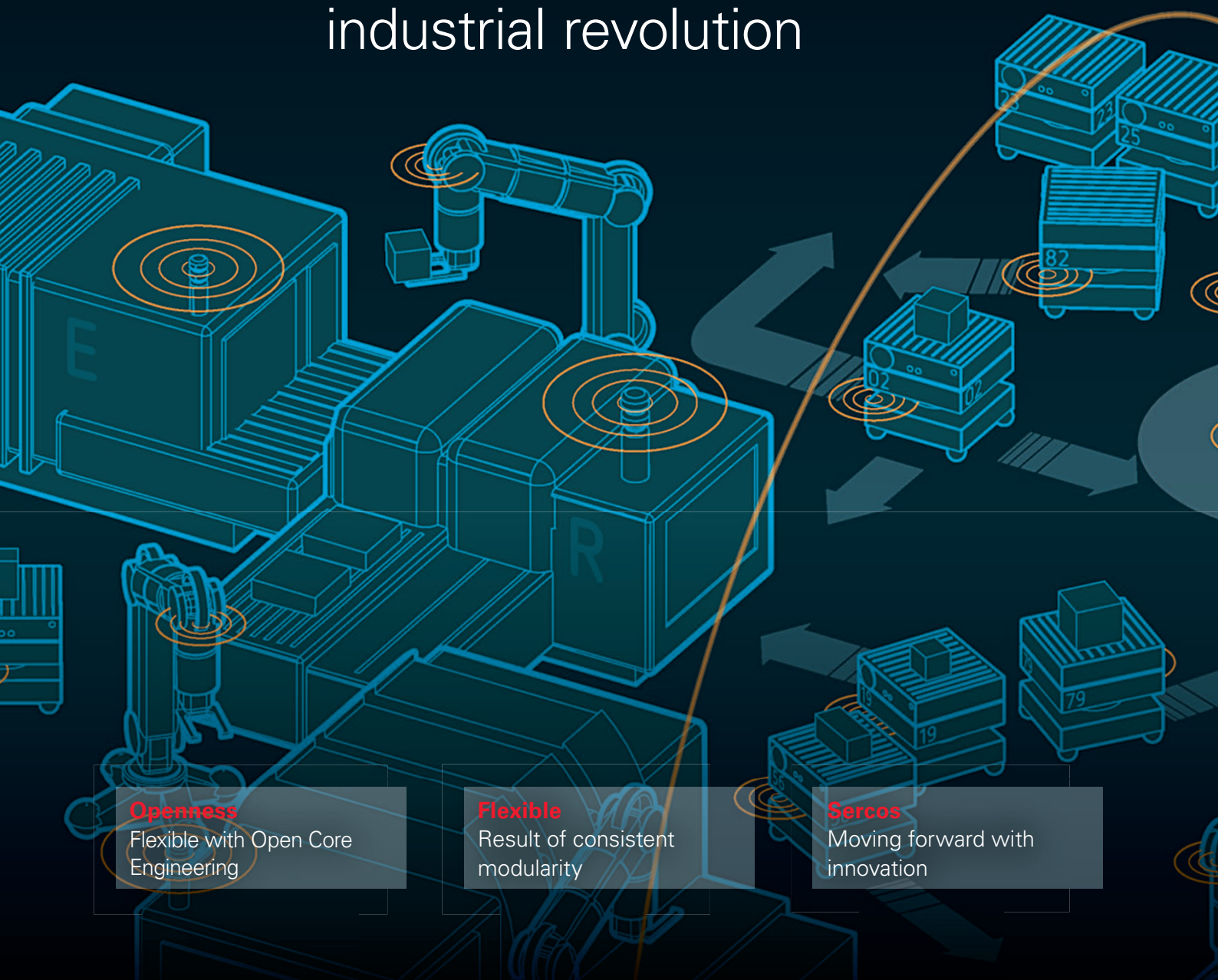


# sercos news

the automation bus magazine

## Industry 4.0

With Sercos on the threshold of the next industrial revolution



### Openness

Flexible with Open Core Engineering

### Flexible

Result of consistent modularity

### Sercos

Moving forward with innovation

## Dear Readers,



Peter Lutz  
Managing Director  
Sercos International e.V.

The blending of the digital world with the physical thanks to the Internet heralds the start of the intelligent factory era. Mutability, using resources more efficiently, and improved ergonomics, as well as integrating customers and business partners into the business and value creation processes, are all features of this blending process.

Consequently, our modern data bus systems must not only guarantee that machines and facilities can carry out production with safety and precision; they must also help towards establishing a universal solution for integrating different IT systems on different rungs of the organizational ladder within a factory.

As a universal automation bus, Sercos® already meets these demands. Excellent performance, a multi protocol-enabled network infrastructure, a universal manufacturing data model to unify the exchange of information within machines and facilities, and superior IT systems make Sercos the first choice for countless market leaders in machinery and plant manufacturing.

In this current edition of Sercos News you will find reports about the latest developments and trends related to the Sercos automation bus.

We hope you enjoy reading ...

## S Contents

## News

- 3 iPad App
- Product Guide 2013
- International interest for Sercos continues to grow
- Mapping Guide IO-Link
- 6 Events 2014

## Technology

- 7 Moving forward with tradition and innovation
- 10 Efficient Sercos controllers
- 12 Bihl+Wiedemann

## Application

- 16 Consistent modularity for greater flexibility
- 20 Graebener Group

## Cover Story

- 24 Sercos – enabling technology for Industry 4.0
- 26 New paths to more openness

## New Products

- 31 Bosch Rexroth AG
- Baumüller Nürnberg GmbH
- HMS Industrial Networks GmbH
- Kollmorgen Europe GmbH
- Moog GmbH
- Phoenix Contact GmbH & Co. KG
- Servotronix Motion Control Ltd.
- TR-Electronic GmbH
- Smitec S.p.A

## Review &amp; Outlook

- 36 Sercos User Conference provides new impetus
- Sercos International e.V. finishes the Industrial Automation exhibition in Beijing successfully
- Premiere in Japan: Sercos International e.V. attends ION
- New record number of attendees at 12th Sercos PlugFest
- 39 Imprint

# Sercos International e.V. launches free iPad app, Sercos tube racer

**The user organization launched a free iPad app “Sercos® tube racer”. The game is available in the iTunes Store and shows in a playful manner how the common network infrastructure for Sercos III and EtherNet/IP works.**

Sercos telegrams, CIP messages and TCP/IP messages can coexist within a network without requiring additional cables. To keep the cyclical and clocked communication of Sercos III intact, the CIP messages and TCP/IP telegrams are transmitted in the Unified Communication Channel (UCC) which is an integral part of the Sercos transmission method. The game involves these three types of data packages moving down a single cable.

A common network infrastructure enables machine builders and users to reduce the cost and complexity of machine integration while retaining the ability to utilize

their preferred product suppliers and automation devices. Successful attributes in this casual game are speed, precision and concentration, attributes that also characterize the Sercos technology! The player has to click on the data packages at the perfect time to achieve high scores and to reach the next level. The top high scores are listed online unless the player played anonymously.

In addition to being fun, participation is worthwhile because Sercos International e.V. uses this app from time to time to encourage prize draws. The first prize – an iPhone 5 – was handed out at this year’s Hanover Fair where a prototype of the app was tested.

At SPS IPC Drives 2013 in Nuremberg, interested parties have the opportunity again to test their skills in hall 6, booth no. 110. ■

## Sercos Product Guide 2013 – available now!

The updated version of the Product Guide 2013 is available in time for this year’s SPS IPC Drives in Nuremberg.

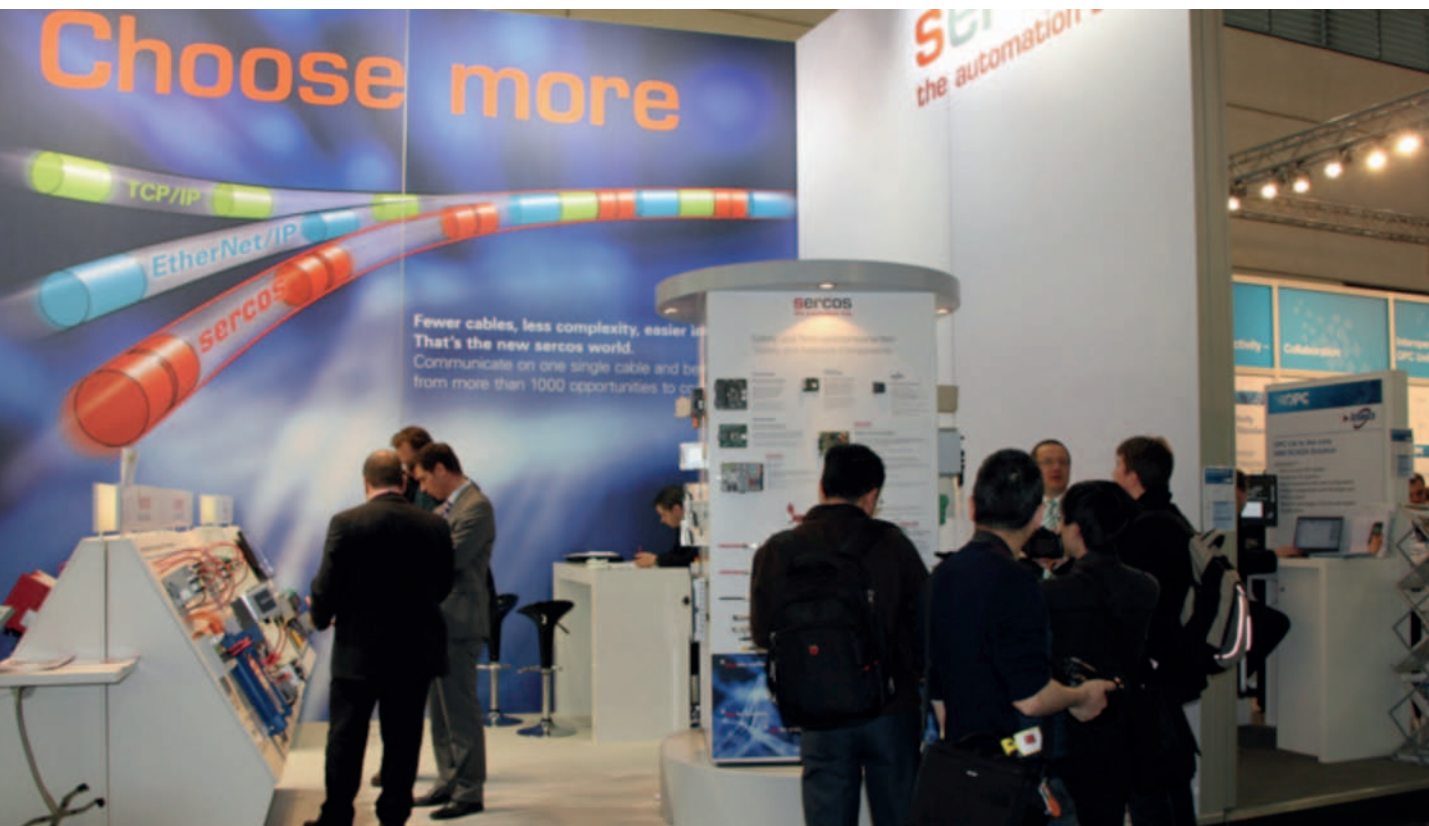
The guide lists more than 125 vendors and manufacturers of Sercos® capable products on approximately 80 pages and is regarded as the handbook for all machinery customers and end users, using the high performance automation bus and/ or intending to do so in the near future.

