October 2023 - Vol 49 - No 10

OCTOBER

IEN europe

INDUSTRIAL ENGINEERING NEWS

Improve Operations by Utilising a Floor to Cloud Approach

By combining the right technologies and approach it is possible to provide real-time insights from the plant floor to help manufacturers increase productivity and meet sustainability goals

page 10

Rugged 2-D System for Automated Guided Vehicles

page 14

New Automation System to be showcased at SPS 2023

Page 16

@ieneurope

LET'S TWEET! Follow us!

twitter

www.ien.eu

ISSN : 2031-9193

FOLLOW
IEN EUROPE
ON LINKEDIN

editorial

Anis Zenadji
a.zenadji@tim-europe.com

Dear Readers,

As we navigate through the ever-evolving landscape of the industrial world, a series of significant developments have taken center stage. These changes are poised to shape the future of manufacturing, technology, and global economies.

Firstly, companies across sectors are investing in clean energy, reducing waste, and transitioning to eco-friendly technologies. A growing emphasis on renewable energy and the push for carbon neutrality will continue to drive innovation and shape industries.

Secondly, IoT, AI, and automation are transforming the way factories operate, optimizing production, reducing waste, and enabling predictive maintenance. As this trend accelerates, we expect to see greater connectivity and data-driven decision-making.

In addition, the automotive industry is in the midst of a profound shift toward electric vehicles. As governments push for stricter emissions regulations, traditional automakers and startups are investing heavily in EV technology. This transformation is affecting not only car manufacturers but also the energy and battery sectors.

In the industrial world, change is the only constant. Staying informed about these key developments is crucial for businesses, policymakers, and individuals alike. It's a reminder that adaptability, innovation, and a commitment to sustainability are the cornerstones of success in the industrial arena. The world is evolving, and those who can embrace change and navigate these complex dynamics will be best positioned for a prosperous future.

We wish you a pleasant and interesting reading.

Editor for IEN Europe

IEN europe

TIM Global Media BV
140 Rue de Stalle - 3ème étage, 1180 Uccle-Brussels, Belgium
o.erenberk@tim-europe.com - www.ien.eu

Editorial Director:	**Orhan Erenberk** **o.erenberk@tim-europe.com**
Editor:	**Anis Zenadji** **a.zenadji@tim-europe.com**
Editorial Support Energy Efficiency:	**Flavio Steinbach** **f.steinbach@tim-europe.com**
Associate Publisher:	**Marco Marangoni** **m.marangoni@tim-europe.com**
Production & Order Administration:	**Francesca Lorini** **f.lorini@tim-europe.com**
Website & Newsletter:	**Carlo Cucchi** **c.cucchi@tim-europe.com**
Marketing Manager:	**Marco Prinari** **m.prinari@tim-europe.com**
President:	**Orhan Erenberk** **o.erenberk@tim-europe.com**

ADVERTISING SALES OFFICES

EUROPE

AUSTRIA/SWITZERLAND
Monika Ailinger
Tel.: +41 41 850 44 24
m.ailinger@marcomedia.ch

BENELUX,
NORWAY, SWEDEN
Nadia Liefsoens
Tel.: +32-(0)11-224397
Fax: +32-(0)11-224397
n.liefsoens@tim-europe.com

FRANCE
Roxanne Akbulut
Tel: + 33 06 52 31 41 56
r.akbulut@tim-europe.com

M'fumu Tiya Mindombe
Tel: +32 465 443 530
m.mindombe@tim-europe.com

GERMANY
Simone Ciolek
Tel: +49-(0)9771-1779007
s.ciolek@tim-europe.com

ITALY, SLOVENIA
Andrea Rancati
Tel: +39-02-7030 0088
arancati@rancatinet.it

TURKEY
Onur Dil
Tel: +90 212 366 02 76
Fax: +90 212 366 58 02
E-mail: o.dil@tim-europe.com

UNITED KINGDOM/DENMARK/
FINLAND
Dave Harvett
Tel: +44 (0)121 705 21 20
daveharvett@btconnect.com

NORTH AMERICA

Hamilton-Murphy Global, LLC
John Murphy
Tel: +1 616 682 4790
Fax: +1 616 682 4791
john@hamiltonmurphymedia.com

JAPAN

Ichiro Suzuki
Incom Co. Ltd.
Tel: +81-(0)3-3260-7871
Fax: +81-(0)3-3260-7833
isuzuki@INCOM.co.jp

OTHER COUNTRIES

Cristian Son
Tel: +39 027030631
c.son@tim-europe.com

Digital File Requirements available at:
www.ien.eu/technical-guidelines/

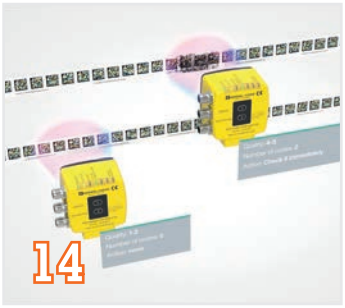
Production by design3, Milano, Italy
Printing by Logo Srl - Padova, Italy

POSTMASTER
Send address changes to:
Industrial Engineering News Europe
Marco Prinari - m.prinari@tim-europe.com

In the next issue:

SPECIAL:

SPS Smart Production Solutions
Mechatronics & Digital Automation
Virtual and Augmented Reality
Equipment & Machinery
AI IEN Special
Artificial Intelligence & IIoT



NSI Mobile Water Solutions Acquires a Segment of Pall Water's European Mobile Water Fleet

This strategic purchase is set to bolster Nijhuis Saur Industries' Mobile Water Solutions division's fleet, significantly expanding its capacity to serve an even larger customer base.

The acquisition marks a significant milestone in the expansion of NSI Mobile Water Solutions' fleet and further strengthens Nijhuis Saur Industries' position in the Industrial Water market segment as one of Europe's leading providers of mobile water services. The company's fleet of mobile water treatment solutions is already one of the largest and youngest in Europe, and the addition of the Pall Aria™ assets will allow NSI Mobile Water Solutions to meet the most challenging requirements of its growing customer base.

The fleet comprises the Pall Aria™ mobile water PAM C60 and C20 containers, which house a comprehensive membrane water treatment system, employing hollow fiber membrane technology. These containers feature filtration racks with advanced membrane modules, effectively filtering pressurized raw water. The versatile filtration modules are designed for various applications, such as municipal drinking, industrial pre-filtering, and wastewater processing.

By adding the Pall Aria™ units to the fleet, NSI Mobile Water Solutions is equipped to handle even the most demanding requirements of various industries. The company's dedication to innovation and customer satisfaction sets it apart, ensuring clients can access reliable, sustainable, and efficient mobile water solutions tailored to their specific needs anytime, anywhere.

Empowering Fast-Track Water-On-Demand Solutions

Menno M. Holterman, CEO and president of Nijhuis Saur Industries: "At Nijhuis Saur Industries, we are driven by a deep commitment to sustainable water practices and environmental stewardship. The integration of the Pall ARIA™ units into the NSI Mobile Water Solutions' fleet represents a supplemental leap forward in delivering top-tier water solutions to our valued customers.

The Pall ARIA™ units offer specific applications that further enhance our mission to provide sustainable water solutions, including PFAS removal, Sea Water Reverse Osmosis (SWRO) pretreatment, and advanced water recycling and reuse. With our Customer for Life approach and our extended range of solutions, we continue to lead the way in 'reducing, removing, reusing, and recovering' water, making a lasting impact on sustainability and responsible water utilization".

Dominique Tassignon, CEO of NSI Mobile Water Solutions: "We are thrilled to announce that the integration of Mobile Water Solutions into the Saur Group has been nothing short of a resounding success since our acquisition in December 2022. This milestone has allowed us to seize a plethora of opportunities to foster synergies and deliver added value in collaboration with Nijhuis Saur Industries, benefiting both our existing and prospective customers.

