sercos
news

the automation bus magazine

An
existential
issue

Heinz Gall, Global Business Field
Manager at TÜV Rheinland in
conversation with Sercos International

Cost efficient

Cost reduction by one third,
reduction of energy requirements
by about 25 percent

Optimized

Reduction of machine down
times while increasing
transmission rates in parallel

Transparent

Ethernet communication
with Sercos and Hilscher's
netSWITCH

sercos
news

Editorial News Events Technology Application Cover Story New Products Review & Outlook

Editorial **News** Events Technology Application Cover Story New Products Review & Outlook

sercos
news

Safety for Higher Economic Efficiency and Flexibility

The requirements of operational safety for machinery are rising continuously. Automation solutions must not only protect people, machines and the environment in a reliable manner but at the same time must fulfill high standards of economic efficiency and flexibility.

Bus systems, which not only transmit process data but also safety-relevant data, play an important role here. Enormous amounts are saved in installation and engineering, safe periphery components can be combined with standard components, and safe data can be used for diagnostic purposes at the standard level as well.

However, these advantages are countered by higher complexity both for device manufacturers and for engineers. In this connection, it does not help that for most bus systems a specific safety protocol must be implemented. This often restricts the diversity of devices even further. For this reason, engineers often tackle the element of safety technology as in the past, especially in the case of simple machines or in machines for which no integrated safety technology is demanded by the end user.

Therefore, it is a tremendous advantage for users and manufacturers that CIP Safety can be used as an open, uniform and standardized safety protocol for various bus systems. Thus, with identical stack software and a uniform test system, implementations can be developed and certified for Sercos, EtherNet/IP and DeviceNet. This reduces the development costs and investment risks to a minimum.

We hope you find reading this magazine valuable.

Peter Lutz
Managing Director
Sercos International e.V.

Contents

Webinar Recordings

"Moving Forward with Tradition and Innovation"
"Sercos in Practice: Easy, Fast, Flexible"
"Sercos in Practice: Efficient, Reliable and Economic"
"CIP Safety on Sercos & EtherNet/IP"
"Benefits of a Common Sercos III and EtherNet/IP Infrastructure"

Sercos Webinar Series Available as Download

Sercos International presented a free German and English-language webinar series "Moving forward with tradition & innovation" in the first quarter of 2014.

The series was hosted by Peter Lutz, Managing Director of Sercos International. In the first 30-minute presentation, he showed why Sercos® is employed with great success in a wide variety of machine and plant construction sectors, and how the Sercos technology continuously adapts to changing requirements of users and manufacturers.

In the second part of the series, Lutz showed how easily, quickly, and flexibly peripheral components of a machine or plant can be connected using the Sercos automation bus. He explained why Sercos is one of the fastest real-time Ethernet protocols, which network topologies can be implemented, and how the commissioning of a Sercos network takes place. The possibility of connecting safety-oriented peripheral equipment via Sercos without additional hardware was also discussed. The title of this webinar was "Sercos in practice: Easy, fast, flexible".

The webinar series concluded with the topic "Sercos in practice: Efficient, reliable and economical", explaining why the automation bus enables such networking in machine and plant construction and how Sercos makes optimal use of the available bandwidth of Fast Ethernet. Additionally, Lutz explained features such as hot plugging, ring redundancy and synchronization.

The webinar recordings can be requested via email (info@sercos.de). Recordings of webinars that took place at the end of 2013, including, "CIP Safety on Sercos & EtherNet/IP" and/or "Benefits of a common Sercos III and EtherNet/IP infrastructure" can also be requested via email.

New Brochures for Users and Vendors Available

A revised Sercos® III brochure and a new competency brochure, "The fast route to Sercos", are available just in time for the Hanover Fair.

The Sercos brochure is primarily targeted at those interested in and using the Sercos technology. It explains basic concepts, the benefits of using Ethernet and the way Sercos functions by discussing transmission principles, protocol structures and topologies. Cross communication, synchronization, ring redundancy and hot plugging features are explained, as well as function-specific profiles, safety and the benefits of using a common Sercos III and Ethernet/IP infrastructure.

"The fast route to Sercos" helps interested parties and users to get started. The brochure explains the various steps from the planning phase up to the implementation of a Sercos interface. A vendor overview shows companies, that offer services and components related to Sercos. Their portfolios encompass chips, ASICS, FPGA's, evaluation kits, software, gateways, certification support and much more.

Both brochures can be downloaded in the download section of www.sercos.de/en or be requested via email (info@sercos.de).

EVENTS 2014

April

Hanover Fair 2014,
hall 9, booth F80
04/07 - 04/11/2014
Hanover – Germany

May

13th PlugFest
05/07 - 05/08/2014
Stuttgart - Germany

Industrial Automation
BEIJING 2014
05/07 - 05/09/2014
Beijing – China

SPS IPC Drives Italia 2014
05/20 - 05/22/2014
Parma – Italy

swissTmeeting,
05/23/2014
Windisch – Switzerland

July

Industrial Open Network
(ION) Roadshow
07/02/2014 + 07/04/2014
Nagoya + Tokyo – Japan

September

Industrial Automation Show North America
09/08 - 09/13/2014
Chicago – USA

October

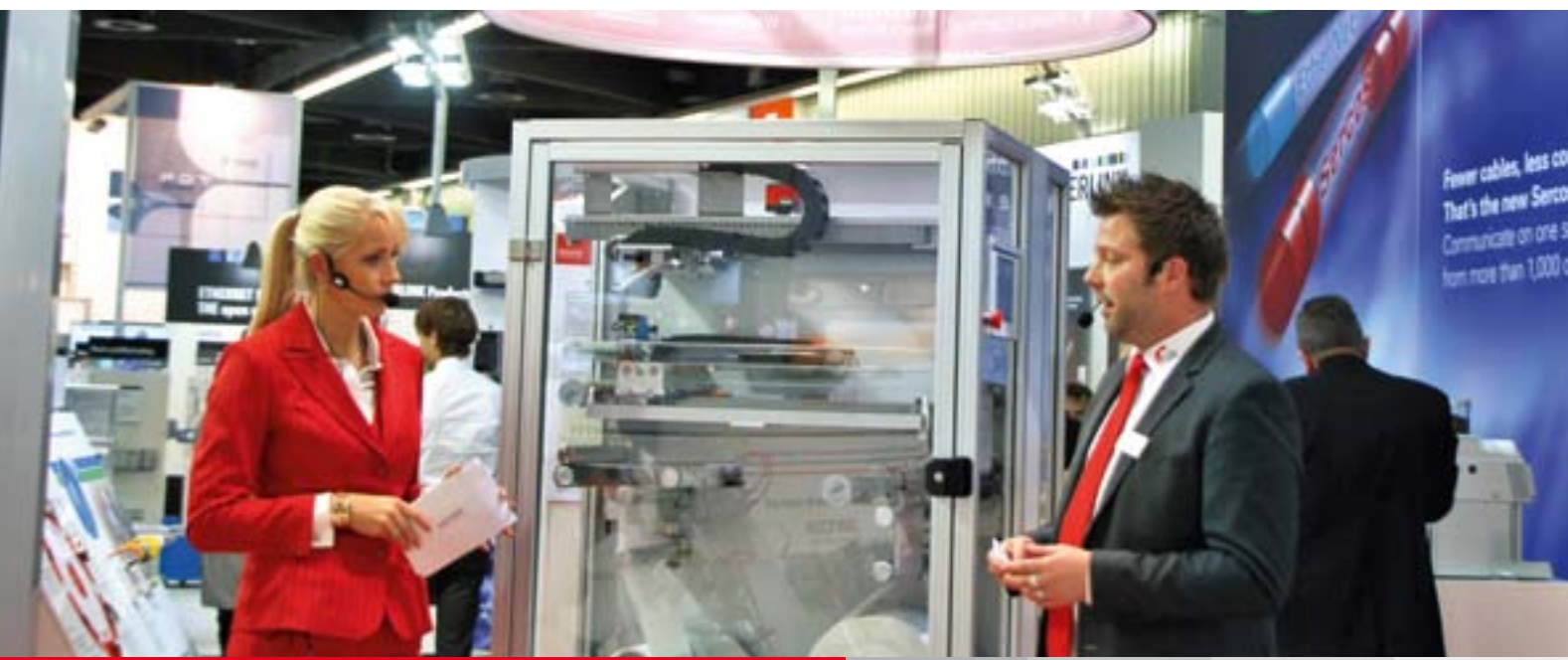14th PlugFest
10/15 - 10/16/2014
Stuttgart - Germany

November

Industrial Automation Show
11/04 - 11/08/2014
Shanghai – China

SPS IPC Drives 2014
11/25 - 11/27/2014
Nuremberg - Germany

Ethernet Connectivity with Sercos

Sercos International talks to Torsten Knörzer, Sales Engineer at Hilscher GmbH, on the topic of Ethernet transparency and what contribution the Hilscher netSWITCH along with the Sercos automation bus can make to it.

Sercos: What opportunities does the Sercos® technology offer to communicate directly with Ethernet devices?