Vendors and manufacturers offer a broad product portfolio from actuators over drives to weight transmitters so that interested parties can easily find the right solution for their automation application.

The guide can be downloaded online. Alternatively, please send an E-mail to [info@sercos.de](mailto:info@sercos.de), giving your full address.

Some of the products listed in the guide are exhibited at the Sercos booth in hall 6, booth no. 110. ■





## International interest for Sercos-compatible products continues to grow

Sercos International e.V. reports full success at world-wide exhibitions incl. its co-exhibiting member companies.

The user organization saw a significant increase in the number of visitors to its Hanover Fair booth as well as in the quality of contacts compared to the previous year – just to mention one example. “Many prospects were already very well informed so that we could explain in depth how the Sercos® technology and Sercos-compatible products of member companies can benefit their organizations,” said Peter Lutz, Managing Director of Sercos International e.V..

Approximately 40% of visitors came from outside Europe, mainly from Asia and the anglo-american region. “We work internationally and have local subsidiaries and agencies in Asia and the US. The high number of visitors coming from these regions shows that Sercos is becoming increasingly important in the major automation markets,” continues Lutz.

Sercos’ continuous work to increase the vendor portfolio also contributed to the overall success. More than 20 companies displayed over 80 products at the joint booth. These included new products such as the IO-Link gate-



way from Hilscher, Axioline E and Axioline F from Phoenix Contact's IO-family and the 130A servo drive from Schneider Electric to name but a few.

Additional safety solutions also complemented the Sercos portfolio, such as Rexroth solutions with CIP Safety on Sercos and the CIP Safety on Sercos protocol stack from IXXAT. The AS-i 3.0 Sercos gateway with integrated safety monitor for CIP Safety on Sercos from Bihl+Wiedemann is another new product in 2013. The gateway is ideal for

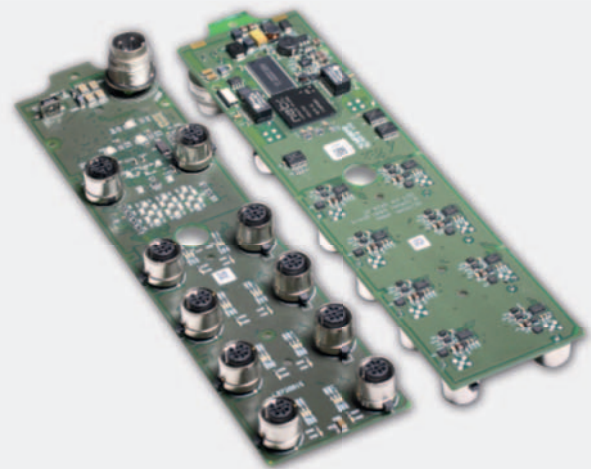
complex applications, e.g., for distributed systems containing various safety networks and many safe signals, or applications where numerous standard signals need to be integrated in the safety configuration.

This trend also remained at following exhibitions worldwide, be it SPS IPC Drives in Parma/ Italy, the Industrial Automation in Beijing/ China or the Industrial Open Network Roadshow in Osaka and Tokyo in Japan. ■

## IO-Link Mapping Guide for Sercos released

The user organization Sercos International e.V. published a new guide for the standardized mapping of IO-Link devices to the Sercos® automation bus. IO-Link is a low level, point-to-point communication interface technology for interconnection of binary and analog sensors and actuators. This user guide helps the automation engineer to uniformly connect and integrate sensors and actuators equipped with an IO-Link interface into a Sercos system.

An IO-Link master can be realized either as part of a modular Sercos slave I/O device or as a stand-alone Sercos III slave. The cyclic data of all inputs and outputs of IO-Link slaves are either transmitted completely within a cyclic IO container or alternatively as separate parameters. The Sercos parameter channel can be used in order to execute acyclic read/write access with regard to the addressed IO-Link slave devices.



On the joint Sercos booth at Hanover Fair, Sercos member Hilscher GmbH presented a development board with an integrated IO-Link master controller supporting 8 IO-Link channels and a Sercos III slave interface. The board is based on a Hilscher netX 51 network controller. Intelligent sensors and actuators can thus be easier and faster integrated into the established Sercos automation bus via the IO-Link communication.

The IO-Link mapping user guide can be accessed by registering on the Sercos specification server:  
<https://www.sercos.org/accredit/en/> ■

## EVENTS 2014

## March

SIAF Industrial Automation Fair  
Guangzhou (SIAF):

03/03-03/05/2014, Guangzhou - China

Sicherheit + Automation:

03/11/2014, Stuttgart - Germany

MC4

03/18/2014, Bologna - Italy

Automatisierungstreff 2014:

03/25-03/27/2014, Boeblingen - Germany

## April

Hannover Messe 2014:

04/07-04/11/2014, Hanover - Germany

## May

13th PlugFest:

05/07-05/08/2014, location tbd - Germany  
all about automation

05/13-05/15/2014, Friedrichshafen - Germany

SPS IPC Drives Italia 2014:

05/20-05/22/2014, Parma - Italy

## June

Industrial Automation 2014:  
tbd, Peking - China

## July

Industrial Open Network (ION) Roadshow:  
tbd, Japan

## September

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

## October

14th PlugFest:

10/15-10/16/2014, location tbd - Germany

## November

Industrial Automation Show:  
tbd, Shanghai - China

SPS IPC Drives 2014:

11/25-11/27/2014, Nuremberg - Germany

JULY

Wk	M	T	W	T	F	S	S
26							
27	2	3	4	5	6	7	8
28	9	10	11	12	13	14	15
29	16	17	18	19	20	21	22

AUGUST

Wk	M	T	W	T	F	S	S
31							
32	1	2	3	4	5	6	7
33	8	9	10	11	12	13	14

SEPTEMBER

Wk	M	T	W	T	F	S	S
34							
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36	8	9	10	11	12	13	14

# Moving forward with tradition and innovation

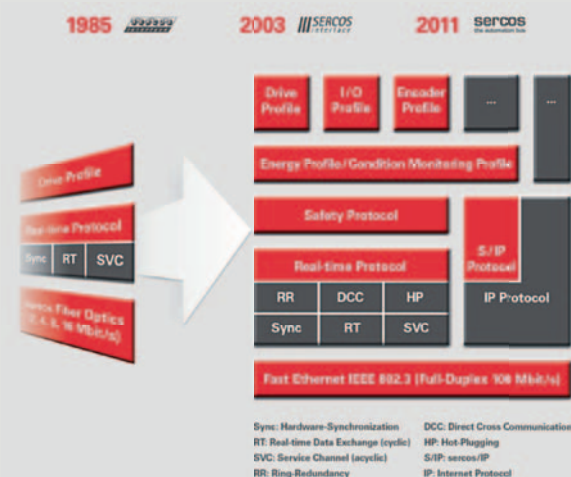


Figure 1: The evolution of Sercos

**Sercos was the first bus system between controllers and drives. It was the product of an initiative by the VDW (German Machine Tool Builders' Association) and the ZVEI (German electronics industry association), which developed a digital drive interface in the mid-1980s. Today, Sercos is an established global industry standard and still uses the same hard real-time mechanisms now in over 4 million nodes.**

## Sercos development as a digital drive interface

Since its market launch in the early 90s, the drive interface has become an accepted international standard for the most varied and demanding range of motion control applications. This is due above all to the interface's excellent technical features – in particular in terms of real-time, performance and reliability – and the extremely large product and supplier spectrum.

Initially, Sercos® was used primarily by machine tool manufacturers, and was also increasingly installed in newspaper presses because of the excellent synchronization it offered. The electronic shaft revolutionized web-fed printing press production with the move to much more flexible and productive single-drive systems. Many food and packaging machine manufacturers soon also recognized the benefits of real-time communication and replaced mechanical solutions with software – intelligent drives using Sercos communication. Electronic cam group, cam disc, print mark control and tension controller software functionalities increase

the flexibility of automation and significantly reduce changeover times.

## Sercos III – the universal automation bus for plant and machine construction

The established Sercos mechanisms combined with Fast Ethernet transmission in the third Sercos generation. The transmission rate has been increased from 16 to 100 Mbit/s. A whole range of innovative and pioneering communication functions (such as hot plugging, ring redundancy, direct cross communication and controller networking) and the CIP Safety on Sercos protocol have been specified. Universal use of Sercos III has also been considered in the device profiles. New functions have been added to the Sercos drive profile for additional actuator physical layers and drive types (including hydraulic and pneumatic drives, and frequency converters), and additional device profiles for I/O modules, encoders, etc. have been defined. A high level of standardization makes it easy to connect devices from different manufacturers – plug and play. With functional device classification and standardized and consistent semantics, Sercos simplifies the complete engineering and diagnostics process for a range of devices. Installers and programmers can simulate automation offline beforehand and therefore reduce the time to market.

Currently, designers of robots, semiconductor manufacturing machinery, food and packaging machinery, machine tools and complex custom applications are the main group



developing concepts using Sercos III as their universal bus of choice. Alongside proven durability, investment security and the fact that over 70 companies worldwide support Sercos III in controllers, various drive technologies and peripheral devices (for example encoders and camera systems), new functionalities and a larger range of drive offer new scope for innovative concepts.