We are also delighted to announce the successful acquisition of a sizeable portion of Pall Water's European Mobile Water Fleet. The strategic addition of this fleet broadens our spectrum of services and propels the evolution and diversification of our mobile water fleet. Our expanded capabilities enable us to grow our team and extend our reach to address the most demanding requirements of our growing customer base. This applies across industrial process water and wastewater treatment, resource recovery, municipal drinking water, and wastewater solutions.

For more than 25 years, we have proudly served NSI Mobile Water Solutions' customers, fostering robust partnerships grounded in professionalism, effective communication, teamwork, an outward focus, and exceptional service. As we move forward, we are excited to continue building these relationships and assisting our customers in overcoming their water challenges".

FDT Group Appoints André Uhl as its New Chairman

Successor from Schneider Electric to lead the executive strategy for the open FDT/DTM standard

FDT Group announced that André Uhl, vice president of technology and architecture for Schneider Electric's Industrial Automation Business, has received a unanimous vote to serve as the Chairman of the FDT Board of Directors.

The Chairman's primary role is to ensure that the Board of Directors effectively sets and implements the organization's strategy and governance of the standard. The IEC 62453 standard directly benefits global manufacturing industries with a unified environment for industrial device management supporting brownfield, greenfield and new smart manufacturing initiatives in the process, hybrid, and discrete markets.

Mr. Uhl replaced Lee Lane from Rockwell Automation as chairman due to his departure to a new role. Other board members include Shinji Oda, Yokogawa; Ed Silva, Flowserve Corporation; Rolf Birkhofer, Endress+Hauser; Paul Brooks, Rockwell Automation and Michael Kessler, PACTware.

FDT Group Managing Director Steve Biegacki congratulated André Uhl on his new post. "We appreciate the service Lee Lane provided to our organization. André's industry expertise in technology and standards supporting the process and factory markets will guide the FDT organization and roadmap focused on promoting open integration and harmonized device management, driving future innovation field to cloud," Biegacki said.

Mr. Uhl has over 20 years of industry experience managing Research & Development (R&D) centers for industrial and motion control applications and automation solutions for flagship products in the process, hybrid, and machine builder markets. Currently serving as vice president of technology and architecture for Schneider Electric's Industrial Automation Business, André has served as a member of the FDT Board since 2016 and presently sits on the ODVA Board and OPC Foundation Unified Architecture Field Xchange (UAFX) steering committee shaping the future of the Industrial Internet of Things (IIoT). His dedication to working across the industrial automation ecosystem demonstrates clear leadership and support for the executive strategy of the organization that provides governance over the open FDT standard.

PTC Acquires pure-systems

pure-systems' "pure::variants" is a solution adopted by some of the world's largest manufacturing companies for managing software and product variants. This acquisition supports PTC's ALM leadership across automotive, medical device, aerospace, and other safety-critical and regulated industries.

PTC announced that it has acquired pure-systems, a leading provider of product and software variant management solutions. Manufacturing companies use pure-systems' pure::variants® solution to efficiently manage the different variations of software and systems engineering assets across their product configurations. PTC and pure-systems had partnered prior to the acquisition, and pure::variants is already integrated with and directly complements PTC's Codebeamer® application lifecycle management (ALM) solution and similarly complements PTC's Windchill® product lifecycle management (PLM) solutions. The addition of pure-systems is expected to support PTC's leading position in the fast-growing ALM market, drive additional ALM growth, and enhance relationships with customers in regulated industries – including automotive, aerospace, and medical device manufacturers – which are increasingly prioritizing software in their product designs.

"The acquisition of pure-systems adds important functionality to our ALM suite that is critical to manufacturers around the world," said Jim Heppelmann, the now ex Chairman and CEO of PTC. "Manufacturers are increasingly turning to software to differentiate their products and to create different versions of their products to address the full range of customer needs. In particular, automakers that are investing heavily in software-defined vehicles require tightly integrated ALM and software variant management solutions to plan and deliver the different software configurations that power their range of vehicle offerings."

"The pure-systems team is thrilled to join PTC and continue supporting our manufacturing customers' needs for software variant management solutions," said Danilo Beuche, CEO, pure-systems. "PTC shares our focus on this critical need for companies that make complex, regulated products and on the importance of an open ecosystem approach. We are proud of what the pure-systems team has accomplished for our customers to this point, and we are excited to join PTC's ALM group to continue to grow our position in this important market."

Transmitting Safely From the Danger Zone

The key considerations for using wireless telemetry systems in hazardous environments

In 2019 an accident at a Petrochemical plant in Texas caused the evacuation of 60,000 nearby residents. This event highlights the importance of taking every necessary precaution to prevent accidents in hazardous working environments. Here, Matthew Youngs, sales and marketing manager at sensing and measurement specialist Mantracourt, discusses the key considerations of ATEX and IECEx certified electronics for use in hazardous applications.

The oil & gas industry and industrial processing industries create demanding and harsh industrial environments for electronics because of the volume of volatile chemicals.

Electronics like wireless transmitters face various challenges as a result. For example, if they are not sealed correctly, they can allow chemicals, combustible dust and other matter into the equipment. Not only can this interfere with the performance, but it can also create an environment where a spark could cause an explosion.

Therefore, they must be specially designed for the application and rigorously tested and approved if they are to be used in these hazardous applications.

Regulatory compliance

ATEX is a European single market directive that applies to electrical and mechanical equipment and protective systems. If equipment is being used in an area that is identified as potentially explosive, such as petrochemical plants, then it must be tested and certified to ATEX. There is also IECEx, which is an international certification relating to equipment for use in hazardous explosive atmospheres and is more commonly used outside of Europe.

ATEX zones are defined based on the likelihood and duration of the presence of a potentially explosive atmosphere in a particular area. There are three zones: Zone 0, Zone 1, and Zone 2.

Zone 0 is an area in which an explosive atmosphere is present continuously, or for long periods of time, or frequently. Zone 1 is an area in which an explosive atmosphere is likely to occur in normal operation and Zone 2 defines an area in which an explosive atmosphere is not likely to occur in normal operation, but if it does occur, it will only be for a short time.

ATEX and IECEx approval means that electronic products have been designed and manufactured to prevent the ignition of explosive atmospheres, significantly reducing the risk to the safety of personnel and equipment. It is a legal requirement for electronic products to have this approval when used in these zones.

Key considerations

Although ATEX certifications are a requirement for equipment that is to be used in these environments, there are other considerations to make when choosing the right wireless telemetry system for the job.

Instruments with long battery life can reduce the need for personnel to access hazardous or remote locations to replace or recharge batteries, improving their safety and reducing the risk of accidents.

Temperature fluctuations can cause changes in the electrical properties of the sensor or the instrument, resulting in variations in the output signal.

Electronics with low temperature drift help maintain stable and predictable electrical behaviour, reducing the risk of sudden temperature-related failures or malfunctions that could ignite the hazardous atmosphere. They also degrade at a slower rate in environments with variable temperatures, further enhancing their durability.

Mantracourt's X24 range including its Telemetry Strain Transmitter Module and its Handheld Telemetry Display is approved for use in explosive atmospheres Zone 1 and Zone 2. These devices operate with strain bridge inputs and gather and transmit data from force, weight, torque and pressure sensors.

The Transmitter Module can transmit data to existing T24 receivers in the safe zone. This reduces the risk to personnel by allowing them to monitor their systems from a safe distance. The T24 wireless telemetry system can then link to a PC in the safe zone, where users can safely access SensorSpace, a cloud-based platform with a 24/7 live feed.

▶▶ 64148 at www.ien.eu

The Electric car Giving Driving Lessons to Children Under 10

A real electric car in miniature is giving children the opportunity to start their driving career early. The aim is to set children on course for excellent road safety and driving skills before these young drivers pass their test for real. Young Driver Motor Cars is providing this realistic driving experience using maxon motors.