Torsten Knörzer: With Sercos, any Ethernet device, such as a laptop, can be connected directly at any free port – without additional hardware. This functionality is contained in the protocol.

For communication with these Ethernet devices, a time slot (UCC = Unified Communication Channel) can be reserved in the Sercos transmission process. This time slot is configured at the master and is communicated when devices are started up.

Sercos: How can that work in a ring topology if all ports are in use?

Torsten Knörzer

The Hilscher netSWITCH forwards the Sercos telegrams with a processing time of only 600 ns, without interference.

Torsten Knörzer: When a standard Ethernet device is incorporated into a Sercos ring, the ring must be disconnected (because of ring redundancy, communication continues in the case of a Sercos network) and converted to a line topology.

Sercos: Is disconnecting the Sercos ring absolutely necessary?

Torsten Knörzer: Without the use of additional hardware there is no other possibility, since all ports are in use in a ring operation.

However, this is where the Hilscher netSWITCH comes into play. With its two real-time Ethernet ports for Sercos and an additional Ethernet port (the so-called NRT port) for connecting standard Ethernet devices, Ethernet telegrams can be coupled in and coupled out without disconnecting the Sercos ring.

**Sercos:** What is the functionality of the netSWITCH?

Torsten Knörzer: The Hilscher netSWITCH forwards the Sercos telegrams with a processing time of only 600 ns, without interference. The non-Sercos Ethernet telegrams arriving from the NRT port are temporarily saved in the internal 64 kB buffer and are transmitted in the time slot

of the unified communication channel (UCC) configured for it in accordance with the store & forward principle. Non-Sercos Ethernet telegrams that come from the UCC are also sent to the Ethernet devices at the Ethernet port of the netSWITCH.

Sercos: What is the advantage for the user of using the Hilscher netSWITCH?

Torsten Knörzer: One advantage is surely that there is no data loss when there is an increase in data volume from Ethernet telegrams on the part of the Ethernet devices. The synchronicity of the Sercos network is not influenced by the synchronous integration of the Ethernet telegrams. The ring topology (required in the case of redundant networks) can remain intact and the integration and extraction of the Ethernet telegrams takes place without interference to Sercos communication.
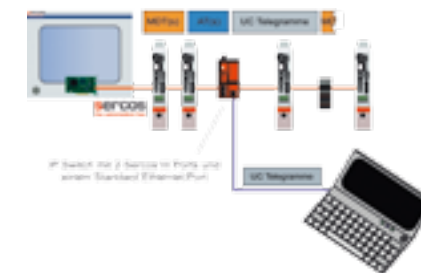
Sercos: Do special functions such as IP Switch Support need to be supported in the Sercos protocol for netSWITCH to be used?

Torsten Knörzer: Not necessarily. However, if this function is available in the Sercos master, the master sends the parameters of the UCC as well during start-up. The netSWITCH detects the parameters and then automatically configures the time slot of the UCC.

Sercos: What if the Sercos master does not support this function?

Torsten Knörzer: In that case, the netSWITCH offers the opportunity - by means of an integrated web browser - to configure the time slot for the UCC manually and save it on the device in a remanent manner.

Sercos: Thank you for the interview!

sercos
news

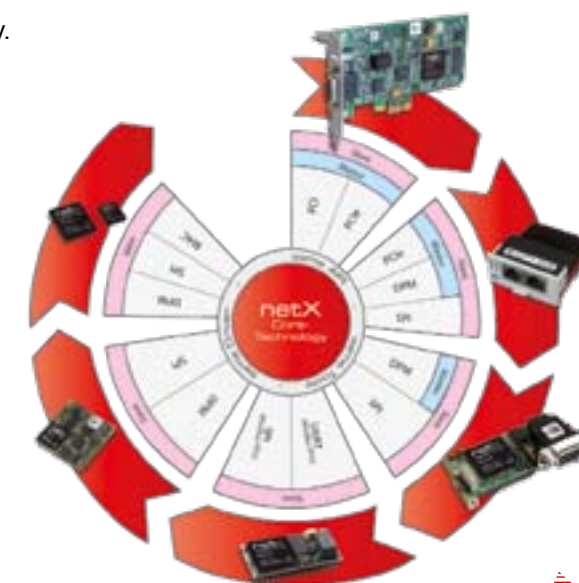Editorial   News   Events   **Technology**   Application   Cover Story   New Products   Review & Outlook

Editorial   News   Events   **Technology**   Application   Cover Story   New Products   Review & Outlook

sercos
news

Multi Vendor Solution:
Plastic Electronics

At the recent SPS IPC Drives show, Sercos International presented the 'Plastic Electronics' multi vendor solution from Bosch Rexroth in cooperation with Bihl+Wiedemann, Hilscher and Vision & Control.

Plastic Electronics is a true source of innovative, visionary ideas. Applying electronic circuits onto thin, flexible materials, such as plastic film, is revolutionizing the product portfolio. The future will bring ultra-thin TVs, color screens for e-books, flexible RFID chips or foldable displays that can be rolled up like newspapers. However, translating these versatile product ideas from laboratory processes into series production requires new system concepts. Instead of batches and quantities, it is now about ongoing production. The major challenge with Plastic Electronics is the precise control of several different processes in one machine.

These processes take place partially or completely in a vacuum environment. That means greater challenges for control technology and engineering. For seamless process-

es, web transport and processing units must be perfectly synchronized and the web tension must be strictly adhered to. Extensive knowledge is also a necessity for particle-free substrate transport in vacuum conditions. That makes automation technology a key factor for reliable, yet cost-effective process realization.

Due to its long-term experience in the printing and electronics industry, Bosch Rexroth offers comprehensive expertise and a broad product spectrum for the automation and standardization of roll-to-roll and coating processes. The demo machine, that was shown at SPS IPC Drives 2013 meets these challenges, also due to the incorporation of the following components.

Bosch Rexroth
IndraMotion MLC

The perfect alignment of track transport and processing units has the highest priority in roll-to-roll processes. Compact, control-based Motion Logic Control (IndraMotion MLC) from Rexroth which uses the Sercos® automation bus provides the high level of performance required for the control system. Integrated technology such as the tension controller and winder functions reduce engineering costs by up to 40 percent. In addition, motion functions that are time critical and require precise calculation can be stored in the drive system, thus making the installation process flexible and cost-effective.

Bihl+Wiedemann
AS-i 3.0 Sercos Gateway

The AS-i 3.0 Sercos Gateway with an integrated safety monitor from Bihl+Wiedemann monitors safety technology in the system – such as the emergency stop button – using As-i Safety at Work and provides the supervisory control system with relevant status data via Sercos, so that the system can react appropriately should an error occur.

Hilscher
Hilscher netSWITCH

netSWITCH for Sercos III from Hilscher allows any Ethernet telegrams from outside of the Sercos ring to be channeled in parallel to Sercos real-time telegrams in the UC channel (Unified Communication Channel) by using a time slot process. These UC telegrams are connected to or disconnected from the Sercos network in sync with one another, and when there is an increase in data volume they are temporarily saved in a buffer to ensure they are transmitted in real-time free of interference. In this way, netSWITCH makes it possible to couple standard Ethernet devices, such as a PC for servicing purposes, to the Sercos network and allows these devices to communicate bi-directionally with any number of Sercos participants via their IP channels.

Vision & Control
pictor® camera

The pictor® intelligent camera from Vision & Control uses a Sercos interface to transfer good or bad analyses of the printed circuit board. By comparing models, the printed trace is controlled and inspected at the same time to ensure it is in the correct position. In addition, registration control is possible using pictor®. Integrating the intelligent camera directly into the Sercos network provides a considerable advantage. Clear, ordered communication via the bus as well as in the data structure and timing makes networking easier for the user. Central triggering via the control system allows individual participants to be more in sync and saves procuring additional hardware such as position transducers or encoders for track positions. Servicing and diagnoses can be carried out via the camera's integrated web interface.

sercos
news

Editorial   News   Events   **Technology**   Application   Cover Story   New Products   Review & Outlook

Editorial   News   Events   **Technology**   Application   Cover Story   New Products   Review & Outlook

sercos
news

Flexible Topologies with Sercos III

The network structure of several devices that enables data exchange with each other is described as a topology. The topology of a network determines its failure safety: only in the case of alternative/redundant connections between the components does the functionality of the system as a whole remain intact when individual components fail. The physical topology describes the structure of the connections and the logical topology describes the data flow within the connections.

Which topologies are supported by Sercos III?
In general, all Sercos® networks consist of at least one master that coordinates and a slave that carries out automation functions. They are ordered simply and neatly in line or ring topologies. Here, switches or hubs are not used, which leads to huge savings in costs. Each device has at least two Ethernet connections. These are connected to the other devices via Cat5e or optical Ethernet cables. Sercos III does not use the star topologies of Ethernet.

Line Topology
In the line topology (also called linear topology or bus topology), all devices are arranged serially. The master is positioned at the beginning of a line. Deviating from this, in certain cases it can be positioned between two lines. The data runs through all slaves that are connected serially, i.e. in a series one behind the other and are 'looped back' by the last device. Since all components of the system analyze the data in two directions, all data is guaranteed to reach each device within the cycle at least once, independent of the order they are placed in.

