider this a major achievement for EtherCAT, because in large segments of North America and Asia, the semiconductor industry has clear technology leadership and other industries follow accordingly."

Dmitry Dzilno of Applied Materials explains his company's decision to utilize EtherCAT at the newly formed ETG Semiconductor Technical Working Group.



Beckhoff makes matching slave protocol stack available for download

Texas Instruments releases EtherCAT microprocessor

Announced in April 2011, now available: the Sitara™ microprocessor from Texas Instruments (TI) with EtherCAT slave interface. The first and so far only standard processor series with hardware-integrated, real-time Ethernet has become a reality. Beckhoff has developed a matching EtherCAT slave protocol and is offering it for download free of charge.

"The announcement of the Texas Instruments Sitara-range with integrated EtherCAT interface had already given our technology a further boost. Now that the first of these chips are available to the market, significant new opportunities for EtherCAT will arise – both inside and outside the conventional automation industry," said Martin Rostan, Chairman of the EtherCAT Technology Group (ETG). Matthias Poppel, Director Embedded Processing EMEA at TI, said: "I am pleased that Beckhoff Automation released the slave protocol stack at the same time, so that this reference implementation supports our integrated EtherCAT slave controller on the Sitara AM335x from the outset. The stack from Beckhoff, the inventor of EtherCAT, ensures compatibility."

The Slave Stack Code (SSC) from Beckhoff is the most widely used protocol stack for the implementation of EtherCAT slave devices and is therefore regarded as the unofficial reference. The C code not only includes the software components of the EtherCAT slave interface, but also application examples for drives and input/output modules as well as a tool for adapting the functionality. The SSC was launched in 2004 and has since been continuously maintained and extended. Now it has been modularized, so that it is independent of the EtherCAT slave controller being used and can be implemented on the new TI processor without problem. In the past the SSC was supplied with the slave implementation kits from Beckhoff. Now that the Sitara product range with EtherCAT interface is available, ETG members can download it free of charge.