According to the Department for Transport, young drivers, including those between 17 and 24 years-old, are more likely to be involved in an accident compared to other age groups. Young drivers also have relatively higher injury rates in road collisions. The need to make driving a safer experience for the young was the motivator for Ian Mulingani in his leadership of Young Driver. The Young Driver scheme provides driving lessons to children throughout the UK in safe areas, off the public highway. Through government-approved instructors, the aim is to give young learners a head start and enable them to become safer drivers. Originally, the scheme provided lessons to children aged between 10 and 17, but following demand from parents, 10 years old wasn't young enough.

Firefly Mk I

"Parents would bring along younger brothers and sisters who wanted to try our driving lessons, but children of this age were too small to drive the standard, road-going cars we use for 10- to 17-years old," says Ian. "I tasked our team to buy some small electric cars, but they couldn't find anything suitable. They were either unrealistic toys, not durable enough for our needs, or collectors' items costing £30,000-plus. I realised we needed to make our own."

In 2016, Ian worked with a team including external partners to develop an initial model. The first version of the Firefly, with 12 cars produced, delivered around 12,000 lessons to drivers as young as four.

"After four years using the cars, we'd replaced the batteries a few times, and the motors were still running perfectly. We were using motors from Parvalux by maxon, which came recommended from our engineering partner at the time," says Ian. "The car bodies were however in need of attention - as you would expect at the hands of such youngsters behind the wheel – so instead of refurbishing the cars, we took the opportunity to develop a new, improved model."

Thanks to Ian's automotive background, he was able to call in engineering expertise, including fellow former Jaguar-Land Rover colleague, Dr Ian Pogson, who began working on the design of the electric powertrain for the Firefly Sport. "This time, we ran the car development project just like we had done at JLR," says Dr. Pogson.

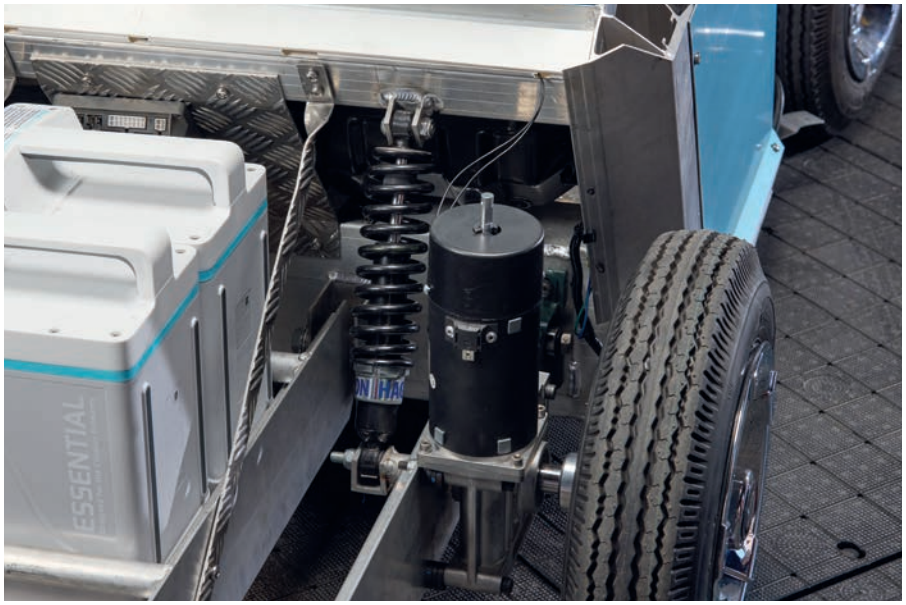
Firefly Sport

The new car includes an upgraded aluminium chassis with independent suspension designed by former Aston Martin prototype guru, Steve Rawson, as well as rack and pinion steering. The body design was even derived from market research among the car's user group: a survey among drivers under 10 years old.

To power the Firefly Sport, the Young Driver team immediately returned to Parvalux motors on the basis that they had already proved themselves.

"The motors provided the speed and power we needed, and they just kept going with no maintenance required, so we knew they would give us the right performance," says Dr. Pogson.

Just like modern road going electric sports cars, the Firefly Sport is powered by twin electric motors. Rear mounted right angle gear motors, one per rear wheel, are installed on a pair of swing arms with a spring and damper. Maxon specified the Parvalux PMDC right angle motor for its high starting torque and smooth, controlled speed delivery. The motors are com-



bined with a Parvalux GB9 right angle, worm wheel gearbox to optimise torque control.

Running time for the Firefly Sport is also key. This means the motors needed to provide high efficiency, while offering sufficient torque in a lightweight package to minimise overall power requirements.

"Removing and replacing the battery during a Young Driver session isn't a practical solution," says Ian, where the Young Driver team provides 15-minute lessons from morning to late afternoon. "Instead, we needed a lightweight, efficient motor, combined with the right battery technology, that can run all day."

The Firefly Sport, weighing just under 200kg, can operate for up to eight hours on a single charge, driving at speeds around 5mph. The car can travel significantly faster in return for a shorter battery life, but the limited speed is optimal for the young driver's experience. After use, the specialist high-cell batteries are recharged using a solar power system, minimising running costs, and ensuring a zero emissions operation.

Practical engineering support from maxon also helped optimise safety, with advice on how to lock the motor to prevent the car moving when the accelerator pedal is disengaged, like when the car's stationary on a slope, or if the young driver has brought the car to a stop.

"We had already adjusted the motor on the workbench without success, so maxon came to see the car and showed us that after the turnbuckle adjustment, the motor required a load and resistance for the brake to function," says Dr. Pogson. "Just 15 minutes with maxon's engineer, hands-on with the car, was all it took to resolve our challenge."

Increasing young driver safety

With six cars completed and a further six in progress, Young Driver Motor Cars is looking to expand production. 150 enquiries have already been received from around the world, and the Firefly Sport is set to retail for around £11,000. Young Driver's main intention for the new car though is to expand the potential reach of driving lessons for the young, which now offers driving lessons from four years old and up.

"The national average rate for young drivers suffering an accident in the first six months after passing their driving test is 20%, but for Young Driver pupils, it's just 3.8%, a safety improvement of over 80%" says Ian.

"Young Driver lessons normalise driving as an experience," says Ian. "If you've been driving since you were younger than 10, there isn't the same pressure to drive beyond your capabilities when you eventually pass your test. Secondly, the younger you are when you start to learn, the more opportunity your neural networks have to build, improving your driving capabilities and safety. If you're four years old today, you'll probably only ever drive an electric car, so Firefly Sport becomes a realistic starting point for your safe driving future."

▸▸ 64142 at www.ien.eu

Improve Operations by Utilising a Floor to Cloud Approach

Amit Patel from Emerson explains how by combining the right technologies and approach can provide real-time insights from the plant floor to help manufacturers increase productivity and meet sustainability goals

In today's discrete manufacturing, a high degree of automation, increasing robotisation, industry 4.0 and smart factory principles help to improve efficiency and maintain competitiveness. For machines within manufacturing, the key indicator is overall equipment effectiveness (OEE), which is a measurement of manufacturing productivity based on availability, performance and quality. Any failure or underutilisation of machinery and equipment can have a negative impact on the production output. Many plants have room for improvement in terms of efficiency. On average, they achieve only 65% efficiency, which means capacity is not fully utilised. There is an obvious opportunity to increase productivity. To ensure the reliability, availability and process stability of manufacturing equipment and systems, cross-divisional transparency is crucial. Without real-time insight into machinery health and process performance, production can be delayed, quality can suffer and unplanned downtime may occur.

A floor to cloud approach enables manufacturers to identify optimisation opportunities and continuously improve operations.