The advantages of this method are the very simple and inexpensive connection of all devices with each other, even across wide stretches (as in the case of assembly lines, for example). The line topology is used mostly in large production facilities and also to connect production cells.

Ring Topology
With an additional cable, one can connect the line topology into a ring. This works in the case of one line with only one extra cable between the master and the last slave, or two lines between the two last slaves. In the case of the ring topology, the master sends data into the ring from both ports so that it is also analyzed in two directions in the ring.

Here, the ring structure of Sercos III is not simply a ring, but rather due to the full duplex characteristics of Ethernet it is a logical double ring structure. All components are connected via two signal connections. Only this topology allows the correct functioning of the network even when individual connections fail (e.g. cable break or device failure). It enables a data transmission free of interference and reports interference for removal. Interference, such as a failed device, can then be removed without hindering the system. Thus the network always remains available, even in the event of a cable break or failure of a device.

Ring Redundancy and Hot Plugging
The ring topology uses ring redundancy in the event of an error (for example, cable break or node failures). In the process, the ability to communicate remains intact through fast switching of the transmission channel, since the active ring divides into two lines. Even in normal operation, the real-time data is redundant, which means it is transmitted on two separate channels (the 'primary' and 'secondary channel'). In the event of an error, the nodes that are positioned right at the location of the error switch from "Forward" to "Loop back" within a maximum of 25 µs. Thus, since the ability to communicate remains intact even in the event of a cable break, connecting and integrating new devices (hot plugging) and new groups of devices (hot swapping) into the communication network is also possible.

Further topology possibilities
Other possible topologies of Sercos III are hierarchical, cascading network structures. Here, individual network segments are combined one below the other via a ring and line topology.

Advantages of this connection are synchronized network structures connected to real-time, as well as the opportunity to generate various cycle times in the individual segments, for example to connect drives and controls. In addition, all devices in the network are able to communicate with each other in real-time.

The infrastructure component TopoExtension of Automata GmbH & Co. KG opens up new opportunities for cabling components in an even more flexible manner. In this scenario, the device first combines the two necessary lines of the ring cabling into one cable and then divides the signals onto two individual cables again. Thus, individual components can be connected to a single cable, whereby the topology advantages of Sercos III are maintained. Additionally, branches into line or ring topologies can be implemented.

Installation of the Topologies of Sercos III
The installation of a Sercos III topology is simple and does not require any special network configuration. All devices are connected using patch or crossover cables. The Ethernet ports of the devices can be exchanged and can also be used to connect standard Ethernet devices (e. g. notebooks) to a Sercos III real-time network. This means that every Ethernet and IP protocol on Sercos devices can be accessed without interfering with the Sercos III network real-time process, and without requiring the Sercos III protocol to be activated at all.

For the flexible topologies of Sercos III, the maximum number of devices per ring/line is 511 devices. For Sercos I and Sercos II, 254 devices per ring are possible.

ⓘ Author

Dipl.-Ing. Andreas Müller
Sales & Marketing
Kunbus GmbH
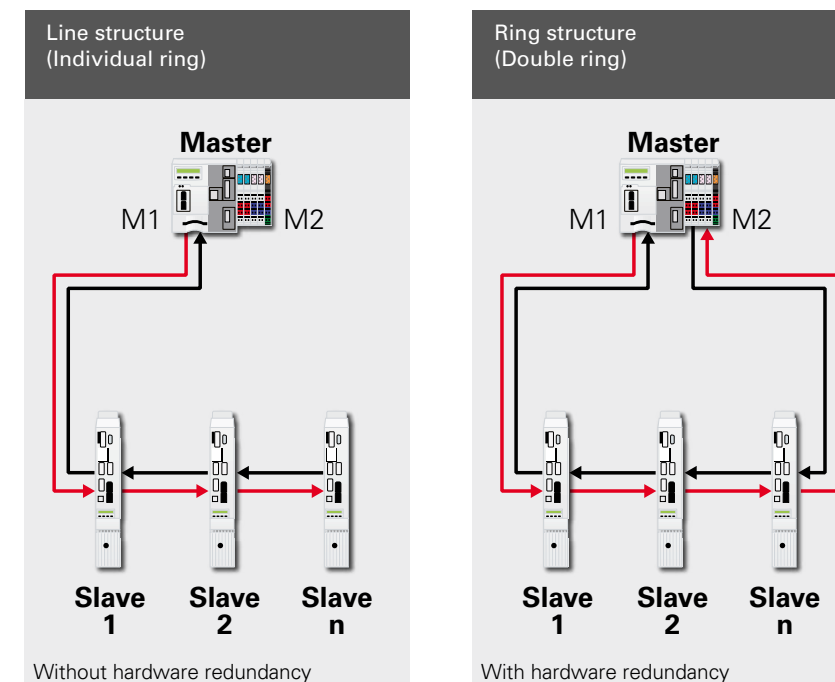
Sercos based topologies: Line and ring

Extended topologies with branches or stubs

sercos
news

Editorial News Events Technology **Application** Cover Story New Products Review & Outlook

Editorial News Events Technology **Application** Cover Story New Products Review & Outlook

sercos
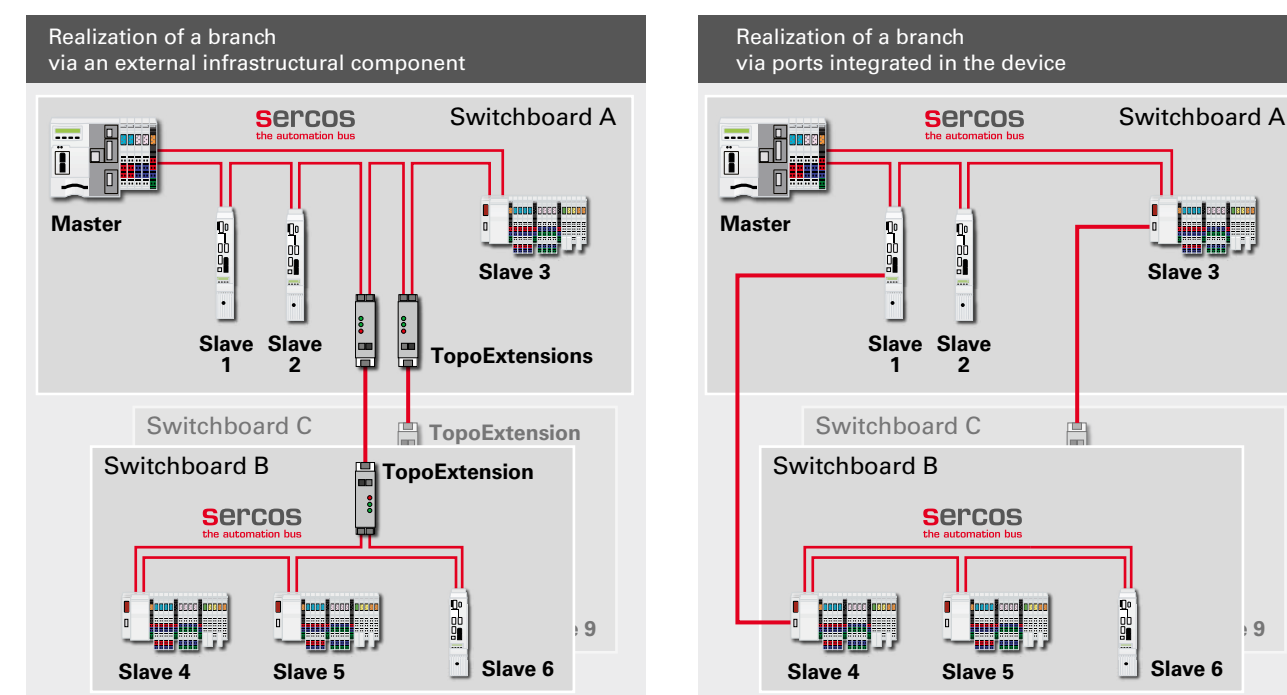**news**

(i) Gerhard Schubert GmbH

Gerhard Schubert GmbH is a medium-sized family business, currently employing 900 people worldwide. Schubert builds highly flexible packaging and filling machines, plus thermoforming, filling and closing machines for products of any type from a variety of industries. Packaging any product is easy and manageable using TLM (Top Loading Machine) systems from Schubert. Schubert also provides a comprehensive service program for its TLM packaging machine systems.

Sercos Replaces Signalbus

For many years, a bus developed internally by Schubert known as Signalbus has been used to link controllers in TLM packaging machines.

Every two milliseconds, 8,000 signals are transmitted deterministically by the Signalbus. Data transfer for programs and log books at a rate of 50,000 bits per second occurs at the same time. Last year, the first TLM machines with the 5th generation of the VMS packaging machine controller were delivered.

The new VMS modules now communicate via Sercos® instead of Signalbus. Sercos is a standardized, real-time capable Ethernet bus with the advantages of an Ethernet bus for data transmission and, at the same time, guaranteed deterministic transmission of signals.

