Topics and trends by exhibitors not at preview 2019

State-of-the-art training systems bring theory to life

The new Pilz Education Systems – PES – from Pilz GmbH & Co. KG are a modular solution that enable education and training facilities to improve practical training in safe automation technology.

Users can choose from nine different control panels that cover sensor technology, control technology, operation and maintenance and can be combined with each other, along with a board that simulates an actual plant. Using genuine industrial components means that a machine or system's safety and automation functions can be replicated on a practical level. What's more, the modules of the training systems are ready to use without the need for any other installation work and can also be combined in various ways. The documentation supplied with the systems also ensures learning objectives can be achieved fast, as exercises can be completed through self-study without the need for guidance.

This new offering from Pilz is aimed at training facilities such as industrial companies or vocational schools and universities for the subject areas of electrical engineering and automation. For instance, trainees can use Pilz Education Systems to learn the basics of safe automation through a practical approach, using wiring examples to carry out their own projects and completing tasks using set sample exercises. The level of difficulty can be adapted to the learner's abilities. For an easy introduction when

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learners do not have any programming knowledge, the instructor can use the modules with the basic sensor technology functions and relays to clearly explain the fundamentals of machine safety.

For more advanced learners, there are modules with more complex controllers, such as the logic panel, where more sophisticated safety circuits with fixed or free configurations can be created. The “conveyor belt actuator technology” control panel also has a firm practical focus, as it maps a complete machine and the associated safety and automation functions.

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A helping hand is always welcome

Configuring power chains used to be a complicated affair – but not anymore. The ÖLFLEX CONNECT CHAIN configurator from LAPP promises to make the whole process child’s play! The online application automatically eliminates potential error sources to ensure it always guides users to a functional solution.

With connection technology getting ever more complex, it’s no surprise that ready-made system solutions from a single source are becoming increasingly popular. One of the first companies to identify this trend is U.I. LAPP GmbH. Besides supplying customized cable assemblies, the firm has long been supplying servo assemblies for connecting servo drives in line with the standards of leading manufacturers and it is also a major supplier of turnkey power chain systems. Up to now, configuring the latter has always been a complex procedure. However, all that is set to change, as the ÖLFLEX CONNECT CHAIN configurator from LAPP turns a challenging task into child’s play. It is claimed that just a few clicks is all it will take to engineer a power chain online.

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The ÖLFLEX CONNECT CHAIN configurator guides users step-by-step through the process of choosing a cable chain, cables and the ideal accessories. Every step of the way, the digital assistant makes sure that components are compatible, especially when it comes to minimum bend radius. And if the cable chain does have a smaller bend radius than the cables, which would considerably reduce their service life, the configurator will display a warning message and suggest alternative types of cable chain. Other criteria include travel distance, acceleration, temperature behavior and shielding, with the configurator automatically excluding cables that are not suitable for the application. If required, the system will integrate dividers and shelves – while ensuring that the weight of the cables is evenly distributed along the power chain. When the configuration is complete, users receive a personalized quotation and are then able to choose whether they want to purchase the power chain fully assembled by LAPP or as individual components, with the option of having cables pre-cut to the appropriate lengths.

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Finally – “control” condensed onto the back of a beer mat!

The “Singular Control” solution from YASKAWA helps users control robots, servo drives, frequency converters and I/O systems with just a single controller. It’s all down to the new MP3300iec RBT compact machine controller.

Drives, motion control, robotics, system engineering and information technology are the mainstays of Japanese company YASKAWA. In fact, it was YASKAWA that first coined the term “mechatronics”, which it had registered as a trademark in 1971. The company is one of the few worldwide that can offer components and solutions for virtually every industry from one company. Among its latest achievements is the

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"Singular Control" solution, which enables users to take control of robots, servo drives, frequency converters and I/O systems with just a single controller. The new MP3300iec RBT compact machine controller now also helps the whole system work even better.

When it comes to performance, the new MP3300iec RBT is certainly a heavyweight addition to YASKAWA's MP3000 range. Uniform application programming is carried out exclusively using the "MotionWorks IEC" software tool with industry-standard PLCopen and YASKAWA-specific function blocks that are available free of charge and are designed to greatly simplify system programming. The range of functions is further extended with the integration of visualization systems and camera systems, as well as with conveyor tracking, a group toolbox and many more features. Thanks to the "Singular Control" solution, mechanical engineers and other users can now incorporate robots into existing architectures without needing a special programming device or a proprietary robot programming language. In the future, the controller's firmware will take care of calculating the motion sequences of individual robot axes or delta and customer-specific kinematics. That means programmers can focus entirely on the actual application at hand.

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Tires made from dandelions?