Improving sustainability in production

A key step to the success of sustainability strategies is monitoring usage – understanding the behaviour and what is normal for a given process. Manufacturers may not be aware of how much energy, water, raw and primary materials their processes consume throughout the value chain. This lack of awareness leads to inefficiencies and wasted resources. Because of this, identifying and assessing resource consumption and production emissions on-site is crucial. It is essential for manufacturers to gain awareness of energy consumption to make potential cost savings tangible. With an appropriately digitised production environment is it possible to continuously measure and optimise sustainability efforts. To support sustainability goals, experts must first identify and prioritise areas of energy consumption and then implement the right technologies, such as sensors that extract the right data and software tools that evaluate extensive data streams to deliver key insights. This kind of real-time information can be used to track energy consumption and identify and correct issues at an early stage. Informed decision-making can reliably minimise environmental impact, improve energy efficiency and guarantee compliance with regulatory requirements.

New automation architectures

The manufacturing industry is currently undergoing a major shift in terms of adopting automation technology, moving from simply deploying individual smart components to implementing entire digital ecosystems. That doesn't mean existing automation technology is being replaced – instead, components and the various vertical layers of a production landscape are linked within a digital ecosystem. This is because smart devices add greater value when they can interact with other automation components. Equally, software cannot support improvements without leveraging additional data. by integrating hardware and software into a

Controllers and edge computing hardware collect data from smart devices and sensors, with analytics software presenting actionable insights to enable existing machines and processes to be optimised.

digital ecosystem can manufacturers obtain added value.

The automation architecture currently used by manufacturers will need to transition to ensure data from sensors and hardware within the operational technology (OT) layers is integrated appropriately with the information technology (IT) layers. In addition, the people who operate in each layer will need to expand their skill sets or leverage new digital tools that enable greater connectivity. Today, unoptimised connectivity of the OT and IT layers presents a barrier to meaningful data use because there are separate layers of automation and network architectures. Modern automation architectures enable manufacturers to manage, connect and deliver operational technology (OT) and information technology (IT) data seamlessly across their plants. Data is gathered from devices and modern edge-based technology control systems and securely moved to today's cloud-based enterprise for analysis, trending and forecasting. This supports efforts to optimise the process, reliability, safety and sustainability.

However, because every manufacturing company is different, this requires not only a common set of principles and specifications, but also flexible automation architecture that can be configured to the specification of each manufacturer. Architecture flexibility is important, not only in terms of providing the opportunity to start small and scale up, but also supporting adjustment of production lines to meet changing market demands.

Smart devices and sensors, controllers and edge computing hardware and analytics software enable existing machines and processes to be optimised, and workforces to achieve ambitious productivity and safety goals, and companies to meet their sustainability targets. Using a methodology such as Emerson's Floor to Cloud™ approach, manufacturing data is acquired, translated and presented by modern human machine interfaces to provide insights into a plant's condition and performance. The aim of a floor to cloud approach is to acquire real-time data to enable manufacturers to identify optimisation opportunities and continuously improve operations. By implementing advanced sensor technology, analysis software and networking solutions, manufacturers and original equipment manufacturers (OEMs) can access and analyse machine data. Critically, real-time diagnostics are possible, which provides the opportunity to improve OEE, sustainability and production safety.

Access to data

A key element of a floor to cloud approach is to reduce the technology barrier of entry, while enabling the access to data for the right range of users. By extending the availability of real-time operating data from an individual device or system, not only manufacturers, but also OEMs and automation vendors can identify issues and make informed decisions that positively impact the management of a plant. For example, real-time trends and diagnostics can be used to perform predictive maintenance processes that improve equipment availability or analyse root causes to achieve better product quality and continuously optimise systems and operational production processes. Utilising external expertise from the machine builder or automation vendor can supplement a manufacturer's in-house maintenance team. It is also very important to get access to this data without having to redesign an entire machine. Equally, users want to perform analysis and optimise machines without having to access the data from a control system. The use of smart gateways and edge controllers that support both deterministic control and analytical software helps to achieve this.

A typical floor to cloud approach incorporates intelligent devices and individual components connected to controllers, edge devices or gateways. Automation vendors don't offer solutions for every production environment, but standard communication protocols allow components from different companies to connect and operate within the digital ecosystem. The technology must be as easy as possible to implement. These devices have plug-and-play capability, with appropriate interfaces for communication via OPC UA or IO-Link. Software solutions such as Emerson's PACEdge or Movicon offer similar connectivity and can present analysed data to support predictive maintenance strategies, optimisation of OEE, or reduced energy consumption.

▶▶ 64149 at www.ien.eu

MSM II Push Button: Embracing the Future with Advanced Manufacturing Technology

Companies are striving to take advantage of the opportunities offered by automation and digitalization to create more efficient and sustainable production processes. SCHURTER has already taken this step into the future with the renewal of the production processes of the renowned MSM switch.

The rapid development of digital technology has drastically changed the way products are manufactured with companies trying to benefit from the advantages provided by automation and digitalization to permit efficient and sustainable production processes.

Successful Push Button

Since its debut, the MSM button has become one of the market's premier and most successful push buttons. Its consistent quality over the years is evident in its widespread use in both indoor and outdoor settings. The success of the MSM is not only due to the high quality materials such as stainless steel or ceramics from which it is made, but also to its unique actuation function. This offers unparalleled tactile feedback, widely valued by customers across various industries.

Numerous variants

Despite its success, the path of the MSM button has not been without challenges. Over time, the basic design of the push button has been repeatedly expanded to incorporate additional functions and meet individual customer requirements. This resulted in a large number of design extensions, which added many variants to the functionality and design of the button, but also led to more resourceintensive production and logistics, as more and more components had to be required, stored and managed.

Focus on internal competence

SCHURTER has invested significantly in the automation and digitalization of its production facilities, in process development and in production plant engineering. Meanwhile, the company develops and builds a considerable part of the production machines inhouse. This strategic decision enables SCHURTER to continuously expand its own knowledge for the implementation of the most advanced production lines and to ensure state-of-the-art production.

The new MSM II

What seemed unattainable a few years ago is now a reality. The MSM series has undergone a fundamental revision and has been reintroduced as the upgraded MSM II. Upon installation, the MSM II looks visually identical to its predecessor for the user. The proven actuation function and the premium quality material appearance have been retained. However, a closer look reveals a significant change beneath the surface: the entire push button has been redesigned as a modular system, which allows individual components to be replaced for different button variants. All variants are now based on the same basic structure. For many variants, this leads to a more compact design than before and to a significant reduction in the variety of components in logistics and production.

State-of-the-art Manufacturing

Technologies The MSM II is manufactured in an internally developed, fully automated production unit, which brings a number of advantages for customers. Compared to its predecessor, the delivery time has been halved. Even the production of variants in small batches is possible without any challenges. An option that was previously only available from a higher number of pieces. Today, the fully automated production line can produce approximately 7 million distinct variants.

Product advantages

In addition to the improvements from the manufacturing process, the MSM II now boasts several new features. The most important improvements are: An increased ESD resistance (contact: ± 8kV; air: ± 15kV) according to the IEC 60601-1-2 standard, an increased impact resistance IK 08, even wider temperature range from -30 °C to +85 °C and for subminiature microswitches -40 °C to +85 °C, and even more homogeneous, high-quality and scalable illumination. The new MSM II is also offered as a subminiature microswitch, ideal for confined spaces due to its notably shallow mounting depth.

Conclusion

SCHURTER demonstrates that even a highly successful product can be further elevated using cutting-edge methods. With the launch of the MSM II, SCHURTER not only sets new industry standards but also reaffirms that sustained innovation and investing in internal expertise are pivotal for enduring success in an ever-evolving market. In conclusion, SCHURTER's redesign of the MSM push button exemplifies how businesses can harness digitalization and automation to refine their production processes, resulting in superior products. The MSM II merges the finest attributes of its predecessor with future technologies, presenting customers with a product unparalleled in quality, functionality, and efficiency.