The Sercos transfer rate is 100 million bits per second, which was absolutely inconceivable for industrial environments just ten years ago. Thanks to this 100 million-bits-per-second capability, the transfer rates could be increased considerably in comparison to the Signalbus. 16,000 signals per millisecond and 10 million data bits per second can now be transmitted, which corresponds to a four- to 200-fold increase in performance.

The figure below shows the control architecture of the VMS. A separate VMS module is responsible for controlling the functions of each sub-machine. The link between
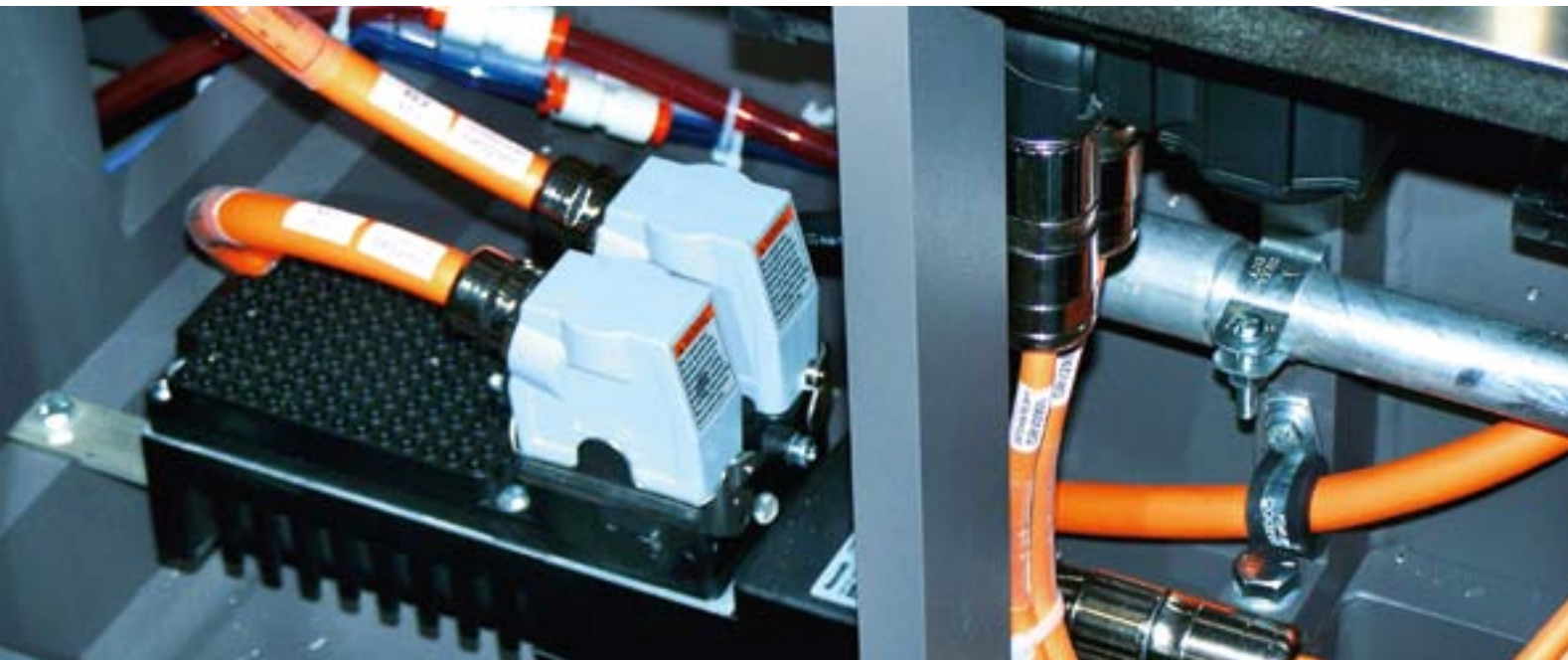

Ring topology with Sercos

the VMS module and automation components within the sub-machine is made via a local Sercos ring. The automation components consist of NC drives, positioning drives, frequency converters, scanners, cameras, I/O terminals, valve blocks, rotary transducers and devices from other manufacturers, e.g. gluing mechanisms. A separate global Sercos ring handles the VMS module links amongst each other.

In TLM machines, Sercos is only used in the form of ring structures. This enables the location of a fault to be reliably localized and indicated should a component fail or a line be interrupted, as every subscriber is accessible from two sides. The ring structure also enables the use of redundant components, which means that the machine could also continue with production if a bus node fails.

This is a requirement for picker lines, for example, in order to achieve availability of nearly 100%. As a communication standard for linking devices from different manufacturers, Sercos has in the meantime become widely distributed. Today, more than 4 million real-time nodes are used in over 500,000 applications.

Examples of Schubert TLM packaging machines

sercos
news

Editorial   News   Events   Technology   **Application**   Cover Story   New Products   Review & Outlook

Editorial   News   Events   Technology   **Application**   Cover Story   New Products   Review & Outlook

sercos
news

Rexroth Helps Streamline New Generation of Servo-Driven Case Packers

Brenton Engineering designed a new line of side-loading case packers to exceed current "green manufacturing" end user trends, featuring servo control to increase speed and reduce energy costs within a compact footprint.

Brenton Engineering, a large provider of packaging and palletizing equipment located in Alexandria, Minnesota, spent months consulting with customers and vendors before designing the next generation of its popular BrentonPro Series of case packer machines.

"Customers wanted a faster and simpler all-servo machine", said Mike Grinager, VP of Technology for Brenton Engineering". With the new design we did everything we could to reduce the complexity of the machine. We took out the pneumatics, which was the most expensive aspect of the machine, and our engineers removed more than 200 moving parts, reducing costs by one third. Plus, the integrated servo motors and drives that we now use require less space than even the smallest motors we used previously," said Grinager. As a result, Brenton's new Brenton Pro Mach-2 case packer is an all-servo-driven, side-load case packer featuring an IndraDrive Mi motor integrated drive system with Sercos®

The Brenton ProSeries Mach-2 uses a Rexroth motor integrated drive and motion logic control platform to improve machine performance, save space, lower costs and save energy.

distributed I/Os, an IndraMotion MLC motion logic controller and the IndraControl VEP40 human machine interface (HMI) all from Bosch Rexroth, Illinois.

According to Grinager, the multi-axis machine reaches speeds of up to 25 cases per minute and can accommodate a variety of cases, including RSC, HSC, tray, wrap-around, knock-down and harness for cartons, bottles, cans and tubs. During operation, an empty case blank is picked by vacuum and set in the machine. The case is moved through loading and sealing sections of the machine, which are powered by servo-driven flap traps. After loading, the full case is indexed through a compression and sealing area. The completed case is then discharged on the customer's takeaway conveyor.

Brenton developed the Mach-2 case packer to minimize the environmental impact of packaging operations through the appropriate use of electric servo drives, resulting in lower energy consumption — including zero air consumption — and less product and packaging waste. The company worked closely with local Bosch Rexroth distributor Motion Tech Automation, Oakdale, Minnesota during this phase of the development.

"We recommended Rexroth's compact, scalable IndraDrive Mi motor integrated drive system, which is an innovative, cost-effective and simple solution that satisfies the design challenges for today's modular and high-performance packaging equipment," said Shawn Nelson, sales engineer at Motion Tech.

Designed with sustainability in mind, the servos were sized to work out of the box as the most cost-effective solution. A holistic approach was taken, with motor drive and gearing all playing a role to reduce the power requirements of the machine. On average, the Mach-2 is expected to generate energy savings of up to 25 percent compared with the first generation machine. Nelson said that Rexroth's IndraDrive Mi system combines each servo motor and drive amplifier into one compact unit mounted directly on the machine, outside of the control cabinet. A single cable running from

the cabinet is daisy-chained to each motor/drive unit and provides both power and communication. As a result, Rexroth's design has the potential to reduce a machine's cabling needs by more than 80 percent. The IndraDrive Mi is also 50 percent smaller than a traditional servo system, which uses a separate servo drive and motor. This innovative architecture also eliminates the need for an air conditioning unit from the control cabinet and the need to maintain or replace expensive filters. Conventional servo drives are typically mounted in a large external control cabinet and are connected to the individual servo motors by separate communications, power and feedback cabling that must be mounted and run through large wire ways that clutter the machine.

"Our machine has a cleaner appearance without all the wires running to and from the electrical cabinet", said Grinager. "Because of the small motor integrated drive units

Rexroth's motor integrated drive system helped Brenton Engineering cut out more than 200 moving parts, reducing component costs by a third.

and fewer cables, the machine features an attractive walk-in design that allows easy access for the operator to clean and maintain it".

"The motor integrated drive units help reduce the size of the electrical cabinet", added Nelson. Because the drives are integrated directly with the motors outside of the control cabinet, design engineers reduced the size of the Mach-2 control cabinet by 25 percent. Up to 20 IndraDrive Mi units can be connected from one power supply without additional distribution boxes. The IndraDrive Mi easily accommodates the multiple functions of the Mach-2 case

packer without increasing the size of the electrical cabinet. In addition, integrating the drive control and motor into one component provides a more flexible "plug and play" capability. More motors can easily be installed for machine upgrades or other machine configurations such as unique infeeds, said Nelson.