Numerous technical bodies belonging to Sercos International e.V. are working on new function profiles to expand the existing specifications and meet the demands posed by increasing application diversity. The innovations include function profiles for measuring and testing, servo drive power and control units, and controller-to-controller communication. A profile for preventive maintenance and servicing for plants and machinery is also to be specified. This condition monitoring profile will be based on the VDMA standard "Fieldbus-neutral reference architecture for condition monitoring systems in factory automation".

### Machinery Initiative to reduce interface diversity

Sercos is taking a pioneering approach with the blended infrastructure for Sercos III- and EtherNet/IP. This network infrastructure is the first achievement of the Machinery Initiative on which Sercos International e.V., ODVA and the OPC Foundation have been collaborating since 2011.

As the necessary infrastructure for EtherNet/IP and Sercos III includes the physical and data link Ethernet layer, Sercos frames, CIP messages and TCP/IP frames can all coexist in one network without extra cabling. To keep the cyclic and clocked communication of Sercos III intact, the CIP messages and TCP/IP frames are sent on the Unified Communication Channel (UCC), which is an integral part of Sercos transmission. This standard network infrastructure enables engineers and users to reduce the costs and complexity of machine integration. At the same time, they can retain their preferred product suppliers and automation devices without additional cabling.

The blended infrastructure does not require any modifications to the existing Sercos III or EtherNet/IP specifications, as the necessary communication mechanisms are integrated in Sercos III. Implementation guidelines detail planning and design of such multi-protocol networks.

The Machinery Initiative is also working on a protocol-neutral data model to standardize the exchange of information with plants and machinery, including their basic attributes and states. Adapted to specific technologies – CIP, Sercos and OPC UA – this data model can collect data from individual machines or aggregate data from multiple

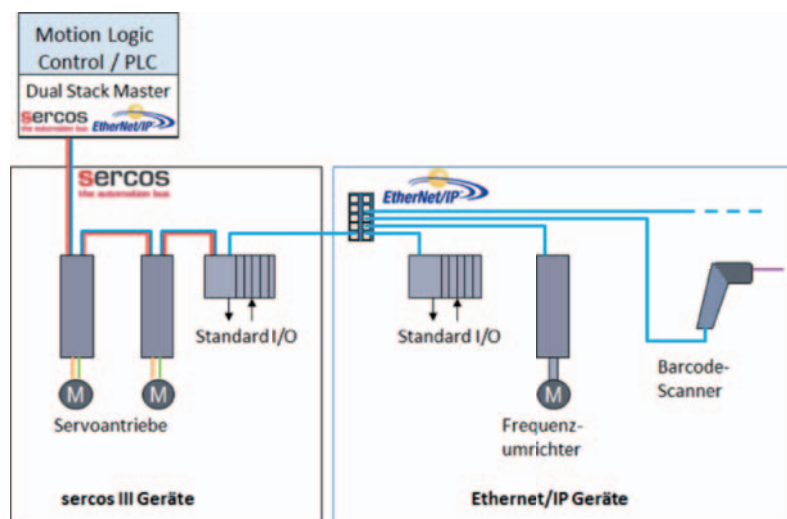
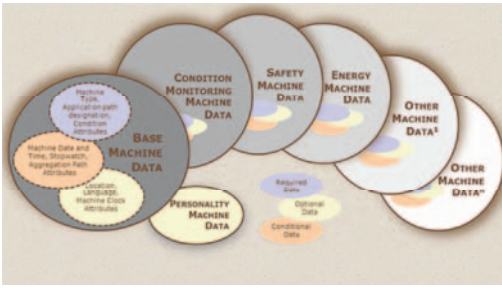


Figure 2: Blended infrastructure for Sercos and EtherNet/IP





**Figure 3: Protocol-neutral data model for Sercos, CIP and OPC**

machines at various levels of the enterprise, and present this data consistently at all levels from the machine to process and system level and the control and enterprise level. This is achieved by integrating machine data on the basis of logical groupings of data. Methods developed in CIP, OPC and Sercos to access a common set of data attributes are used in conjunction with machine applications. This is the basis for a unified integration model that supports access to information including base machine data, condition monitoring, energy and safety. In addition, data models that have been developed for specific machine applications such as packaging, machine tools and semiconductors can instill the machine with a personality. Including personality machine data, developed by standards groups in these machine segments, is essential to leveraging the application specific know-how that is core to a machine's successful operation. ■

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Fieldbus

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# Efficient Sercos controllers: success, step by step

**Efficiency means doing the right things right!  
For Schleicher Electronic, making controls efficient means minimizing input for maximum results.  
We focus on a range of features, which together set our solutions apart from the competition.**

## Commissioning

Commissioning is key to improving efficiency, as a lot of time is invested in this phase.

The bus nodes are connected and activated as a ring in the Sercos® network. In automatic configuration mode, the bus detects the peripheral devices. Drives are detected as drives and I/Os as I/Os. The controller therefore configures itself; the drive parameters can be assigned using Sercos without launching a configurator.

This means the user has immediate access to all Sercos devices over the bus, and can for example install firmware in drives, or access drives using conventional drive tools provided by the manufacturer.

That is a major advantage of the Sercos automation bus over other buses supporting the immediately available TCP/IP communication structure.

The commissioning time for Sercos systems is therefore unrivaled.



**Peter Brinkmann**

Head of Development, Schleicher  
Electronic GmbH & Co. KG

## Cooling

Devices such as controllers generate heat when they run, and this heat has to be removed. The more heat a device generates, the less efficient it is.

That is why Schleicher Electronic uses Sercos-capable controllers, such as the integrated SPS/ CNC controller which is so efficient that customers can use it in switch cabinets without a cooling system. Efficiency in this case is not that a device consumes 20 W rather than 50 W, but that it does not require cooling.

## Remote network access

Each Schleicher controller with Sercos enables remote access, established automatically together with the service structure. Both real-time operation and the Unified Communication Channel (UCC) are available.

Routing gives the user access to all network devices; users can for example access, control and diagnose the I/Os. Sercos therefore facilitates highly efficient network use not offered by other providers in this form. Users of other providers must often first set up mailboxes for communication.

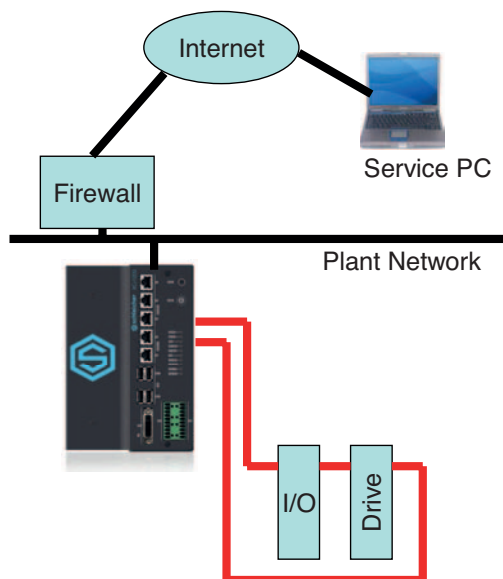


Figure 1: Schleicher Sercos III controller in remote access (Teleservice) mode

### Using network resources

Schleicher's new hand-held control device OP 50 M has been developed for efficient use with machines.

A gateway connects the device to the Sercos network, and the device makes optimal use of the Sercos real-time features such as UCC. Real-time keyboard data is sent to the controller, the hand wheel is also sent as real-time data and can be read straight from the I/O section of the controller – without jitter.

The hand-held control device has a large touch display with integrated browser. A Web server supplies the device with data. In other words: one small hand-held device provides a complete visualization system.

Figure 2: Sercos-compatible Schleicher hand-held device OP 50 M



Here, too, Sercos real-time and visualization data are exchanged through a central network in UCC in the classic TCP/IP protocol, making the best possible use of network resources.

With open gateways, users can also detach the hand-held control device and connect it to another device during operation without setting up additional functions – that also means no need for data tunneling or extra gateways, thanks to Sercos TCP/IP-capability.

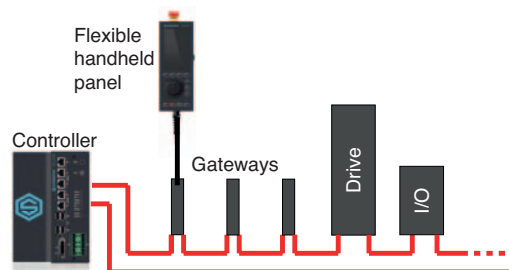


Figure 3: One device, multiple terminals, hot plug-in changeover of the device

The UCC is easy and flexible to use, no matter what data is being sent. Real-time frames are not affected. The channel offers users maximum flexibility.

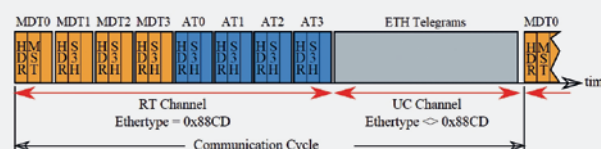


Figure 4: Standard Ethernet telegrams passed in the Sercos communication cycle

Schleicher Electronic recognizes the benefits of using the energy-efficient automation bus from Sercos, and so too do customers whose controllers must meet complex technical requirements. ■

### S Contact

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# Alliance of the Future

## Safe Link over Ethernet

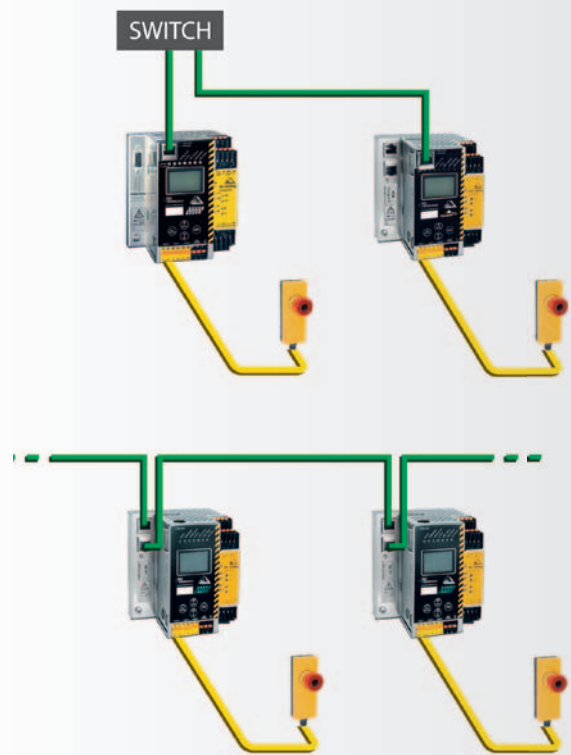


Figure 1: Safe Link over Ethernet diagnostics interface (above) and over the fieldbus interface (Profinet or EtherNet/IP+Modbus TCP)

**Perfect interaction with all the commonly used automation systems has always been one of the primary strengths of AS-i Safety. Safe Link in the new Bihl+Wiedemann Gateway generation with integrated Safety Monitor means not only that now multiple safe networks can be efficiently linked – this innovative feature makes it even possible to network the safety technology of systems with each other when they operate in the standard, non-safe area with different controllers.**

“Industry 4.0”- the title of the German federal government’s project for the future is intended to express nothing more or less than the beginning of the fourth industrial revolution. Following the age of mechanization, of mass production and the use of electronics for automating production, we are now entering the era of the intelligent factory.