▸▸ 64147 at www.ien.eu

Safe Position for Safe Traffic

Rugged 2-D System for Automated Guided Vehicles

Multiple intrinsic redundancy and highly rugged technology are the basis for safe position determination with the safePGV 2-D positioning system from Pepperl+Fuchs. The system only requires a single sensor to obtain highly accurate absolute position data. The combination of large color codes and the extended field of view of the camera allows the system to achieve SIL 3/PL e safety levels and provides a simple solution for reference-based control of AGVs.

Redundancy at Multiple Levels

The safePGV positioning system is guided by a fixed, three-color Data Matrix tape in the camera's field of view with red and blue LED lighting. Measuring 15 x 15 mm, the codes are above-average size and are therefore easy to detect. The large reading window of the sensor (120 x 80 mm) detects several codes at the same time. Since each individual code allows for unique position determination on the X axis, this already provides the first level of redundancy: Individual damaged codes do not impair detection—even when sections of the tape are compromised, the position data is output with an accuracy of 0.2 mm. Individual codes for a specific absolute position are available for a distance of up to 100,000 m.

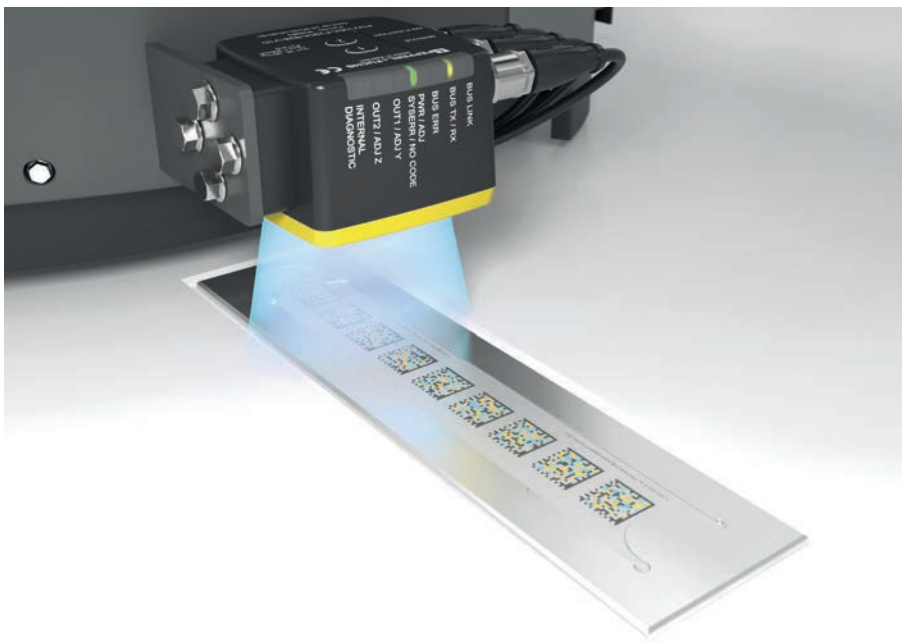
The next level of redundancy is achieved by the multiple colors of the codes and the lighting: One red and one blue LED ring flash separately in random sequence. Each light color allows only part of the colored codes to be visible at a time—the camera detects the red and black fields in blue light and the blue and black fields in red light. The LED rings are controlled directly by the safety element; an integrated safety controller—which knows the respective lighting color—uses a safe algorithm to compare the signals with the expected value.

Each code is therefore subjected to a direct and independent plausibility check. Any malfunctions, such as the output of incorrect position data, are detected immediately based on color matching. At the same time, the safety element continuously checks that the software is functioning correctly. In this way, only information that has already been checked is transferred to the safe controller via the integrated PROFINET PROFIsafe interface. This means that an additional function block for further processing of the position data in accordance with SIL 3 and PL e is no longer required.

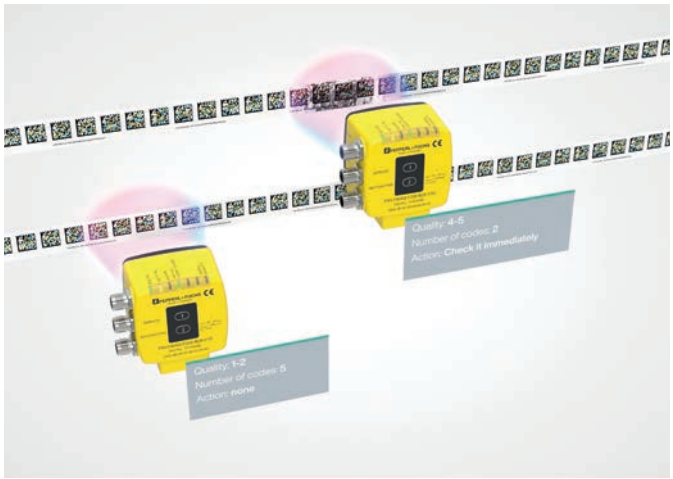
Unlike other optical systems, the safePGV system only requires a 2-D camera for detection, which significantly reduces hardware and integration costs. In addition, position determination is easier and more reliable since, for instance at a crossover, there is no need to adjust and merge different position signals from two cameras.

Communication and Self-Checking

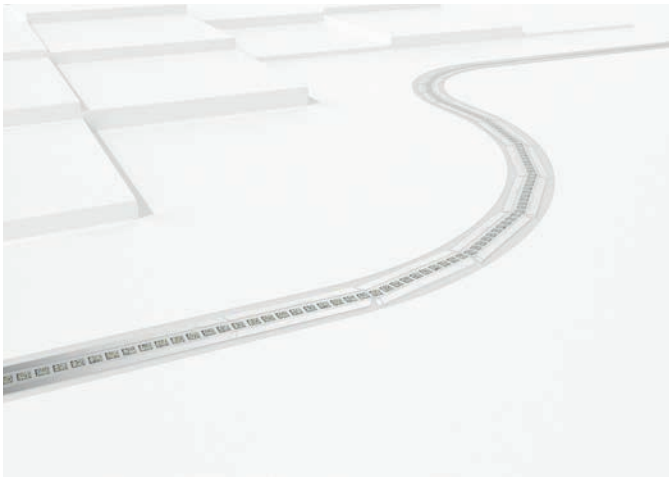
The safePGV system features a "Checker" function to further secure the position de-



A closed rail designed as a countersunk bar provides the basis for precise positioning at a defined station.



Since the sensor always detects several codes, reliable position determination is possible even when sections of the tape are compromised.



Individual position codes are available for a distance of up to 100,000 m. The metal bars can also be joined together to form extended sections.

termination. The sensor continuously assesses the quality of the detected codes and outputs the number of codes detected. This can be used for early detection of code tape sections approaching a critical value. Preventive maintenance is carried out in time and without unplanned downtime. Individual sections of the code bar can be easily replaced.

The properties of the sensors are described in the GSDML file, which also contains the sensor data for operation in the PROFINET network. The file is also used for differentiated parameterization directly via the safety controller. The stored diagnostic data provides early indications of possible faults, which can be corrected as part of planned maintenance. No additional controller is required for the bus coupling. Since the read head does not contain any moving parts, the sensor operates without any wear. With minimal maintenance, it offers virtually continuous availability.

Metal for Code Stability

The standard code tapes made of resistant laminate already boast a high level of robustness and a long service life, which is completely sufficient for most sections of the route. However, there are always high-stress areas within intralogistics, for example at intersections, gate passageways, or bends, where vehicles constantly drive over the tapes. Increased abrasion and occasional damage are inevitable in these areas—wear can make larger sections of the code tape unreadable, meaning reliable signaling is no longer guaranteed despite its intrinsic redundancy.