Grinager said there was one additional advantage to using Rexroth's motor integrated drive system: versatility. Although the compact IndraDrive Mi system allowed Brenton to design a machine with a significantly smaller footprint, reducing size by about 30 percent, the space in the machine's case compression area was too compact to accommodate even the smallest integrated motor/drive unit. The solution was Rexroth's near motor drive system IndraDrive Mi with inverter KMS. This is a distributed drive unit that can be mounted on the machine near a conventional servo motor and seamlessly connected with the Indradrive Mi cables.

Mounted on the machine frame, the Rexroth IndraControl VEP40 HMI uses a Windows CE-based platform and integrates easily with the rest of the control system.

Brenton Engineering's innovative controls team also used the IndraDrive Mi distributed input/output system (I/O), said Nelson. Having four I/O outputs directly on the motor eliminated the need for extra wiring and other costs associated with purchasing separate I/O outputs from another vendor.

Motion synchronization and control are handled through Sercos digital communication to each servo drive. The case packer utilizes synchronous, electronic camming technology provided by Rexroth's system solution IndraMotion MLC. The controller hardware IndraControl L40 features FlexProfile functionality, seamlessly combining synchronous and time-based steps into a single data function which optimizes system perfor-

mance and recovery and also reduces the changeover time.

In addition, Rexroth's IndraControl VEP40 HMI, which was mounted to the frame instead of the control panel, integrates easily with the rest of the machine components via OPC communications. The IndraControl VEP40 is an embedded terminal with a Windows CE operating system and a high-performance 12-inch TFT touchscreen display. Motion Tech provided an application engineer who was on-site for two days to help support Brenton Engineering's controls team after the machine was built. In addition, Motion Tech and Rexroth engineers conducted in-depth onsite training sessions for Brenton engineers.

"The Mach-2 has become a standard for Brenton Engineering", concluded Grinager. "Rexroth technology allowed us to simplify the design of the Mach-2 case packer and reduce extraneous parts and energy consumption in the machine. The ability to daisy-chain servo motors led to less wiring and contributed to a smaller electrical cabinet and ultimately an overall smaller machine footprint".
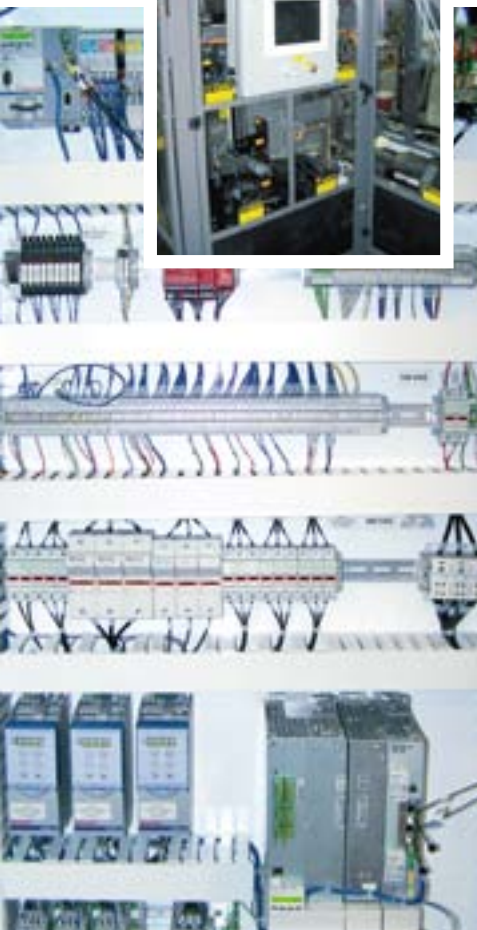
ⓘ **Company Info**

Brenton Engineering
Alexandria, Minnesota, USA
www.brentonengineering.com

Bosch Rexroth Corporation
Hoffman Estates, Illinois, USA
www.boschrexroth-us.com

Motion Tech Automation, Inc.
Oakdale, Minnesota, USA
www.motiontech.com

Ingenious solution, freedom in engineering } Exactly

OPEN CORE ENGINEERING

Freedom and efficiency redefined
Open Core Engineering increases software engineering efficiency and offers an unprecedented level of freedom through extended access to the control core: Independent creation of customized functions with high-level languages, simultaneously running on your firmware as well as on smart devices. Differentiate yourself from your competition and protect your expert knowledge.
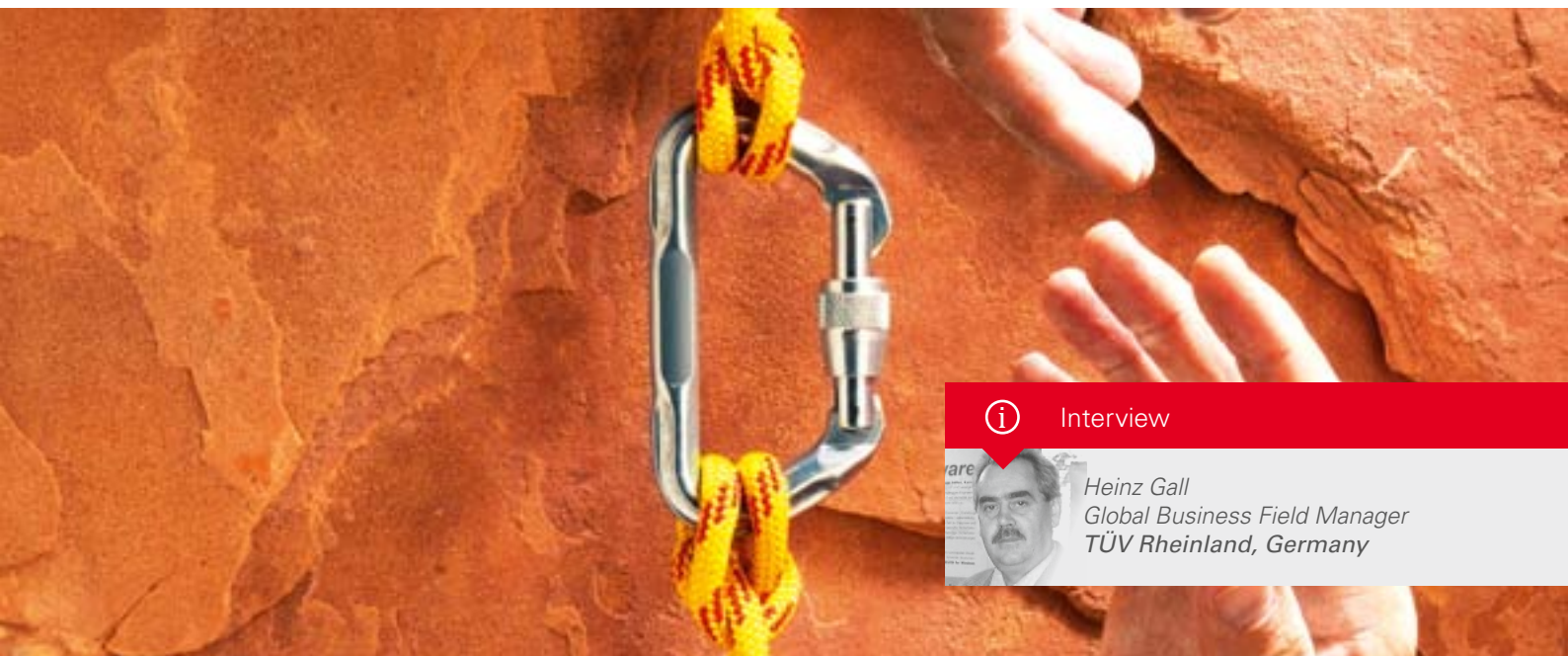
10 TENTH ANNIVERSARY
HERMES AWARD 2013

Bosch Rexroth AG
www.boschrexroth.com/oce

The Drive & Control Company

Rexroth
Bosch Group

> (i) **Interview**
>
> Heinz Gall
> *Global Business Field Manager*
> **TÜV Rheinland, Germany**

"An Existential Issue"

Heinz Gall, Global Business Field Manager at TÜV Rheinland, talks to Sercos International about the added value of modern safety solutions and their constantly growing importance worldwide for manufacturers, plant construction firms and users.

Sercos International: Mr. Gall, let us first of all bring a bit of order into the terminology: How exactly do you distinguish between the concepts of safety and security?

Heinz Gall: Safety encompasses the functional safety of a machine, i.e., all the components that ensure a correct process both in normal operations and in the event of an internal failure. Security is about protection from manipulation attempts that could be launched externally via the increasing number of communication interfaces and system-internal gaps. Incidentally, this topic in particular is still given far too little importance in Germany.

Sercos International: In the last few years, it has been different with modern safety concepts: they were already

Heinz Gall:

Safety encompasses the functional safety of a machine, i.e., all the components that ensure a correct process both in normal operations and in the event of an internal failure.

in favor in Germany when, for example, traditional solutions were still preferred in the USA. What is the situation today?