What this means for manufacturing in practice was summarized in one striking sentence by Dr. Kurt D. Bettenhausen, Chairman of the VDI/VDE-Gesellschaft Mess- und Automatisierungstechnik at the Automation 2012 Congress in Baden-Baden: “The increasing networking of devices and systems as well as the availability of every kind of information will make industrial equipment even more complex.”

### **Safe Link: A simple yet innovative response to the trend towards ever more complex systems**

These are precisely the current challenges that Bihl+Wiedemann turns into opportunities in the field of safety technology. The AS-Interface pioneers from Mannheim have an answer to the trend towards ever larger, distributed production systems that is as simple as it is innovative: “Safe Link” is the magic word. Behind it lies the ability to connect multiple safe AS-i networks together in an especially efficient manner



and to integrate them into complex applications. One highlight: the 'team building' concept even works when different controllers have command over the respective system in specific areas.

"Both machine builders and users are often forced to run machines in the standard area with different automation systems," notes Bihl+Wiedemann CEO Jochen Bihl. "Or sometimes it happens that you want to convert a large system to a newer control technology in steps rather than all at once: in all these cases it's a great relief when at least the safety technology can be configured uniformly. With our Gateways with integrated Safety Monitor and Safe Link – e.g. the AS-i 3.0 Sercos Gateway BWU2588 – this is accomplished quite simply and conveniently."

But also in any other complex and distributed system that works with a uniform automation system or a fail-safe controller, the new technology offers significant efficiency benefits.



**Figure 2: AS-i 3.0 Sercos Gateway with integrated Safety Monitor and Safe Link over Ethernet (BWU2588)**

### Communication via Ethernet: Nearly 2000

#### **AS-i Slaves in direct connection – without regard to the system concept**

With Safe Link nearly 2000 slaves can now communicate with each other directly through all the connected AS-i networks, regardless of the overall technological concept behind the system. You have direct access to the input and output data of all the participating machines. These innovative devices exchange the values with each other automatically and make them available to the respective program. Overall, this approach makes it possible to couple up to 31 of the new Gateways with integrated Safety Monitor with each other – without losing performance at any point and without the use of additional hardware – apart from standard switches and the Ethernet cable connecting the Gateways.

Safe Link is implemented using a simple standard Ethernet network. In applications that work with Sercos® and traditional fieldbuses, safe information is exchanged over the Ethernet diagnostic interface of the Gateways with integrated Safety Monitor. Until now this feature was "only" there to pass along the diagnostic information gathered in the entire network and to enable access for remote maintenance via Web Server – but in addition this interface can provide up to 31 safe bits per Gateway to other devices. In other words, all the modules in the mutually linked AS-i networks listen to all safe signals and are thereby able to respond directly to new information – without the use of a fail-safe controller. In short: The safety application becomes even more flexible, more transparent and of course even more economical.

It gets even simpler when an industrial Ethernet derivative is being used as the fieldbus: Then the AS-i networks can when desired be coupled through the fieldbus interface of the Gateways, and communication takes place over the already existing Ethernet rail. "User preferences do vary widely here," affirms Bihl+Wiedemann Product Manager Johanna Schüßler. "Some prefer to have the safety technology for their production equipment connected to the company network to enable for example remote maintenance – others would rather keep office and production communication completely separate from each other. Our solutions make both possible."

### Gateways from Bihl+Wiedemann:

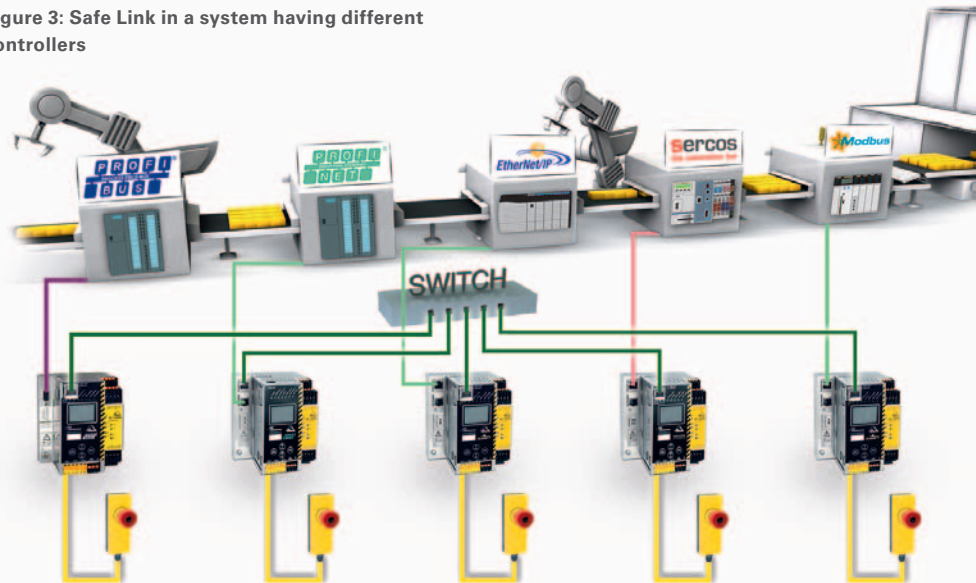
#### A continuously growing portfolio, oriented on the demands of the market

The question of which interface to use can be answered with flexibility and not much effort – the program remains the same. The concept of Safe Link works independent of the host controller and always fits perfectly. This is ensured by the continuously growing range of Gateways with integrated Safety Monitor and Safe Link from Bihl+Wiedemann: These multi-talents are currently available for Sercos, for Profibus and Profinet as well as for Ethercat, EtherNet/IP and Modbus TCP. “And of course we watch the market very carefully,” as Jochen Bihl tells the strategic inside story. “As soon as there is a demand for links to other systems, we are happy to respond very quickly to equip our other Gateways with the new feature as well.” ■

### Facts about Safe Link

- Up to 31 Gateways networked in a group
- Up to 1922 safe AS-i slaves in maximum configuration
- Ethernet-based safe protocol
- Safe Link available via:
  - Ethernet diagnostics interface
  - Fieldbus interface and EtherNet/IP
- Link to the controller through all common fieldbuses

Figure 3: Safe Link in a system having different controllers



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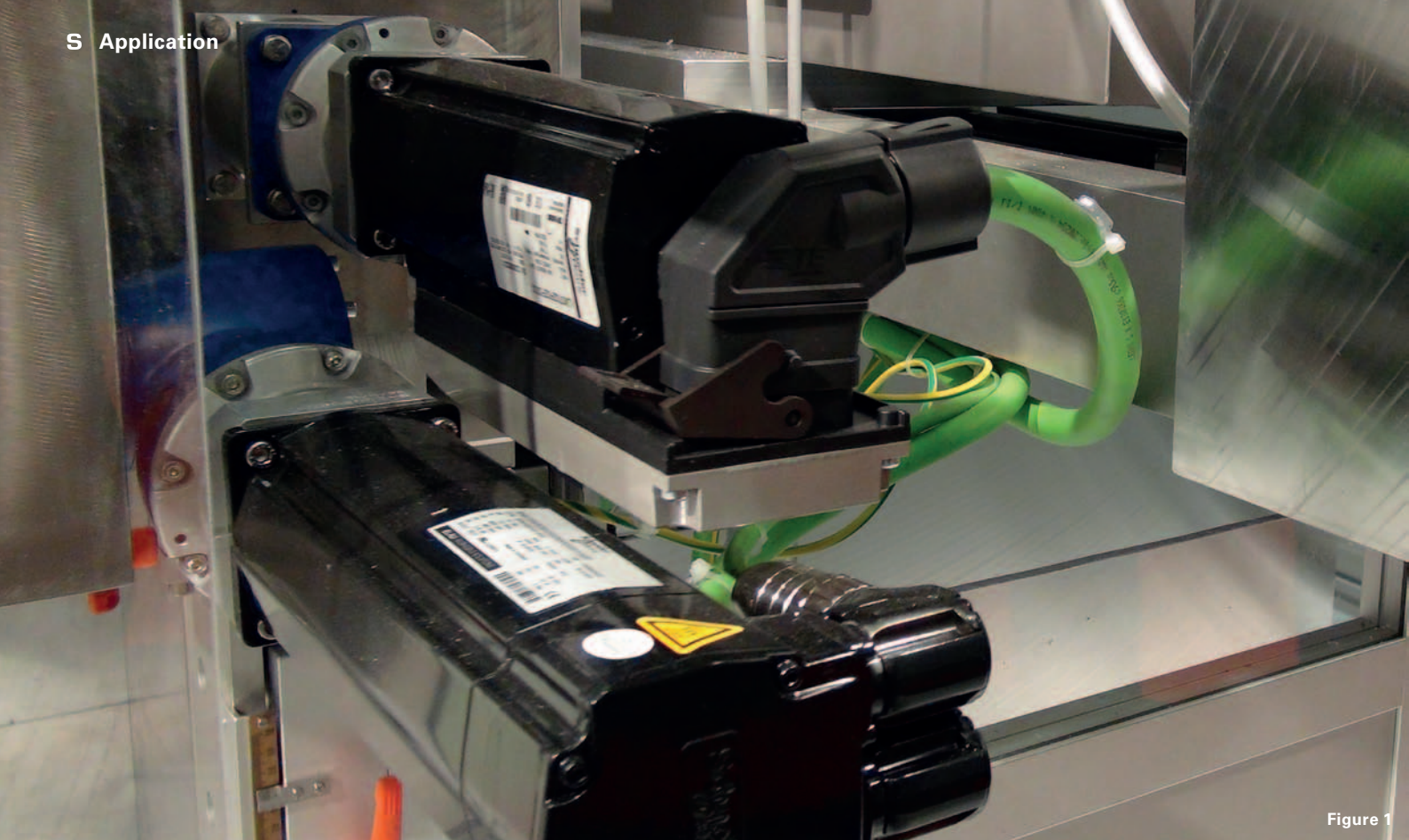


Figure 1

## Consistent modularity for greater flexibility

Wilhelm Rasch GmbH & Co. KG surprised attendees at ProSweets Cologne 2013 with its introduction of a fully servo-driven confectionery packing machine. The machine's impressive flexibility is the successful result of a modular design that incorporates mechanical aspects, electronics, and software. The company formed a project partnership with Schneider Electric to automate the machine with PacDrive 3.