Metal code bars are available for these types of areas, which are able to permanently withstand mechanical stress. The codes are printed on aluminum bars using a special procedure optimized for this purpose. An anodized layer provides additional protection. Extensive endurance tests have shown that even when the bars are constantly driven over, the code information remains affected. There are three application methods for different degrees of stress. The simplest method is directly bonding to the floor or on carriers. Due to the self-adhesive coating on the underside of the rails, no precautions other than a clean surface are required. Additional protection is provided by mounting in drive-over profile rails, which are screwed into the ground and form a flat groundsill. The code bar is attached to the recess on the top of the rail via the self-adhesive layer. The third method is mounting in countersunk rails, which are bonded or screwed into a groove milled into the ground. The code bar is also glued to the rail for this method. The metal rails can be combined with the laminate code tapes to create the appropriate solution for sections subject to varying degrees of wear.

As a closed rail with an insulated, short code bar, the metal rail can be used to determine the position at defined stations that the vehicle approaches via by free navigation. The PGV rail enables positioning to a fraction of a millimeter. The follow-up action—for example, the opening of the safety box for transferring sheet metal to a welding robot—is only carried out after the position has been verified using the code information. The safePGV system creates the prerequisites for safe registration.

▶▶ 64141 at www.ien.eu

Baumüller Will be Showcasing a New Automation System at SPS 2023

Increasing productivity with drive intelligence

This year, SPS is focusing on the megatrend of automation: productivity, sustainability, and connectivity. Baumüller is launching numerous new products that engage with these trends. On November 14–16, 2023, in Hall 1 at Stand 560, the Nuremberg automation specialist will exhibit an entirely new runtime system for PLCs, the servo converter range b maXX 6000 including drive-integrated performant control unit b maXX PLC di and the new DSC2 generation of motors. New tools for smart energy monitoring in the drive, along with new ways to model mechanics for drive simulation, are likewise increasing performance along all steps of the machine manufacturing value chain.

One of the fastest drive-integrated PLCs on the market

Even more flexibility for automation systems: In the servo drives of the new b maXX 6000 range, the drive-integrated control unit b maXX PLC di ("drive-integrated") handles scalable control tasks up to high-performant synchronous multi-axis applications. This reduces the demand on, minimizes, and accordingly replaces central process loop control, since the PLC di can also be used as EtherCAT Master to control additional servo converters. With minimal field bus cycle times of up to 250 µs, the integrated control unit is one of the fastest driveintegrated PLCs on the market.

Through digital inputs, the b maXX PLC di reacts in real time to important events such as touch probes. The advantage: The control unit works with greater efficiency and safety, in particular in environments requiring fast response times.

In addition, the drive-integrated PLC also allows the implementation of smart applications in addition to movement control. The extremely fast interface between PLC di and servocontroller (local axis) provides access to drive parameters such as voltage, current, power, torque, revolutions per minute, and position. Using their own control algorithms and IoT functionalities, engine manufacturers can thus offer their clients added value.

Completely new IoT solutions become possible using the analog high-speed inputs (no additional hardware required, minimum scanning time 1 µs). For example, a mechanical vibration sensor can be attached directly, so as to perform a vibration analysis directly in the drive system PLC.

This excellent connectivity enables the design of highly flexible and modular structures through interfaces such as OPC, UA, MQTT, EtherCAT, and Ethernet. The b maXX PLC di is thus ideally set up for future requirements regarding automation or the Internet of Things.

Faster engineering, greater performance

When it comes to control technology, Baumüller relies on open systems and simplified engineering: With the new runtime environment IEC 61131, developed entirely in-house, Baumüller offers a platform that supports current standards such as high-level programming languages and IoT connectivity. This ensures that Baumüller will continue to be able to react flexibly to client requirements in the future.

The runtime system is based on Linux and allows the coding of PLC programs using objectoriented programming. This makes it possible to build modular, reusable and clearly structured programs. Such programs not only reduce developer workloads in project implementation, but also increase flexibility. Exist-

ing templates, machine modules, and libraries following the PLCopen standard can still be used.

High-level programming languages such as C++ are likewise integrated into the platform. The advantage: System expansion after the fact and cross-platform use are simpler than ever before. This improves development efficiency, reduces time-to-market, and increases the flexibility of the overall system.

The new runtime system is available for the drive-integrated b maXX PLC di from launch. It will also be made available later for Baumüller's other control platforms.

Boost your performance, reduce your footprint

The new b maXX 6000 servo controller generation stands for more performance and maximum scalability. The increase in performance is achieved for example through newly developed safety functionalities which were devised specifically for applications requiring especially dynamic and precise handling. In the new servo-controllers, the safety module is integrated directly into the device. This allows safety-relevant encoder signals to be analyzed at an even higher resolution. That way, speed and position precision can once again be significantly improved, helping reduce machine cycle times. Numerous hardware and software options ensure maximum scalability, so that drives can be even better adapted to the requirements of the specific application. A large number of encoder, hardware, and safety options is available. For the hardware, the signal bus, service option, digital and analog I/Os, and brake connection can be selected, among other things. With regard to safety, different variations are available, from the simple hardware-controlled STO (Safe Torque-Off) through to higher safety functions actuated via FSoE (FailSafe over EtherCAT), all of which comply with the highest safety level.

Baumüller is also setting new standards for device dimensions: In addition to the space-saving side-by-side system (b maXX 6300), the mono units (b maXX 6500) are also significantly more compact. The installation volume is thus greatly reduced, enabling even smaller control cabinets.

But the servo can do a lot more: the drive can be used as a sensor/sensor hub and provides scalable IoT connectivity, for example as a cloud link through edge computing.

Even more performance, even smaller space

The new DSC2 servo motors are the next generation for applications requiring high torque densities. Their low weight and small dimensions make them the series of choice. One of the reductions was in installed length, making the DSC2 significantly more compact while maintaining the same performance.

Like the DSC1 product family before them, the DSC2 motors are scalable and easy to adapt to specific requirements. The numerous encoder and cooling options, optional break, various compatible gear variants and many additional options ensure that the DSC2, as well, can be matched perfectly with its individual area of application.

Increasing productivity and enabling new business models through smart drive solutions

Condition monitoring solutions allow operators to keep track of the condition of many machines on a regular basis. For example, wear on motors can be identified early, preventing potential machine downtimes. However, if this function is performed via sensor, it can quickly get very complicated and costly, depending on the type of machine and the number of motors used, such as in a textile machine.

The new Smart Vibration Monitoring software solution allows machine manufacturers to offer their clients condition monitoring without external sensors. The software is directly integrated in the servo-controller using softdrivePLC, making it easy to retrofit and update. Machine manufacturers thus have new options, such as offering runtime models for additional machine functions.

The new function uses previously recorded and analyzed process parameters as reference values for monitoring the mechanics, such as the electric motor, fan, or hydraulic pump. The software detects vibrations, such as those created by imbalance or improper alignment, early on and sends an error signal. This allows planned maintenance to be carried out on the motor, preventing further damage to or failure of the machine.

Determining and reducing the product carbon footprint

In times of rising energy costs, solutions are in demand that can help determine energy consumption and then reduce it in a targeted way. With its new Smart Energy Monitoring software function, Baumüller now presents a solution for the intelligent energy monitoring of machines and systems. The software transparently measures energy use/consumption of individual production steps and then optimizes energy use based on a reference measurement. This last also serves as an initial value for detecting energy changes in the production process. Warning and error thresholds can then be set on the basis of these values.

The software is loaded directly onto the servo-controller. This makes it easy to retrofit and update, allowing the machine manufacturer to market it as an additional function. Energy consumption is recorded directly via the intelligent drive. This saves additional costs for unnecessary external sensors and reduces the amount of wiring required.

