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Unified Safety Protocol to boost Equipment Efficiency

In April 2012, David Humphrey of the ARC Advisory Group published an article on openSAFETY in the ARCwire Industry News Analysis. Entitled, "openSAFETY Initiative Aims to Unify Industrial Safety Protocols", it recognizes the potential of the openSAFETY protocol to revolutionize the way individual production machines are connected to form production lines.



David Humphrey of the ARC Advisory Group

The analysis reports activities of large automation customers such as Nestlé as well as industry consortiums like the OMAC towards specification of a universally applicable safety interface standard. They have recognized that the lack of a common, machine-to-machine safety protocol reduces the value of having an integrated line.

A unified, hardware-independent and legally open safety protocol such as openSAFETY on the other hand reduces line integration efforts while increasing overall line safety as well as overall equipment effectiveness (OEE).

Founded in 1986, the ARC Advisory Group ranges among the leading technology research and advisory firms for industry and infrastructure worldwide. ARC's coverage of technology and trends extends from business systems to product and asset lifecycle management, supply chain management, operations management, energy optimization and automation systems.

POWERLINK High Availability with CPU Redundancy

Offshore power generation, railway systems and the process industry need failsafe systems with high availability of the Master Node as well as the physical network. In a master-slave architecture, Master Node failure inevitably leads to immediate communication breakdown and termination of the application, they require fast switching to a redundant processor unit.

CPU redundancy for POWERLINK networks as described in the EPSG specification WDP 302-A utilizes cross communication capabilities of that industrial ethernet protocol. It allows the active application and the communication management to be separated and operated on different network devices. The solution, proven in serial applications, uses standard Controlled Nodes without modifications to build high available POWERLINK networks. Monitoring of the master mode's cyclic synchronization message results in a Controlled Node acting as a standby Master Node taking over communication management without stopping the application in the event of Master Node failure.

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Damages to the physical network connection can also be harmful unless counteracted. For high availability independent of cable issues such as unintentional disconnection or breakage, two methods are employed:

Dual line redundancy uses frame duplication to concurrently transmit Ethernet messages on two separate lines linking all POWERLINK devices whose nodes are equipped with link selectors. It allows uninterrupted, lossless communication in case of network failures. Ring redundancy uses a ring redundancy manager located on the Master Node that monitors return of local outgoing cyclic POWERLINK message and closes the ring upon failure to receive that message. This method does not require modifications of the Controlled Nodes.

All these redundancy features have been available as add-on solution modules from IXXAT. Fully compatible with standard POWERLINK devices, they have been in use for some time in offshore power generation, in shipbuilding and in various other high availability applications by manufacturers like Kongsberg Maritime Ship Systems in Norway.



ETHERNET
POWERLINK
certified product

FPGA based POWERLINK modules from IXXAT are optimized for high availability solutions using redundant Master Nodes, Link Selectors for line redundancy or ring redundancy

Manufacturers met Integrators on POWERLINK Day

As in 2011, turnout to the second POWERLINK Day in Salzburg as a meeting point for Automation equipment manufacturers and B&R automation systems customers exceeded expectations. It is now clearly established as a forum for decision makers and sales managers of automation component and system manufacturers with its focus on integration of the real-time Industrial Ethernet protocol POWERLINK and the field bus independent network openSAFETY integrated safety control system.

Aside of numerous presentations on implementation issues by technology partners such as Texas Instruments, on challenges imposed by changing market requirements by experts like Innotec Safety and on strategic developments by B&R, POWERLINK Day attendees took the opportunity to exchange views with B&R

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systems customers. The latter shared their experiences with POWERLINK for fast and reliable data communication between control computers and field devices such as sensors and actuators, including motion controllers and motors. One main aspect of the discussions was the potential of POWERLINK and openSAFETY to simplify design and manufacturing of production plant and machines with cutting-edge efficiency.

Coinciding with the 2012 POWERLINK Day, the EPSG also held its annual general meeting in Salzburg on that day. In the event, all members of the board were re-elected for the current period.



As part of the B&R Inside Automation User Conference, the POWERLINK Day was an excellent opportunity for automation equipment manufacturers to discuss technology integration issues and exchange views with B&R systems users.

B&R impresses with innovative safety technology



In 26 German cities, automation users acquired valuable information on efficient, vendor-independent ways toward machine safety at the 2012 B&R Safety Roadshow

B&R's Safety Roadshow through 26 different German cities came to a successful conclusion. Between February and May, numerous visitors from a wide range of industries came to check out the latest in state-of-the-art safety solutions.

Visitors gained significant information on the subject of safety, for example regarding the 2006/42/EC machine guidelines that have been valid since the end of 2009 and the vendor-independent safety protocol

openSAFETY. Attendees also got comprehensive insights to safety technology close to application reality in the form of real-life customer applications. B&R's Smart Safe Reaction technology enables machine manufacturers to first build their standard modules and corresponding control cabinet and then to configure them – along with the safety technology – on a computer screen to handle their respective tasks after commissioning has been completed. The time this saves for programming, configuring, delivering and commissioning the machine is considerable.

In the area of press manufacturing, the integrated Smart Safe Reaction safety concept and integrated Safe Motion Control drive technology accelerate the entire setup process, making it possible for machine builders to develop more flexible and energy-efficient solutions.

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