Core of the automation solution:

Figure 1: One SH motor (below) and one ILM servo drive with integrated control technology; Figure 2: The PacDrive Logic Motion controller with shared power supply for the complete servo solution and Lexium LXM62 servo drives; Figure 3: The safety solution with Sercos III bus coupler, and safe I/O terminals

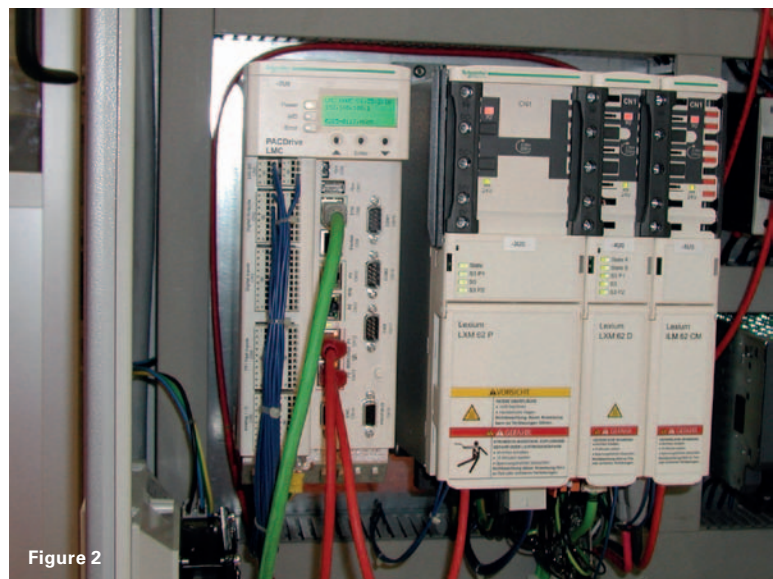


Figure 2



For more than 60 years, Cologne-based Wilhelm Rasch GmbH & Co. KG has been a well-known name in the confectionery industry. This year, Wilhelm Rasch now has introduced the first fully functional prototypes of its brand-new wrapping machine, known by its acronym RU 2: Operating at a speed of up to 160 units/minute, it can package anything that can be wrapped or folded in material with dimensions of 40 to 200 mm in width and length, including chocolate eggs, balls, and barrels, symmetrical and asymmetrical hollow figures, flat products, and bars.

### Option design with short change-over times

Starting from a base version for backfolding, the machine design can be expanded with optional modules for front folding, bottom folding, double twist, labeling, and even heat sealing for figures and pralines. A string attachment option is also currently in preparation.

Thanks to quick-change devices for the modules and, where possible, design of the optional modules as a mono-block, the machine can be quickly retooled to handle different products.

### Cabinet-free automation wherever possible

The machine shows how optimal support was provided for mapping a highly modular mechanical design to the automation solution. A central logic motion controller of the PacDrive series from Schneider Electric runs the machine and synchronizes all eight servo drives in the

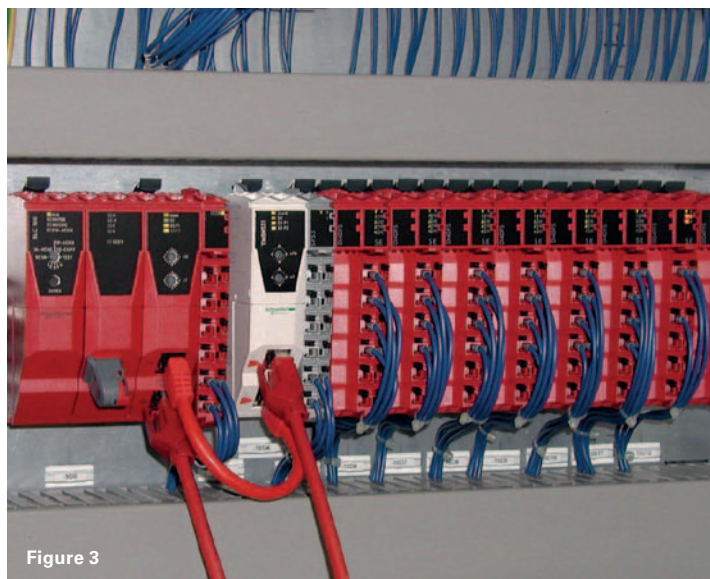


**Figure 4: The Rasch RU 2 wrapping machine in its first public appearance in the Wilhelm Rasch exhibit at ProSweets Cologne earlier this year**

basic model. Two of these drives use a Lexium LXM62 double drive, one of the most compact cabinet-based servo systems available on the market.

The remaining six servo axes are designed as integrated ILM62 servo modules, which are powered by the same shared power supply as the LXM62 controller. Together with a networking solution based on pluggable hybrid cables and distributor boxes, ILM62 servo modules pave the way for cabinet-free automation and the design of consistently modular machines. The hybrid cables are leading electrical power and also the Sercos® III motion bus to the decently installed servo modules.

Besides the drive communication also I/O and safe communication are based on Sercos III. A SLC safety controller acts as a Sercos slave to control all safety-related functions. Safe signals are linked using safe TM5 I/O modules. These can be combined with standard terminals to create mixed blocks. Both safe and non-safe terminals can be connected to functionally identical TM7 I/O modules in IP67.



**Figure 3**

### Autoconfiguration when switching modules

Regardless of the actually present modules of an individual configured RU 2 all machines of this type run the same machine program. Each of the available optional modules can be activated automatically using autoconfiguration. All PacDrive motors and servo drives are equipped with electronic name plates. Following a changeover, the PacDrive controller performs a Sercos scan, integrates all of the detected units into the current controller configuration, and activates the corresponding program modules.

These features now allow Wilhelm Rasch to offer its customers fully modular machines with outstanding flexibility. Despite the cutting-edge automation design, the company has still kept complexity to a minimum.

### About Schneider Electric Automation

Schneider Electric Automation with its main office in Marktheidenfeld/Germany is part of the Schneider Electric global Industry business. With its departments

Machine Solutions and System Consistency Schneider Electric Automation is globally responsible for developing and manufacturing hardware and software products for automation solutions in machine and plant construction. In particular Schneider Electric Automation places an emphasis on the development of solutions for packaging machines, pumping, hoisting and HVAC.

### About Schneider Electric

As a global specialist in energy management with operations in more than 100 countries, Schneider Electric offers integrated solutions across multiple market segments, including leadership positions in Utilities & Infrastructures, Industries & Machine Manufacturers, Non-residential Buildings, Data Centers & Networks and in Residential. Focused on making energy safe, reliable, efficient, productive and green, the Group's 140,000 plus employees achieved sales of 24 billion Euros in 2012, through an active commitment to help individuals and organizations make the most of their energy. ■

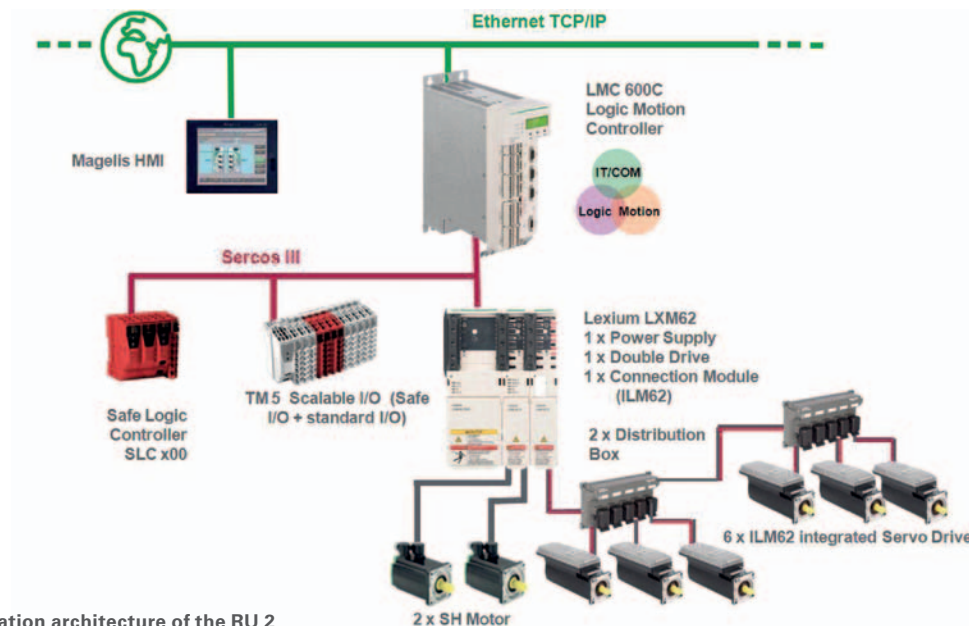


Figure 5: Automation architecture of the RU 2 universal wrapping machine

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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.