Heinz Gall: According to our observation, there are no longer any international differences – neither with a view to the meaning of safety nor with regard to the efficiency of the individual solutions. Manufacturers can sell their products worldwide only if they are state-of-the-art. At least they must conform to the globally recognized standards such as IEC standard 61508.

Sercos International: Have the European machine guidelines also contributed to placing more focus on safety technology at international level?

Heinz Gall: They have in the case of plant construction firms, where for a time there were heated discussions about the implementation of the guidelines and the harmonized standards. For manufacturers of safety-related components, hardly anything has changed.

Sercos International: How would you define "state-of-the-art" in the field of safety today?

Heinz Gall: The times of traditional wiring in safety technology are definitely in the past. As soon as an application becomes somewhat more complex, one can no longer do without programmable safety technology. The advantages of the safety bus systems are simply too varied and too convincing. They range from easier installation to greater flexibility and higher machine availability to the possibility of remote activities.

Sercos International: However, until recently many companies linked safety more to costs and workload, correct?

Heinz Gall: That may be true. However, the added value of automated safety technology actually far outweighs the negatives. The cost-benefit calculation is even clearer if I consider the entire life cycle of a machine and also include the efficiency advantages in maintenance.

Heinz Gall:

The times of traditional wiring in safety technology are definitely in the past. As soon as an application becomes somewhat more complex, one can no longer do without programmable safety technology.

Heinz Gall:

Manufacturers can sell their products worldwide only if they are state-of-the-art.

Sercos International: Are there companies that use the topic of safety as a competitive factor?

Heinz Gall: II think it has now even become the existential issue for manufacturers: The global trend towards integrated safety technology virtually forces them to offer corresponding solutions, otherwise they would no longer be able to hold their own in the market. And for users, too, the cost pressure in many industries is now so high that they can now barely afford to ignore the savings potential that condition-based maintenance, for example, offers them.

Sercos International: At what point should plant construction firms take the safety concept into account in the development process? In the design stage – or can one also simply retrofit so as to minimize costs during the preliminary stages?

Heinz Gall: The sooner, the better. In general, during the development of the basic concept. If it is not incorporated until the implementation stage, the costs can rise by 10 times, in ongoing operations even by 100 times. There may be systems for which retrofitting can be done without larger losses in productivity. However, that must be examined very carefully in each individual case.

Sercos International: Mr. Gall, thank you for the interview.

TÜV Rheinland

TÜVRheinland®
Precisely Right.

CIP Safety™

CIP Safety on Sercos

Application Coverage for CIP Safety Expanded to Include Safe Motion

Coincides with Release of CIP Safety Conformance Testing for Sercos III Devices

The next edition of the CIP Safety specification will include services for safe motion applications. With the addition of these services to CIP Safety, users will be able to deploy networked motion control systems using EtherNet/IP and Sercos® III in applications requiring safe motion functions such as safe torque off and safety limited positions.

First released in 2005 by ODVA to solve functional safety applications using devices such as safety gates and light curtains, CIP Safety has established itself as a key network technology in achieving the sustainability objectives of industry. In 2006, Sercos International announced that it would adopt CIP Safety as its safety protocol for Sercos. Since that time, ODVA and Sercos International have worked together on enhancements to the CIP Safety specification and its associated conformance tests, as well as on broader industry topics such as machine integration.

As it relates to safe motion, the recent enhancements to

CIP Safety relied on IEC 61800-5-2 ("Adjustable Speed Electrical Power Drive System – Part 5-2: Safety Requirements – Functional") as a framework. Initiated by ODVA and Sercos International as part of the machinery initiative, the enhancements were further developed by ODVA's technical working group for functional safety, the Special Interest Group (SIG) for CIP Safety. The interest group is a collaboration of multiple vendors with expertise in functional safety and safe motion, including Bosch Rexroth, Rockwell Automation and Schneider Electric among others – involving technical expertise from Sercos International. The resulting CIP Safety services for safe motion include support for drives on EtherNet/IP and Sercos III. The safe-motion-enhancements to CIP Safety are part of ODVA's semi-annual update of its family of specifications which, for the second publication cycle of 2013, include over 20 different enhancements.

ODVA's offer of conformance tests for CIP Safety now extends to devices for Sercos III, EtherNet/IP and DeviceNet.

Devices which succeed in meeting the requirements for ODVA's CIP Safety conformance test and are certified by an authorized competent body for full compliance with IEC 61508 will receive a Declaration of Conformity from ODVA indicating compliance with the CIP Safety specification. Bosch Rexroth is the first company with a device holding ODVA's Declaration of Conformity for CIP Safety on Sercos III. These tests are currently available at ODVA's Test Service Provider (TSP) in North America.

"CIP Safety provides users with a proven approach to functional safety that is supported by multiple vendors and two leading consortia, ODVA and Sercos International," stated Katherine Voss, president and executive director of ODVA. "The extension of safe motion to CIP Safety will further accelerate adoption and innovation in motion control systems using EtherNet/IP and Sercos III."

"The inclusion of safe motion in CIP Safety will provide machine builders with an integrated and flexible solution for functional safety", added Peter Lutz, managing director of Sercos International. "Moreover, the availability of CIP Safety conformance testing for Sercos III will facilitate the

implementation and certification of CIP Safety on Sercos III devices, and help to ensure that machine builders are able to deploy certified functional safety devices in machines using Sercos".

Vendors seeking to prepare for the CIP Safety conformance test will also be able to purchase the ODVA Conformance Test Software for CIP Safety. This software is the same used by ODVA's TSPs to determine compliance with the CIP Safety specification. Enhancements to the conformance test software will be on-going, including, but not limited to, coverage for safe motion. Vendors who hold subscriptions to the conformance test software will receive software updates as they become available.

In addition to their collaboration on CIP Safety, in 2014 ODVA and Sercos International will continue their related collaboration with the OPC Foundation on machinery integration, which is currently focused on machine-to-supervisory communication and logical groupings of data such as functional safety. ODVA also expects to expand its CIP Safety conformance testing for EtherNet/IP and Sercos III to TSPs in Germany.

10 years CIP Safety

Katherine Voss, Executive Director of ODVA

sercos
news
Editorial   News   Events   Technology   Application   **Cover Story**   New Products   Review & Outlook

Editorial   News   Events   Technology   Application   **Cover Story**   New Products   Review & Outlook
sercos
news

Safety in Automation –
an Introduction

Safety in automation is not a peripheral topic in the development and implementation of a system, but represents a complex challenge for component builders and engineers. Since it is not just about one single device function and can therefore be retrofitted only to a degree, necessary safety measures need to be taken as early as in the design stage.

Safety in automation is not a peripheral topic in the development and implementation of a system, but represents a complex challenge for component builders and engineers. Since it is not just about one single device function and can therefore be retrofitted only to a degree, necessary safety measures need to be taken as early as in the design stage.

Safety means ensuring the safe condition of a system. In order to ensure this, demonstrable and traceable functioning is required, especially in the case of an error. All measures aimed at error prevention (electrical, mechanical and/or organizational prevention of dangers) or error recognition (safe reaction and shifting to a safe condition in the case of recognized errors) should be planned and documented in an orderly manner.

IEC 61508 is an application-independent basic standard for safety technology. Published first in 1998, it covers the entire service life of a system: from design to development/implementation to the removal from service of both the hazardous and the safety-related (risk-reducing) systems. Derived specifications for the development of a safety system can be found in the harmonized application standards EN 13849-1 and EN 62061.

Performance Level	Probability of a dangerous failure per hour [h⁻¹]	SIL Level
a	$\geq 10^{-5}$ bis $< 10^{-4}$	none
b	$\geq 3\times10^{-6}$ bis $< 10^{-5}$	1
c	$\geq 10^{-6}$ bis $< 3\times10^{-6}$	1
d	$\geq 10^{-7}$ bis $< 10^{-6}$	2
e	$\geq 10^{-8}$ bis $< 10^{-7}$	3

Risk assessment acc. to EN 62061 (SIL Level) and IEC 61508 (Performance Level)

The basis of both of these standards is risk assessment. While EN 62061 uses the SIL level (safety integrity level) defined in IEC 61508 for risk assessment, EN 13849-1 arranges the safety requirements into performance levels. In terms of quantity, performance level and SIL are comparable. However, in terms of quality there are differences between these two standards, especially in the implementation of safety functions, to which attention should be paid in system development.

The first step towards a "safe system" is the assessment of risks. Important here is that the entire sequence flow i.e., all electrical, mechanical and organizational components involved, is taken into account. If the system integrator needs to examine "only" the entirety of his system with all the possible operational and use variants, this is disproportionately more difficult for the component manufacturer. Since safety-relevant components can be used in a variety of scenarios, all possible critical cases of application must be considered and the risks and necessary risk-reducing measures derived correspondingly.

In the field of distributed safety applications, intelligent safety technology is being used ever more frequently. Here, new possibilities emerge through the common use of infrastructure components in safety and non-safety relevant communication:

- Flexible positioning of safety components in the system without multiple cabling of the sensors and actuators between each other
- Only one fieldbus cable for safe and non-safety relevant data
- Comfortable configuration of the safety function and the possibility of adaptation of safety parameters to the system runtime
- Shorter reaction times, since safe sensor data can be read without an intermediate step via the safe controller on the non-safe side.