The new function supports determining energy use/consumption both overall and for each individual axis of the drive system per cycle. The energy measurement is performed autonomously and in real time in the Baumüller b maXX servo converters. Measurement and results can be easily displayed through machine visualization or on the dashboard displays of open IoT interfaces for alternative devices, such as OPC and UA.

Optimized engineering and increased productivity thanks to a digital twin

Baumüller offers a wide variety of controller and mechanics models for virtual commissioning. The advantage: Using the engineering tool ProSimulation, the machine manufacturer can determine the ideal drive system and ideal operating site. In particular for more complex nonlinear processes, the tool simulates different movement profiles in order to find the ideal drive system. This saves the machine builder valuable time in designing the machine, and reduces energy costs and thus the CO2 emissions of the machine from the very beginning. In addition, the simulation makes it possible to determine ahead of time whether the required performance values will be reached.

The latest model simulates the knee lever in the clamping unit of an injection molding machine. On request, Baumüller's simulation experts can adapt the modeled mechanics to individual machine types.

Life-cycle management worldwide

In addition to the development and manufacture of drive and automation components, the Baumüller group of companies provides numerous services for plant and machinery manufacturing and for machine operators. From project planning, design and engineering through assembly and commissioning to maintenance, retrofitting and relocation, Baumüller offers support over the entire life cycle of machines and systems. With over 40 branches worldwide, Baumüller is a reliable service partner with decades of experience. Baumüller attaches particular importance to the sustainable and resource-saving production of intelligent drive and automation solutions.

▶▶ 64111 at www.ien.eu

Anritsu bringing its latest Signal Generation and Analysis Solutions to European Microwave Week 2023

Anritsu attended the European Microwave Exhibition, the largest trade show dedicated to Microwaves and RF in Europe, showing its most advanced testing solutions for signal generation and signal analysis.

Microwave technologies are used by a growing number of applications, encouraging developers to adopt higher frequency bands while also optimizing the cost of these technologies. Anritsu's strong culture of innovation is leading to new measurement methods that help developers achieve both these goals.
This year, Anritsu welcomed AnaPico to its stand to showcase its Single and Multi-Channel Signal Sources as well as its Signal Source Analyzers.

From the Field to the Lab: Signals IQ Capture, Analysis & Playback
Together with AnaPico, Anritsu showcased a solution enabling IQ Capture, Analysis and Playback of real-world signal environments. Signals can be captured in the field with the Anritsu Field Master ProTM MS2090A Spectrum Analyzer or remotely with the Anritsu Remote Spectrum Monitor MS27201A. In-depth analysis can then be performed using the IQ Signal MasterTM software. Subsequently, these signals can be replayed with high-fidelity, either the way they were captured, or modified to margin and stress test system designs for compliance, ensuring they can survive in the field. In this demonstration, the AnaPico APVSG Multi-Channel Vector Signal Generator is used to simulate real world radar signals and, once captured, play them back.

Artificial Intelligence – the Future of Signal ID and Anomaly Detection
This solution, based on Artificial Intelligence (AI), provides a new class of RF sensing and is built on the Anritsu MS2090A Field Master Pro Spectrum Analyzer and on the OmniSIG Software.
Going beyond the capabilities of existing spectrum monitoring solutions, OmniSIG presents a system that not only simultaneously detects and classifies signals but also understands the spectrum environment to inform contextual analysis and decision making.
The Anritsu MS2090A Field Master Pro Spectrum Analyzer streams live IQ data from definable frequency bands into the OmniSIG software, which automatically classifies the signal and presents the result online on the screen. Visitors will be able to see a live demonstration by activating their car key. If the signal of the specific car brand was trained beforehand, the visitor will get a recognition message.

Broadband Spectrum Analysis up to 170 GHz
Frequency and Time Domain measurements have been demonstrated using the ultraportable and ultrabroadband Spectrum Master MS2760A, receiving signals transmitted by the Rubidium MG362x1A High-Performance Analog Signal Generator. The demonstration will focus on F-Band (90.0 to 145 GHz) and D-band (130 GHz to 175 GHz) frequency ranges, which have high potential in mobile communications, industrial radar systems and future radar applications.

S-Parameter Measurements using PhaseLync Distributed VNA

The ShockLine™ ME7868A/ME7869A system is the first distributed, fully reversing 2-port VNA solution that provides guaranteed performance from 1 MHz to 43.5 GHz by using Anritsu's Extended-K™ components. Powered by the revolutionary PhaseLync™ technology, it enables engineers to synchronize two portable ShockLine MS46131A VNAs and connect them directly to a DUT to conduct vector transmission measurements at distances up to 100 meters.

Whether in a manufacturing, engineering, or education environment, this solution simplifies long-distance S-parameter measurements and VNA test system integration by removing the need to use conventional benchtop VNAs with long cable runs. This eliminates insertion loss, improves measurement stability, and reduces setup costs.

Opto-electronic Network Analyzer up to 110 GHz

Anritsu also showcased a solution used to characterize and measure opto-electronic devices and components that are used extensively to support higher baud rates for data communication. Devices like lasers, VSCELS, TOSA, ROSA, BOSA, and SiPh need to be characterized for bandwidth, group delay, return loss, and other key performance parameters.

The 110 GHz ONA solution is comprised of a 110 GHz VectorStar VNA, a 110 GHz NIST traceable reference photodetector, and a 110 GHz electro-optical modulator and is used to characterize Opto-electronic/ High speed devices that require higher bandwidth above 70GHz.

Anritsu Corporation (www.anritsu.com), a global provider of innovative communications test and measurement solutions for 125 years. Anritsu's philosophy engages customers as true partners to help develop wireless, optical, microwave/RF, and digital solutions for R&D, manufacturing, installation, and maintenance applications, as well as multidimensional service assurance solutions for network monitoring and optimization. Anritsu also provides precision microwave/ RF components, optical devices, and high-speed electrical devices for communication products and systems. The company develops advanced solutions for 5G, M2M, IoT, as well as other emerging and legacy wireline and wireless communication markets. With offices throughout the world, Anritsu has approximately 4,000 employees in over 90 countries.

▶▶ 64067 at www.ien.eu

Machine Learning Development Suite for Easy Incorporation of ML into MCUs and MPUs

Unique solution is first to support 8-bit, 16-bit and 32-bit MCUs and 32-MPUs for ML at the edge

Machine Learning (ML) is becoming a standard requirement for embedded designers working to develop or improve a vast array of products. Meeting this need, Microchip Technology has launched a complete, integrated workflow for streamlined ML model development with its new MPLAB® Machine Learning Development Suite. This software toolkit can be utilized across Microchip's portfolio of microcontrollers (MCUs) and microprocessors (MPUs) to add an ML inference quickly and efficiently.

"Machine Learning is the new normal for embedded controllers and utilizing it at the edge allows a product to be efficient, more secure and use less power than systems that rely on cloud communication for processing," said Rodger Richey, VP of Microchip's Development Systems business unit. "Microchip's unique, integrated solution is designed for embedded engineers and is the first to support not just 32-bit MCUs and MPUs, but also 8- and 16-bit devices to enable efficient product development."

ML uses a set of algorithmic methods to curate patterns from large data sets to enable decision making. It is typically faster, more easily updated and more accurate than manual processing. One example of how this tool will be utilized by Microchip customers is to enable predictive maintenance solutions to accurately forecast potential issues with equipment used in a variety of industrial, manufacturing, consumer and automotive applications.