Continental, the technological innovator and manufacturer of premium tires, celebrated St. Nikolaus' Day 2018 by inaugurating its new research and experimentation laboratory "Taraxagum Lab Anklam" in the very north-eastern tip of Germany, extending a very festive welcome to the public.

Five years ago, the leading tire manufacturer Continental and the Fraunhofer Institute for Molecular Biology and Applied Ecology (IME) announced that their joint

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development project to manufacture tires using industrial-grade rubber made from dandelion plants was on the brink of a breakthrough. Since then, there have been regular reports on how well their pioneering efforts have been going, culminating most recently in the news that the new "Taraxagum Lab Anklam" research and experimentation laboratory has opened after investments running to 35 million euros, just one year after breaking ground at the site.

During the opening ceremony in Germany's north-eastern state of Mecklenburg-Vorpommern, Nikolai Setzer, member of the Executive Board at Continental AG and head of the Tire division, said: "We are proud to open this lighthouse project today. We are the first tire manufacturer in the world to invest such a significant amount in industrializing dandelion rubber. We see Russian dandelions as an important alternative and complementary to conventional natural rubber from hevea brasiliensis, allowing us to meet the rising global demand in an environmentally compatible and reliable way." If the trials continue to produce such positive results, Continental plans to start using this raw material in series production within the next ten years with the aim of acquiring a growing proportion of the rubber it requires from dandelion plants.

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Safe and secure!

As part of the IUNO research project, automation specialist Balluff and its partners are developing an RFID (radio frequency identification) solution based on OPC-UA for securely communicating data between the object level and company IT systems.

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By increasingly networking production processes, the fourth industrial revolution offers numerous advantages. But there is a downside, with numerous new threats emerging due to security loopholes. Only too aware of this issue, the German Federal Ministry of Education and Research (BMBF) is lending its support to IUNO – Germany's national reference project for IT security in Industry 4.0. Over the past three years, the companies participating in the project have identified threats and risks for smart factories, devised protective measures, and successfully implemented four application scenarios centered on secure data, services, processes and networking.

In terms of secure processes, the companies have primarily focused on two risks. Firstly, the threat that hackers pose to production processes and, secondly, the challenge of ensuring a workpiece always follows the right route through manufacturing and can be identified at all times. "The idea is to ensure that alternative routes can be found if a bottleneck occurs in production. This requires 'navigation systems' for workpieces," explains Oliver Pütz-Gerbig, Product Manager for RFID & Locating at Balluff GmbH. As part of this project, Balluff teamed up with WIBU Systems, which specializes in protecting and licensing software and documentation, to help the Homag Group, a manufacturer of woodworking machines, to establish secure processes for customized production. By meticulously analyzing each process step within furniture production, the participants were able to derive and superbly implement appropriate protective measures. What's more, the OPC-UA protocol is now used in production with end-to-end encryption to stop would-be spies from stealing or tampering with data, thereby ensuring communication is safe and secure.

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Powering up in the fast lane

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Phoenix Contact E-Mobility GmbH has joined forces with the BMW Group, Allego GmbH, Dr. Ing. h. c. F. Porsche AG and Siemens AG to develop a new technology that could allow drivers to recharge electric vehicles as fast as they can fill a gas tank.

The partners are collaborating as part of a consortium supporting the FastCharge research project, which was launched in July 2016 with total funding of 7.8 million euros from the German Federal Ministry of Transport and Digital Infrastructure. In mid-December the companies presented their latest progress in developing fast and convenient charging technology for electric vehicles when they launched the prototype of a charging station with a capacity of up to 450 kW. Electric research vehicles created as part of the project were driven up to the ultra-fast charging station, where the partners demonstrated that charging times of less than three minutes can be achieved for the first 100 kilometers of range and 15 minutes for a full charge (10-80 percent state of charge, or SOC for short).

The new charging station can be used for free right away and is suitable for electric models from all brands that carry the Type 2 version of the internationally widespread Combined Charging System (CCS), as is commonly used in Europe. For its part, Phoenix Contact has contributed its fully CCS-compatible cooled HPC (High Power Charging) cables, which help to meet the demands associated with fast charging at high capacity.

It is anticipated that fast, convenient charging solutions will make electromobility much more appealing. Increasing the available charging capacity to up to 450 kW – which is three to nine times what current DC rapid-charging stations can deliver – is a crucial prerequisite when trying to significantly cut charging times. The FastCharge project is now looking at the technical conditions that vehicles and infrastructure need to meet in order that these extremely high charging capacities can be utilized. The forthcoming HANNOVER MESSE in April 2019 will be a perfect opportunity to stop by the Phoenix Contact stand and find out about the latest developments in the project.

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