Figure 1: Rexroth PLC- and CNC Motion-  
Logic-System IndraControl L65





# Graebener Group: Complete Automation from Rexroth for Hydroforming Presses

Increase in productivity for new and installed machines

**Globally, automobile manufacturers are faced with two challenges: decreasing fuel consumption and reducing exhaust emissions. In addition to improved engine technology, they are especially focusing on reducing the weight of vehicles to decrease fuel consumption. New metal alloys with a thinner wall thickness but the same or higher strength are contributing decisively towards this goal. Hydroforming is therefore currently experiencing a renaissance in mass production. Gräbener Maschinentechnik GmbH & Co. KG – manufacturer of hydroforming presses and operator of the largest global of prototype hydroforming presses – relies on the Rexroth IndraMotion MLC Motion Logic system, which comes with predefined controls for hydraulics and Sercos bus system, to control its presses.**

In the hydroforming process, a pipe or section is formed by a fluid under high pressure. As a result, the dimensions fit exactly with the surrounding molding tool. Depending on the process, material can be added via the pipe ends using a sealing punch to optimize the component's geometry. This process provides a whole range of advantages in mass production. It opens up a degree of freedom for design engineers in the automobile industry to create complex shapes for closed sections. Among other things, hydroforming means that a component, which up until now had to be put together using several subcomponents, is produced in one molding stage. The material is hardened when subjected to high pressure and as a result acquires particular properties. Reduced wall thicknesses are achieved this way, and the weight of frame structures and body panels is markedly reduced. This is a concept that will push lightweight construction forward in the automobile industry.

## **Suitable for manufacturers and users**

Hydroforming experienced its first heyday in the early 1990s when control engineering first provided sufficient computing capacity in order to master reproduction of complex hydroforming processes with numerous hydraulic-controlled axes. Demand has revived of late through the automobile industry, which establishes new capacities and modernizes old facilities in order to increase productivity.

Gräbener Maschinentechnik GmbH & Co. KG plays a pioneering role as a provider of hydroforming processes. The Graebener Group company, a combination of companies with technological expertise in the fields of electronics, hydraulics, milling, separation and molding technology, provides the whole hydroforming supply chain: from simulating first drafts, to construction and prototyping or small-scale production, through to application-specific presses. Many customers seize the offer of small-scale production and of creating prototypes of components. That way they can test out the process for manufacturing new hydroformed components at Gräbener Maschinentechnik in Netphen-Werthenbach, Germany or optimize the process for large-scale production, while continuing production at their facilities. "By taking over the Schuler property for hydroforming in Wilnsdorf-Wilden, we doubled our stock in hydroform prototyping and small-scale production from two to four, and we now have the world's largest contingent of prototyping jobs," Torsten Adam, Sales Manager of Gräbener Maschinentechnik GmbH & Co. KG, explains. The machines have a locking force of 1,500 to 10,000 tons.

However, the outdated control system technology in the purchased machines needed a general overhaul. Gräbener Maschinentechnik used this as an opportunity to introduce a new generation of control systems for the new machine program. “As a machine manufacturer, we were looking for a control system solution that we could quickly and efficiently integrate, and which provides high functionality for complex processes”, Adam explains. “And as a machine operator in our prototyping center, we expect the automation to reduce the time for developing and trying out prototypes and to enable condition monitoring and a greater flexibility”.

### Efficient engineering

The basis for the new generation of control systems from the Graebner Group is the Rexroth IndraMotion MLC Motion Logic system. This compact control system for hydraulic, electric and hybrid drives combines an open PLC in accordance with IEC 61131-3 with a powerful motion control. Previously, a high-level PLC and a NC multi-axis controller were always used in hydroforming presses.

Numerous best-in-class controllers are already predefined in the Rexroth software and then only need to be parametrized; which, when combined with the Rexroth IndraWorks engineering environment, markedly reduced engineering costs.

“Hydroforming requires a complex hydraulic process control,” Torsten Adam explains. The control system centralizes regulator functions for all hydraulic axes and increases flexibility in control structure design. For this, Gräbener uses analog Rexroth axis modules which communicate with the control system in real-time using an integrated Sercos® III bus coupler. Sercos plays an important role in the hydraulic control loop system, since demands for shorter time delays and a faster control rhythm are only ensured by the automation bus’s performance and efficiency. This technology allows the control structure to be flexible and centralized. Sercos has established itself as the de facto standard in all large automation markets when dealing with challenging applications which have great demands for dynamics and precision. Ethernet technology combines peripherals, drives, safety and office communication in one general medium and is therefore the ideal base for a cost-efficient overall network of installations.



Figure 2: IHU-Press at Gräbener technology center

### Sercos combines numerous benefits that already constituted the standard in the 80s:

- High productivity and efficiency via the extremely compact Sercos automation protocol (summation frame method)
- High accessibility as a result of symmetrical ring communication and control redundancy function
- Flexible network structure with line, ring and tree as well as cascading via controller to controller communication
- The simplest integration into standard Ethernet networks (TCP/IP, IT, office, visualization, diagnostics, engineering, e.g. with Sercos/IP or FDT/DTM), Ethernet-based automation protocols (e.g., EtherNet/IP)
- Minimal installation costs, minimal maintenance and very little space required due to network structures that are consistently used and which function without switches
- Quickly implemented thanks to consistent specifications for all classes of equipment and standardized diagnostics information
- Simple diagnostic analysis using engineering tools and the Sercos service channel as well as using the Sercos/IP (S/IP) protocol or the free Sercos Monitor tool, which is independent of the manufacturer at each point in the network
- Open and independent standard for secure future developments

### Tried and tested base – modern automation design

The completely reconditioned 2,500 ton press is designed to operate a total of eight tool control axes and two pressure boosters. The press tappet, as a controlled axis, allows the inserted raw primary material to be preformed. This allows the machine to work on the component without an upstream bending process and minimizes creasing. All control axes are operated via a digital axis controller in a closed-loop control system. Controllable axes are: the press tappet, tool cylinders, pressure boosters and hydromotors. Each control axis can be operated with position or pressure control dependent on another axis. If required, these dependencies can be altered several times during a product cycle.

Gräbener Maschinentechnik's own developed PressPro® program runs as an actual process operation program with visualization for the user. The user enters machine, tool and process relevant data onto the intuitive screen template and also takes the process data readings from the screen. Thanks to entries and their interfaces being clearly structured, the user can quickly adjust the machine to suit different presses, tools and processes.

### Low life cycle costs

"We are manufacturers and users at the same time, which is why we know just how important low life cycle costs are in daily operations," Torsten Adam points out. Intelligent hydraulic pump management substantially improves energy efficiency. The installer can parametrize the pump set points to be process-oriented by using an

operating matrix. In this way, the pumps only generate as much energy as the process actually requires.

Sercos is also making a substantial contribution towards saving time and therefore also saving costs in the production phase. One needs to be able to modify presses quickly to suit different products. By swapping one tool, all of the corresponding hydraulic valves and control modules are also changed. As a result, the new tools must be able to be combined with the control system preferably using 'Plug and Play'. In order to achieve this, Gräbener uses analog Rexroth axis modules which communicate with the control system in real-time using an integrated Sercos III bus coupler. Unified and universal functions allow presses that are fitted with Sercos III to be operated in an energy efficient manner.

Another important manipulated variable is the accessibility of the machines. Due to all the important parameters being displayed in real values, the user can optimize processes more quickly and simply, and can pinpoint wear on the tool before it results in a malfunction. Gräbener Maschinentechnik uses the Rexroth WinView tool to do this, which is integrated into IndraWorks.

"Hydroforming is currently picking up tremendous speed again," Torsten Adam observes. "With the new generation of control systems and Ethernet buses, we are combining all the advantages of the process with a control system solution that is focused on the future and which is extremely financially viable." ■

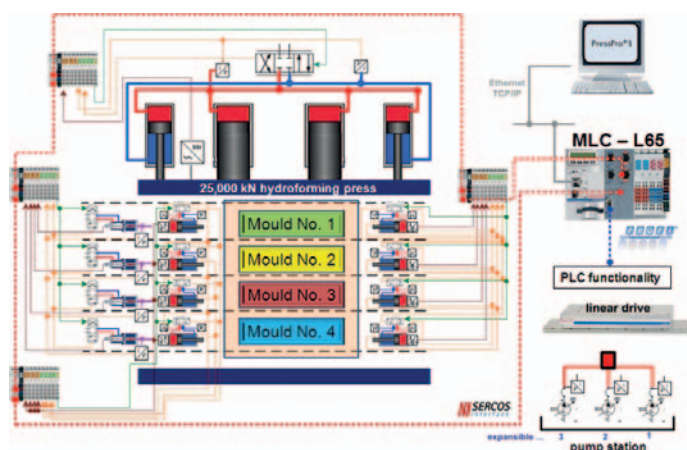


Figure 3: Control diagram

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# Sercos

## Enabling Technology for Industry 4.0

**Doesn't the subject, Industry 4.0, sound somewhat familiar? Haven't we already defined it as 'an intelligent factory with a level of intensity in socio-technological interaction previously unheard of between all of the actors and resources involved in production'? Up until recently, it was called Computer Integrated Manufacturing (CIM). Supply chain management, CAD, PPS etc. have been around for some time already. But Industry 4.0 goes one step further. The blending of the digital world with the physical due to the Internet heralds a new era where products control their own manufacturing process. The goal is to create an intelligent factory that features flexibility, an efficient use of resources, improved ergonomics and the ability to integrate customers and business partners into business and value creation processes.**

By connecting machines and products in the future using Internet technology, an increase in productivity of up to 30 percent is achievable. This networking even allows small batches of customized products to be manufactured efficiently. Here is the opportunity for industry to actively help start the fourth industrial revolution. Cyber-physical systems (CPS) and the 'Internet of Things' are the technological essentials. CPS are systems which use electronics and embedded software to communicate with the outside world and increasingly between themselves via sensors and actuators, and are connected to each other via the Internet. By using sensors, these systems process data from the natural (physical) world and make them available to web-based services that are able to directly affect processes in the natural world via actuators.

The natural world is blending into the virtual world – into cyberspace. Increasing connection between devices with web-based services and automated communication devices can be categorized under the term, the 'Internet of Things'.

### **The Ethernet in machine manufacture**

The transition from today's conventional centrally controlled production facilities to a decentralized control system will be crucial for the transition to Industry 4.0. In the future, the processed component will carry with it the information needed for its own processing.