For demonstrable compliance with the safety standards, a clear division between the safe and the non-safe layer in software and hardware is sensible. Thus, additional requirements are added, particularly for safe data transmission in the jointly used communication network:

- Recognition of transmission errors
- Clear recognition and configuration of each safety-relevant device
- Recognition of hardware exchange and failure
- Recognition of errors independent of the non-safe transport protocol or the error detection means of the transport layer (black channel approach)

A large number of safety protocols are already available, which allow safe data exchange via a non-safe Ethernet-based system; examples of this are CIP Safety, Profisafe, FSoE and openSAFETY.

In general, component manufacturers incur relatively high costs if a variety of safety protocols must be supported, since each safety protocol must be connected to the corresponding non-safe communication controller, and a new device certification is also required.

These expenses can be reduced considerably with pre-certified components. Here, the pre-certification fulfills the orderly function of a component in a defined application environment. If the component is reused in an unchanged manner in the same environment, only reduced proof of safety is required at integration. This accelerates the safety implementation, reduces the development and cost risk and simplifies the final certification of the product. The IXXAT Safe products follow this modular approach and can therefore be integrated into a variety of safety hardware and software environments with little effort.

You can find additional information on the IXXAT Safe products at www.ixxat.de/safe
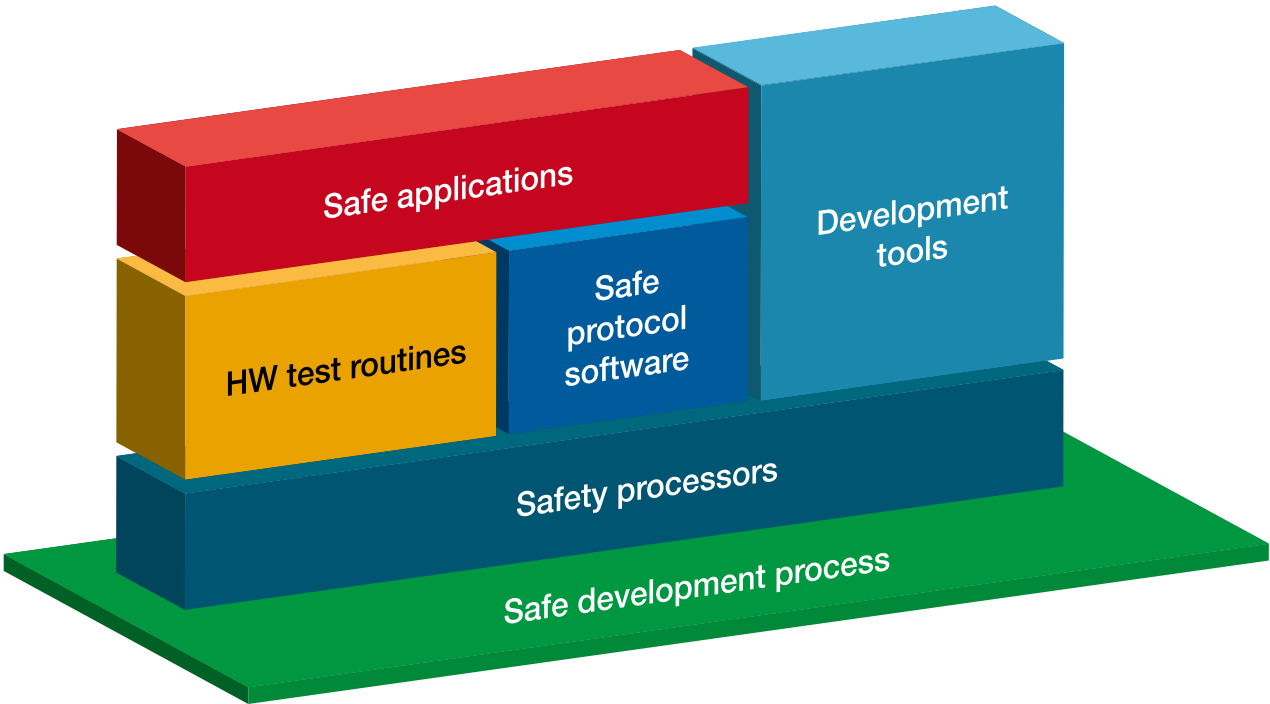
ⓘ Author

Stefan Kraus
Product Manager
IXXAT Automation GmbH

Safety as a modular base

CIP Safety on Sercos Conformance Test Tool Available

Sercos International offers a new conformance test tool for CIP Safety on Sercos devices. This testing tool can be applied for originator and target implementations, no matter whether the safety functionality is part of a Sercos master or slave device.

The test tool offers the possibility to automatically test the full CIP Safety on Sercos protocol functionality of a device in order to demonstrate compliance with the CIP Safety specification. The identical test software can also be used to test implementations of CIP Safety on EtherNet/IP and DeviceNet.

"With the availability of a vendor-independent conformance test tool for CIP Safety on Sercos devices in conjunction with a well-defined certification process between TÜV, ODVA and Sercos International, manufacturers can minimize the efforts and costs to implement and certify a CIP Safety on Sercos device", states Peter Lutz, managing director of Sercos International.

Vendors seeking to perform own tests and prepare for the CIP Safety conformance test will be able to purchase the Conformance Test Tool for CIP Safety. This test tool is identical to the official conformance test system used by ODVA's Test Service Providers (TSP) to determine compliance with the CIP Safety specification.

The CIP Safety on Sercos conformance tests are currently available at ODVA's Test Service Provider (TSP) in Ann Arbor, Michigan. First CIP Safety on Sercos devices have already been successfully certified.

Sercos IPS Conformizer Now Available

The Sercos IPS Conformizer is a test software for the Sercos Internet Protocol Services (IPS).

The IPS defines various services for access to devices in Sercos networks via the UC (Unified Communications) channel. Some of these services are also called S/IP and are based on the Transmission Control Protocol (TCP) as well as the User Datagram Protocol (UDP). These services include functions for device identification, network configuration, and access to Sercos parameters and diagnostics. In addition, the IPS defines a firmware update via the Trivial File Transfer Protocol (TFTP). Access to Sercos devices independently of Sercos real-time communication thus becomes possible via the IPS.

The Sercos IPS Conformizer tests the implementation of IPS in network devices. Various test functions are performed based on the NUnit test framework (http://www.nunit.org/) for Microsoft.NET environments. These test functions allow a targeted test of individual IPS services and are thus suitable for the development-accompanying test of IPS devices. In addition, the test functions of the IPS Conformizer can be expanded specific to a manufacturer via an open interface. In the future, certifications of the IPS will be offered based on the IPS Conformizer.

We will be happy to send you additional information. Please send an email to info@sercos.de for further information.

Schneider Electric's
PacDrive 3 technology

Schneider Electric's PacDrive 3 technology incorporates the advantages of the latest technologies into a proven concept for controlling modern production, assembly, and packaging machines with a motion/robotic component. PacDrive 3 unifies PLC, IT, and motion functionalities on a single hardware platform and is one of four hardware platforms of MachineStruxure, Schneider Electric's solution package for general machinery applications. PacDrive 3's scalable controller performance allows economical automation of applications ranging from small systems with only a few servo axes to high-performance solutions with up to 99 servo axes or 30 robots.

With the addition of Sercos® III, Schneider Electric has created the first fully Ethernet-based communication solution for PacDrive applications. Enabling communication with both drives and field devices, Sercos III also smoothes the way for the integration of safety automation: In PacDrive 3, standard communication and safe communication merge into one - Sercos III is the basis. The Safe Logic Controller Modicon SLC permits programming of the safety functions, the Modicon TM5/TM7 safe I/O system is connecting safety signals to the SLC.

Schneider Electric

Schneider Electric SAS Head Office
35, Rue Joseph Monier • F-92500 Rueil-Malmaison • France
Phone: +33 (0) 1 41 29 70 00 • Fax: +33 (0) 1 41 29 71 00

www.schneider-electric.com

ⓘ Automata GmbH & Co. KG

Gewerbering 5 | 86510 Ried | Germany
📞 : +49 (0)8233 7916-19 | 🖷 : +49 (0)8233 7916-99 | www.cannon-automata.com

ⓘ KW-Software GmbH

Langenbruch 6 | 32657 Lemgo | Germany
📞 : +49 (0)5261 9373-0 | 🖷 :+ 49 (0)5261 9373-726 | www.kw-software.com

CANNON-Automata Presents the Programmable Automation Controller A2-PAC

Sercos® or Ethercat master interface, onboard I/Os and the compact design feature the new Programmable Automation Controller A2-PAC from CANNON-Automata. The base unit is equipped with Intel® multi-core Atom™ or i-Series CPUs. Thus, despite the small size and the fanless operation, enough performance even for the most demanding control and visualization tasks is available.