The factory of the future is relying on communication. Cyber-physical systems such as sensors, actuators, RFID chips, embedded computers, smartphones and machines are connected to one another and exchange data both between themselves and outside of the factory work floor. Robust networks that can satisfy demands for speed, availability and expandability are essential for this. The Ethernet and TCP/IP have caught on in industrial manufacturing



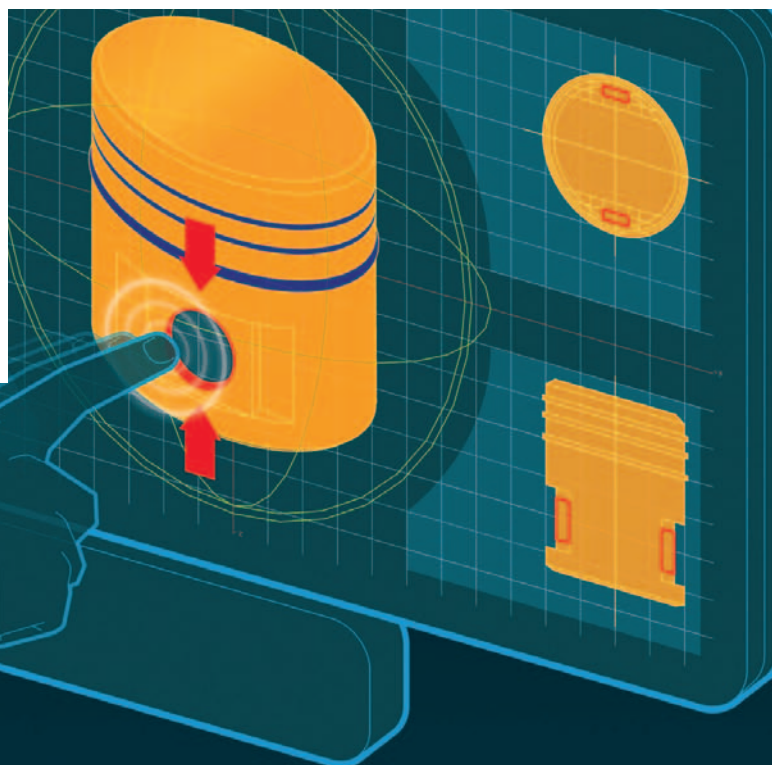
as means of communication. A single protocol guarantees that data is forwarded from the factory and out into the world of office communications without a problem. The machines are therefore able to influence production/planning systems or stock management directly. It also means that manufacturers can be contacted directly when their products experience gradual wear and tear so that preventive maintenance can be started, therefore minimizing dead time.

More than 20 years ago the Sercos user organization made an important contribution towards the third industrial revolution with the first generation of Sercos®. As a digital drive interface, Sercos replaced mechanical solutions with software – intelligent drives using Sercos communication. The electronic lineshaft revolutionized web-fed printing press production with a move to much more flexible and productive individual drive systems, replacing complex mechanical linkages with a drive at each axis. Many food and packaging machine manufacturers soon also recognized the benefits of real-time communication and replaced mechanical solutions with software and intelligent drives using Sercos communication. Electronic cam group, cam disc, registration mark control and tension control software functionalities increase the flexibility of automation and significantly reduce changeover times. As a real-time Ethernet solution, the current generation of automation buses is making an equally important contribution towards Industry 4.0. Sercos III allows machines, machine modules and peripheral devices such as control systems, drivers, I/O modules and intelligent cameras to be both flexibly and robustly connected to each other. Safety-related universal machine and protocol connection to CIP Safety is available for Sercos, EtherNet/IP and DeviceNet without additional cabling costs. Sercos' hard real-time capability guarantees that information is always available at the right time in the right place. Various specialized profiles for different

devices such as hydraulic, pneumatic or electric drives, encoders, control systems and I/Os enable facilities, production lines and individual machines to adjust to new demands in a short time and therefore increase machine performance by using 'Plug and Play'.

However, to create the highest economic efficiency for today's companies it is simply not enough to value machines and facilities using business sales. A more holistic perspective of the 'production' system is needed. How far do facilities help a company to reach its targets? The OMI (Optimization of Machinery Integration) initiative provides machine manufacturers with the opportunity to add value by simplifying communication between facilities, and between facilities and monitoring or planning systems. By unifying reporting language, data becomes information that simplifies decision-making and therefore decidedly improves machine productivity.

The fourth industrial revolution will result in dramatic upheavals within the industry similar to those we have already experienced in the private sector when introducing the Internet and mobile communication. One can expect flexibility from Industry 4.0 in production processes that has never before been available. Processes will become more energy and resource efficient. Sercos is playing an essential role in this process. ■



A close-up portrait of a man with dark, wavy hair and blue eyes. He is looking directly at the camera with a slight smile. The background is a plain, light-colored wall.






# New paths to more openness

Design production sequences more efficient and flexible by use of Open Core Engineering

A new approach in engineering connects for the first time, the previously separate worlds for IT and automation into a uniform engineering portfolio of open standards, software tools and function packages. This not only results in more efficiency and flexibility but also allows for new operation and diagnostic concepts.





Equipped with a multi-core processor, the IndraMotion MTX CNC platform executes programs at top speed, boosting machine productivity

Today, software engineering is challenged in two aspects. The one side is about efficiency. Ever shorter product life cycles raise the demand for highly productive and cost effective machines. Manufacturers must develop, produce and bring machines to market ever faster. On the other side is the machine builder's desire to self implement innovative software functions faster. These are for example sought-after for the most intuitive and efficient operation and programming as possible. Because with the integration of multiple processing technologies increases the system complexity, it is necessary to compensate for this. Coincidentally, innovative software ideas for machine builders are success promising possibilities to differentiate from the competition. IT technologies such as Smart Devices and modern communication architectures increasingly are used in the production area and offer new starting points to design production sequences more efficient and flexible.

One important prerequisite is to bring together the up to now separate programming worlds of IT and automation. Upon this point Bosch Rexroth builds with Open Core Engineering. It is about a comprehensive solution offering that increases the engineering efficiency along the complete value creation across all drive and control technologies. "Open" refers to the consistent use of open standards and interfaces in engineering. "Core" symbolizes the intelligent application functions in all of Rexroth's control and drive solutions which enable increased efficiency

and productivity in automation. In addition, with IndraMotion MLC and IndraLogic XLC control systems, machine manufacturers have expanded possibilities for access.

### **Open standards render flexible and protect the investment**

On the basis of software tools, function packages and multi-technology solutions, Open Core Engineering makes the engineering for machine builders more efficient and reduces the complexity. Thereby it covers all steps from the project design to the programming, parameter setup and startup to the service. The engineering framework IndraWorks provides all required software tools for this. In order to further reduce the effort, the conspicuous programming of complex machine processes is replaced by the simple parameter setup of tailored technology functions. The decision for a control solution represents a large investment for machine builders and end users. Bosch Rexroth protects this investment by consequent use of open standards. In the scope of Open Core Engineering, these are for example the standards of IEC 61131-3 and PLCopen for the PLC programming and OPC UA for the communication. As the backbone for modern automation concepts Bosch Rexroth uses the high performance and application flexibility of Sercos®. Machine builders can homogeneously integrate the Ethernet fieldbus into their solutions. Due to their open architecture, the system solutions also fit in seamlessly with heterogeneous automation topologies.

### IT-Technologies facilitate new operation and diagnostic concepts

With the market penetration of Smart Devices in the consumer world also new ways open up for the communication between man and machine: Current IT-technologies melt with the machine automation to innovative operation concepts. Using Open Core Interface as a new technology interface and OPC UA as a new standard of communication, Apps, for example, get flexible access to all control and drive functions. Machine builders program the application on popular platforms for Google Android and Apple iOS. This gives new impulses to the development of innovative, user friendly concepts for startup, operation

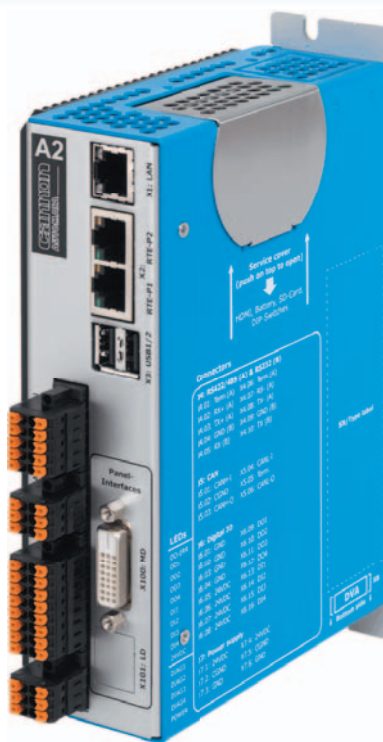
and diagnosis. Furthermore, Smart Devices can replace separate HMI devices currently required for startup, diagnosis and operation. Machine users profit from this. With a Tablet-PC, they will in the future monitor and program multiple machines. Therewith, it becomes easier to maintain an overview about pending tasks. Also new service concepts such as spare part ordering via smart phone or directly via the machine itself can be implemented. Additionally, end users can integrate their machines into modern communication and data processing networks. The machine quasi speaks the language of the IT department, making the integration into MES systems or networking on the production level considerably more efficient. ■

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- Intel® Atom™ to i-series CPUs
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## A2 Programmable Automation Controller

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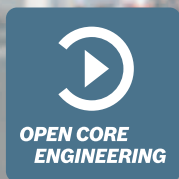
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Ingenious solution,  
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#### Freedom and efficiency redefined

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.