As further communication interfaces CAN, RS232/485 and PC-typical interfaces such as Gigabit Ethernet and USB are available for the user. A high degree of freedom opens the mini-PCI Express slot. This feature permits easy and cost-effective expansion of the A2-PAC with additional field buses or interfaces such as WLAN, Bluetooth, GSM modem or Firewire. Regarding storage capacity and throughput, the

base unit meets the most demanding requirements. Besides a fast and reliable mSATA solid state disk, it is equipped with an easily accessible SD-Card as a removable disk.

Another highlight is the different panel interfaces of the A2-PAC; they allow the connection of control panels of the proven Automata A- or F-Series over a single cable for power supply, video, touch screen, USB, keyboard and I/Os for lamps, buttons and switches. The touch panels can thus be operated over a distance up to 25 m away from the base unit.

The A2-PAC is programmed with the IEC 61131-3 tool CODESYS. Extensive libraries provide alternative programming in C/C++ or other high level programming languages.

Technology for Automation Leaders

As leading suppliers in the industry, we have been developing software technologies for the global players in automation for more than 30 years.

The IEC 61131 programming system MULTIPROG provides, apart from the actual programming function, a broad range of intelligent additional functions, which support programmers in developing, testing, and commissioning their applications. The IEC 61131 runtime system ProConOS embedded CLR transforms standard hardware as well as

specific embedded platforms into extremely powerful IEC 61131 controls.

SAFEPROG, the safe IEC 61131 programming system, SAFECONF, the intuitive configuration tool for safety devices and SAFEOS, the safe high-performance runtime system are perfectly coordinated and certified. The operation and the range of functions are specially designed for the requirements of safety technology.

ⓘ Innovasic, Inc.

5635 Jefferson St. NE, Suite A | Albuquerque, NM 87109 | USA
📞 : +49 (0)241 91691984 | www.innovasic.com | vgoller@innovasic.com

ⓘ LEONI Special Cables GmbH

Eschstrasse 1 | 26169 Friesoythe | Germany
📞 : +49 (0)4491 291-0 | 🖷 : +49 (0)4491 291-5152 | www.leoni-industrial-solutions.com

Innovasic fido5000 REM Switch

The fido5000 REM Switch can be paired with any processor including any ARM® CPU or Innovasic's fido1100® communication controller and supports Profinet, Profinet IRT

(version 2.3), EtherNet/IP, EtherNet/IP with Beacon-based DLR, ModbusTCP, Ethercat, Sercos, and Powerlink all in a single silicon solution.

Motion Control Hybrid Cable

The hybrid cable with digital feedback channel (Cat5e and 2x Cat5e) or flexible installation with high mechanical stress is characterized by a high endurance, trailing applicable and offers a very good EMC performance. The cable

is flame retardant and self-extinguishing in accordance with IEC 60332-1-2, halogen free in accordance with IEC 60754, oil resistant in accordance with DIN VDE 0282 Part 10 and is also available as a cable assembly.

sercos
news

Editorial News Events Technology Application Cover Story **New Products** Review & Outlook

Editorial News Events Technology Application Cover Story **New Products** Review & Outlook

sercos
news

(i) Smitec S.p.A.

Via Vittorio Veneto, 4 | 24016, San Pellegrino Terme (BG) | Italy
☏ : +39 0345 40876 | www.smitec.it

(i) RIE-TECH GmbH

Im Grund 5-7 | 78359 Nenzingen | Germany

COSMOS 315 X & 325 Digital Servodrive

High-performance digital servo-drive, available for both brushless and asynchronous motors. Designed for challenging applica-tions on modern machinery, it offers extraordinary flexibility thanks to reliable real-time buses, sophisticated control algorithms, flexibility on motors and encoders, integrated braking resistor, and Safe Torque Off SIL-2 function.

Gold Technology Especially Developed by RIE-TECH is a Maintenance-Free System with Long Life Expectancy

RIE-TECH is a manufacturer of electric slip ring systems for transmission of Sercos III. Market-leading gold to gold tech-nology allows the transmission of data as well as current and supply voltage required for the motor, from stationary to rotating parts. The gold to gold technology especially developed by RIE-TECH is a maintenance-free system with long life expectancy. Tests at Bosch Rexroth with up to 40 IndraDrive Mi V2 also confirmed safe functioning.

The slip ring systems can be equipped with several hybrid cables and so an almost unlimited number of drives can be attached to the rotating machinery part.

D-GATE Digital I/O Module

Digital I/O module housed in a sturdy IP 64 plastic case. With 16 software-configurable digital "24V" I/Os, this unit is intended for distributed architecture machines whenever sensors and actuators are very far from the electrical cabinet and long wiring is undesirable.

Industrial PC with Sercos III bus master

MST S3 is an industrial PC based on Intel x86 architecture with built-in Sercos III bus master housed in a very compact plastic case de-signed for mounting on a standard DIN rail and styled to be perfectly integrated in a FLXMOD TM automation system. It is the ideal complement to build an automation system based on Sercos III fieldbus and FLXMOD TM modules.

13th PlugFest

May 7 and May 8, 2014 in Stuttgart, Germany

Following the huge success of the latest PlugFest in October 2013, the 13th such event for Sercos® III devices will take place at the Institute for Control Engineering of Machine Tools and Manufacturing (ISW) at the University of Stuttgart, Germany. During this two-day event, experts from several different manufacturers will subject a number of new products with various configurations to intensive tests in combination with other communication participants. Developers and other interested professionals are welcome to attend. Simply send us an email to register for this free event: info@sercos.de

SPS IPC Drives

May 20 – May 22, 2014 in Parma, Italy

The record number of visitors and exhibitors in 2013 resulted in a growth of exhibition space. You will find the joint booth of Sercos International in hall 2, booth F56.

Find out more about the latest products, innovations and technologies provided by Sercos and co-exhibiting companies.

Sercos Community is on the Increase

Sercos International has recently recorded world-wide membership growth.

Innovasic joined the Sercos community as part of its continuous commitment to the Industrial Ethernet. The company intends to develop and launch more Sercos-capable products throughout this year. Festo Corporation of Hauppauge, New York has joined Sercos N.A., the North American promotion alliance for the Sercos automation bus, as an associate member. Frank Langro, Director of Marketing & Product Management at Festo Corp., feels that "by becoming a member we at Festo will be able to bring the perspective of an automation supplier who has an integrated product line that

includes controls, drives and I/O devices, making this an ideal fit". Sercos Asia has recorded a significant growth in membership. The Sercos community has been strengthened by Beijing ShoukeCatchet Electrical Technology, STGCON New Energy Technology Co., Ltd. and the Huangzhou Wahaha Group. In addition to the above named organizations, to mention but a few, Sercos has recorded a growing number of institutions joining the Asian user organization, such as the Automation School, Southeast University and Zhejiang University.

+The New Sercos Website

The new Sercos website will go live in a few days. Visit us online and learn more about our technology, Sercos-compatible products, applications and more: www.sercos.com

Sercos International Attracted Visitors due to Many Innovations at the SPS IPC Drives Show in Nuremberg

Sercos International displayed twelve demo points from different manufacturing companies as well as exhibits from more than twenty companies (including many new products) on advertising columns at the joint stand in exhibition hall 6. In addition, a multi vendor Plastic Electronics Demo was a crowd pleaser. As a result, the user organization's growth trend is set to continue. Increasingly more companies are developing Sercos-enabled devices, and more and more companies are choosing Sercos technology!

The compact high-performance low voltage LVD Sercos III servo drive, from Servotronix, a weight transmitter from Laumas and the fido5000 REM switch from Innovasic were present for the first time. Phoenix Contact also displayed a new media converter and Automata presented the A2-PAC programmable automation controller. Different safety solutions, such as SafeLogic and SafeLogic compact from Bosch Rexroth, as well as the AS-i gateway with CIP Safety on Sercos from Bihl+Wiedemann, added to the presentation of new products.

One of the highlights was the new CIP Safety on Sercos conformity testing system which is now available for implementing conformity tests for CIP Safety on Sercos devices. This can be used for originator as well as for target implementations regardless of whether the safety functionality is a component of a Sercos master or slave device.

The hourly moderated forum "Sercos in practice" proved particularly popular. In this context, different topics were discussed on the basis of the multi vendor "Plastic Electronics" demo from Bosch Rexroth in cooperation with Sercos International, Bihl+Wiedemann, Hilscher and Vision & Control. Sercos-based automation systems, Safety & AS Interface, Vision & Motion and Ethernet transparency were also discussed.

No longer miss a bus with our Safety Gateways

Safe Link over Ethernet

Safety Basic Monitor with switchable AS-i Master – the new cost brake for 3 safe signals or more

Safety Technology by Bihl+Wiedemann

> Safe Link over Ethernet: The simplest way of coupling many safe signals

> Optimal PLC connection via fieldbus, all diagnostic data in the controller, safety and standard signals mixed

> Universally expandable with Safety I/O Modules + Standard I/O Modules in IP20 or IP67, Speed Monitors for up to 40 axis, Safety Relay Output Modules

More information on your application safety at:
www.bihl-wiedemann.com

NEW STANDARD
EN ISO
13849-1:2008
INSIDE!

Bihl+Wiedemann

THE AS-INTERFACE MASTERS