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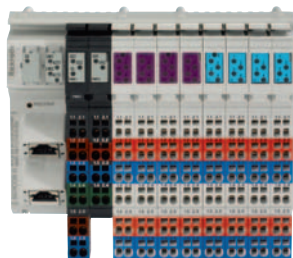




# New Sercos-enabled products

**Rexroth**  
Bosch Group

## Inline block I/O digital fast



A digital bus coupler with an integrated high-speed I/O is the ideal solution for applications with high requirements regarding precision and speed. The digital high-speed in- and outputs, with a hardware delay time of 10µs are updated synchronously to the Sercos® automation bus. With timestamp and oversampling functionality it offers the performance for time critical applications. ■

## Sytronix FcP 7010

Sytronix FcP 7010, up to 60 kW, is a servo variable pump drive system that enables closed loop axis control for open and closed hydraulic circuits as well as control of pressure, flow, force, velocity and position including alternating control. ■



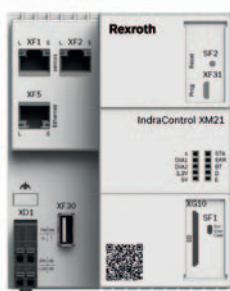
## SafeLogic

Complete safety PLC as a function module. Overall width of 20 mm, safety solutions up to Cat 4 PLe (EN ISO 13849-1) or SIL 3(IEC 62061) and with an integrated system expansion with max. 96 safe participants. The PLC offers digital input/output modules and relay modules with internal evaluation of feedback contacts. ■



## IndraControl XM21 & XM22

IndraControl XM21 with Sercos on-board. This controller is characterized by its robust and modular design. In connection with fastest I/O processing, standard PLC and Motion-Logic applications with medium to high performance requirements are feasible. IndraControl XM22 is available for the same applications with highest performance requirements. ■



### S Contact

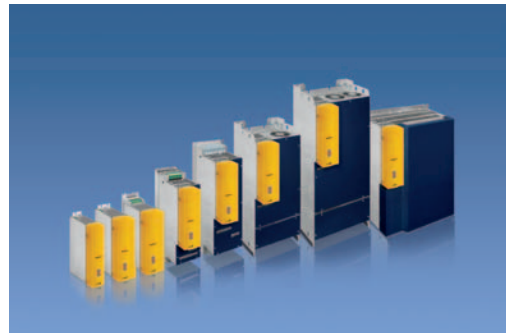
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# Baumüller's proven drive concept b maXX 4000



Baumüller's proven drive concept b maXX 4000 is the basis for both simple and complex automation solutions. It fulfills all requirements regarding the ability to cope with future needs, flexible expansion capacity and simple adaptation to modified production processes.

The series of converters and controllers b maXX 4000 is modular, scalable and open and thus can adapt flexibly to various requirements. Engineering work is reduced to a minimum. The stocking and storage of replacement parts is optimized due to the pluggable modularity. As b maXX 4100 it is also available as rectifier and regenerative feedback units. ■



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# Anybus® NP40™ Multi-network processor from HMS Industrial Networks



The Anybus NP40 is a cutting-edge network processor, especially suitable for high-end real-time industrial Ethernet applications with fast network cycles and synchronization demands. It includes a high-performance ARM core and an FPGA (Field-Programmable Gate Array). The ARM core runs the protocol and application stacks while the FPGA is used to implement the various real-time Ethernet interfaces. A real-time-switch is integrated into

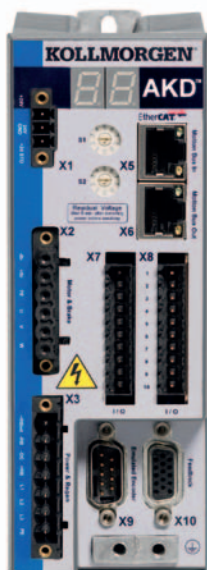
the FPGA and supports synchronous cyclic messaging in real-time networks such as Sercos® III. Since the network processor is flash-based, it can be reprogrammed for several different industrial Ethernet networks.

The NP40 is the core component of the Anybus Compact-Com 40 series, covering communications interfaces in the form factors chip, brick, and module. ■

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# AKD® Advanced Kollmorgen Servo Drives



## KOLLMORGEN

*Because Motion Matters™*

The Kollmorgen AKD® Series includes a complete range of Ethernet-based servo drives that are fast, feature-rich, flexible and easy to integrate into any application. These next-generation drives offer plug and play commissioning for instant, seamless access to everything in your machine. The servo drives offer industry-leading performance, communication options and power levels – all in a smaller footprint. ■

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# Moog offers programmable multi-axis servo drive system (MSD)



Higher performance machines can mean a real advantage in productivity and profitability and Moog's Multi-Axis Servo Drive System is a key enabler in achieving this objective. This integrated family of products provides the highest levels of dynamic response, smooth performance and application versatility.

This system includes both modular and single-axis servo drive options, a common shared power supply and a motion controller to coordinate the motion across multiple axes. ■



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## Phoenix Contact: Shortest response time and synchronized processes thanks to Axioline F



Thanks to Push-in connection technology, Axioline F enables fast installation, has an extremely robust design and mechanics and at the same time, is very easy to handle.

- 1  $\mu$ s update time per I/O module
- Always synchronous with the higher-level network
- Fast, robust, easy

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## High performance low voltage servo drive from Servotronix



The LVD is a high performance low voltage servo drive in a compact package.

This fully digital amplifier is ideal for driving Stepper, Brushed or Brushless DC motors.

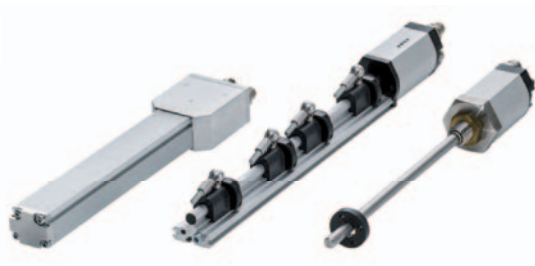
A high PWM switching frequency combined with state-of-the art space-vector modulation enables operation with low inductance motors while minimizing current ripple and eliminating acoustic noise. ■



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## TR-Electronic's new linear absolute Encoder LA, LP, LMP with Sercos



The linear absolute position measuring systems of TR-Electronic measure linear movements with measuring lengths of up to 4 m, without contact and wear-free, and ensure a precise positioning in machines, tools and installations. The encoders are available in profile housing (with magnet guide = LP46 ES3, Flat = LMP 30 ES3) or for direct integration in hydraulic cylinders (LA 46 ES3). ■

### S Contact

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## Contactless Ethernet rotary coupler from Smitec



10/100BASE-T Ethernet rotary coupler for industrial applications, housed in an IP54 tiny

aluminum case. Capacitive coupling technology allows high-speed contactless communication between revolving parts on machinery and robots. Tested on high-speed real-time Sercos® III protocol, it is ideal for Ethernet-based fieldbuses. ■

### S Contact

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# Sercos User Conference provides new impetus

On September 24, 2013, Sercos International e.V. saw its User Conference at the Frankfurt MesseTurm fully booked.

About 70 customers and prospects from machine and plant engineering as well as end customers, system integrators, device and automation manufacturers attended presentations given by Bosch Rexroth, Dürr Systems, Schneider Electric Automation, Sercos International e.V. and others.

Peter Lutz, Managing Director of Sercos International e.V., explained the current status of the Sercos® automation bus and future paths in development which will be guided by the customers' wishes and automation trends.

The latter were also addressed in the keynote of Lucas Wintjes, Director of Sales and Industry Sector Management Factory Automation of the Industrial Applications Business Unit at Bosch Rexroth AG. Based on the changing

structures, Wintjes illustrated new trends and challenges which will have to be faced by automation engineering. He also presented possible solutions which could help companies remain competitive in the future.

Dr. Alexander Meißner, Head of Control Products Development at Dürr Systems GmbH, elaborated on the advantages arising from the integrated robotics networking with Sercos III from a user perspective. At Dürr, more than 10,000 Sercos III components are in use, as Dürr's requirements for an optimum painting process are supported by the Sercos automation bus.

Klaus Weyer, Director Marketing High Performance, and Dr. Rainer Beudert, Marketing Manager System & Networks at Schneider Electric Automation, concluded the first half of the day with a comparison of various bus systems. They used an amusing role play to go into the requirements



of a fictitious machine engineer and discussed which of the about 30 Ethernet-based bus systems would be best suited for the application.

The afternoon was then marked by various presentations on topics such as safety, energy, vision & motion, reduction of machine downtimes, device integration, and tips & tricks for the quick commissioning of machines with Sercos components. These presentations held in the form of breakout sessions allowed the participants to organize their afternoon as they chose and also pay a visit to the accompanying trade exhibition.

Automata, Bihl+Wiedemann, Bosch Rexroth, Hilscher, HMS/ IXXAT, Schneider Electric Automation, Vision & Control and Wago presented their Sercos solutions for factory automation.

"With about 70 participants, interesting presentations and the accompanying exhibition, this event was a complete success and gave comprehensive insights into the current trends and future standards," Lutz added. "The Sercos technology will play an essential role in this context." ■

# Sercos International e.V. finishes the Industrial Automation exhibition in Beijing successfully



The newly organized exhibition in China's capital developed towards a focused event for industrial robotics, factory- and process automation of which Sercos International e.V. took benefit.

The user organization showed at its joint booth products from Bihl+Wiedemann, Bosch Rexroth and LTI, which were of great interest to visitors. Besides having had more contacts at the exhibition, Sercos also led more high quality discussions with interested parties. These were mainly related to finding new concepts as to how to improve the performance of machines by substituting the original communication protocols with Sercos®.

Sercos also noticed an increasing interest from companies, interested in joining Sercos Asia as a member. ■

## Premiere in Japan: Sercos International e.V. attends ION

More than 700 visitors attended the Industrial Open Network Roadshow in Tokyo and Osaka in July.

This event, which supports open networks for factory and process automation in Japan, is organized by various associations such as, Sercos International e.V., ODVA, Mechatrolink and many more. Members of these associations as well as vendors and users of those networks took benefit of this event by learning more about latest developments and innovations, which were available at exhibition booths and accompanying conferences.

ION registered an increase in the number of visitors compared to last year. "Our participation in both, the exhibition and conference were very successful in Tokyo and Osaka. Our technology becomes increasingly important in the Japanese market, particularly in conjunction with our ODVA activities – a trend, which we noticed in Europe, China and the US already some time ago", says Peter Lutz, Managing Director at Sercos International e.V. ■



## New record number of attendees at 12th Sercos PlugFest

The two-day event took place at the Institute for Control Engineering of Machine Tools and Manufacturing (ISW) at the University of Stuttgart, Germany. More than 30 products, many of which were newly developed, were intensively tested with each other to insure users of the interoperability of Sercos products. Among the tested products were CNCs, PLCs and motion controls, electrical and pneumatic I/O systems, servo drives, safety components, encoders and various infrastructure components.

The Sercos® test laboratory used this occasion to test the latest releases of development-, test- and certification tools prior to their finalization.

Peter Lutz, Managing Director of Sercos International e.V., was very pleased with the number of attendees and the positive feedback of all participants. "We are very pleased to see how well the PlugFest has been accepted by the Sercos community. With more than 30 attendees, we've seen a new record in participation. Additionally, we welcomed a number of vendors for the first time at the PlugFest and they used the opportunity to convince themselves of the high grade of interoperability that the Sercos automation bus provides." ■

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