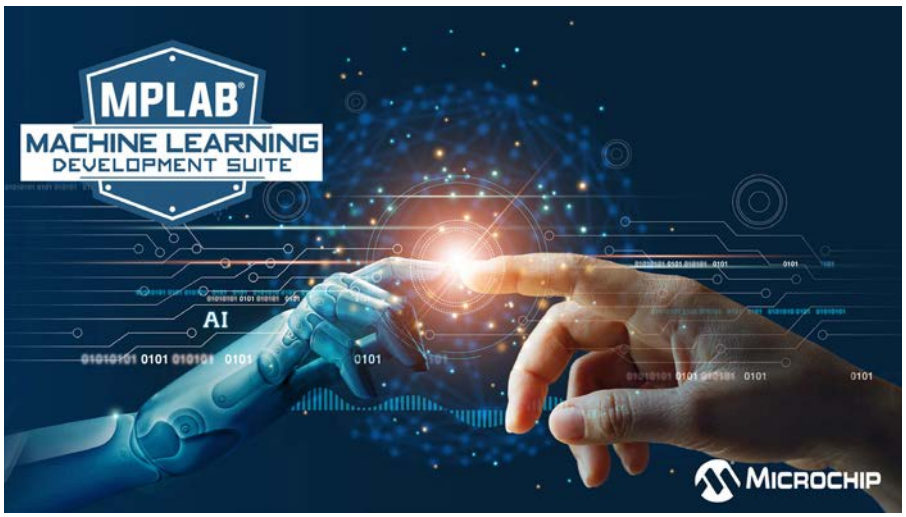
Complete solution that can be easily implemented by those with little to no ML programming knowledge

The MPLAB Machine Learning Development Suite helps engineers build highly efficient, small-footprint ML models. Powered by AutoML, the toolkit eliminates many repetitive, tedious and time-consuming model-building tasks including extraction, training, validation and testing. It also provides model optimizations so the memory constraints of MCU and MPUs are respected.

When used in combination with the MPLAB X Integrated Development Environment (IDE), the new toolkit provides a complete solution that can be easily implemented by those with little to no ML programming knowledge, which can eliminate the cost of hiring data scientists. It is also sophisticated enough for more experienced ML designers to control.

Microchip also offers the option to bring a model from TensorFlow Lite and use it in any MPLAB Harmony v3 project, a fully integrated embedded software development framework that provides flexible and interoperable software modules to simplify the development of value-added features and reduce a product's time to market. In addition, the VectorBlox™ Accelerator Software Development Kit (SDK) offers the most power-efficient Convolutional Neural Network (CNN)-based Artificial Intelligence/Machine Learning (AI/ML) inference with PolarFire® FPGAs. MPLAB Machine Learning Development Suite provides the tools necessary for designing and optimizing edge products running ML inference.

Microchip Technology Inc. is a leading provider of smart, connected and secure embedded control solutions. Its easy-to-use development tools and comprehensive product portfolio enable customers to create optimal designs which reduce risk while lowering total system cost and time to market.



▸▸ 64109 at www.ien.eu

Port of Rotterdam and Yokogawa Kick Off Study to Increase Energy and Resource Efficiency Across Industries

The initiative comprises a feasibility study into increasing cross-industry integration for the efficient use of energy and utilities in the Rotterdam industrial cluster to contribute to ambitious regional decarbonization goals.

The Port of Rotterdam Authority and Yokogawa Electric Corporation announce that they have initiated a feasibility study into increasing cross-industry integration for the efficient use of energy and utilities in the Rotterdam industrial cluster to contribute to ambitious regional decarbonization goals. A first scan showed that optimizing the use of electricity and utilities across companies could yield cost savings as high as 5%.

Individual companies in the petrochemical industry have generally highly optimized their own operations. But concerns about exposing confidential information often hamper them from looking 'beyond the fence' to work with other companies in an industrial cluster, even though this can yield further energy and resource savings. The Port of Rotterdam and Yokogawa aim to break through this barrier by facilitating confidential sharing of data and deeper integration within the cluster to unlock the large potential efficiency gains of optimizing production across entire industrial clusters.

Integration of multiple utilities such as heat, electricity, and hydrogen leads to new efficiencies

For example, with regards to electricity, consumption "behind-the-meter" may be optimized between adjacent companies to manage peak demand, which could also help prevent or reduce electrical grid congestion in the port area. The same approach can be extended by orchestrating the use of other utilities. Companies that produce steam as a byproduct, for example, could choose to ramp up production right at the time when a neighboring company needs more steam, preventing heat from being wasted. Overall, this multi-utility approach could make a relevant contribution to energy savings and emissions reduction.

As Europe's largest port and home to more than 200 industrial companies, the Port of Rotterdam is uniquely positioned to facilitate and implement this project in support of the energy transition. Yokogawa is able to leverage its simulation technology that supports optimal production planning, solutions for regional energy management, and consulting capabilities to uncover opportunities for efficiencies across multiple industrial systems.

The two companies have already completed a pre-feasibility study using computer simulations and comparisons with operations in the Rotterdam port industrial cluster to identify potential savings of a range of utilities. This was combined with deep-dive workshops and roundtable discussions with various companies active in the area.

The pre-feasibility study showed up to 5% improvements in efficiencies from better alignment of the use of electricity, heat, steam, and feedstocks such as water and industrial gases, resulting in lower costs and a reduced carbon footprint. In the long run, deeper integration and optimization within the industrial cluster could yield savings as high as 10%. In this way, the Rotterdam area could develop towards an "industrial sharing economy" in which intensive sharing of resources and infrastructure leads to highly efficient operations for all companies in the region.

Following these promising initial evaluations, the Port of Rotterdam and Yokogawa have now started a feasibility study with several petrochemical and energy companies in the cluster to define concrete use cases based on existing operations. The first results of the feasibility study are expected by the end of 2023. If sufficiently positive, the next step will be to develop plans for carrying out field trials with cooperating companies in the port from 2024.

▶▶ 64110 at www.ien.eu

New 18 kW Power Shelf

Delta to Deliver Higher Energy Conservation for AI Servers with its New ORV3 Featuring over 97.5% Efficiency

Delta, a global leader in power and thermal management solutions, announces the launch of its latest Open Rack version 3 (ORV3) 1 OU 18 kW power shelves at the OCP Global Summit in San Jose, California, USA. The high efficiency 6-slot-chassis power shelf is specifically designed to enable substantial energy savings in AI servers. It includes Delta's new 3kW power supply units (PSU), which boast over 97.5% peak efficiency, and can integrate the power management controller (PMC), with industry-leading PoE (Power over Ethernet) function, to enable smart power management in AI data centers.

Ares Chen, General Manager of Delta's Power and System Business Group, said, "As AI, 5G, automation, and other advanced technologies are becoming driving forces in the server market, more and more clients are adopting the third generation of Open Rack to meet higher power demands. We have embraced ORV3 standards and leveraged Delta's 50-year prowess in energy-efficient power solutions, to develop new power shelves that offer high scalability and efficiency for a wide range of applications, including hyper-scale data centers."

Delta's 18 kW power shelf conforms to the Open Rack Standard V 3.0 busbar definition to address higher power density needs. It provides 48 / 50 VDC output voltage rather than the traditional 12 VDC to reduce electricity distribution losses. The power shelf offers a maximum 18 kW power output or 15 kW with 5+1 redundancy which accommodates six 3 kW hot-pluggable power supply units. Each unit has a 150% load capability for 20 milliseconds to ensure protection from sudden current increases. The power shelf is scalable with extensive options of communication protocols such as PMBus over I2C and RS485 for secure monitoring and control.

Another highlight is the PMC with PoE function, which provides up to 1GbE Ethernet and allows PMC to work with the ORV3 power shelf for energy saving and optimal operational performance of data centers. In addition, both the power shelf and PMC can be customized in terms of hardware and firmware based on client demands to realize high energy efficiency for data centers.

▸▸ 64146 at www.ien.eu

SMARC®-COMPLIANT SOMS

Based on the Renesas RZ family architecture

The system-on-modules from **ARIES Embedded**, provider of hardware and software development and standard products for industrial and agricultural sectors, are based on the Renesas RZ family architecture and provide high performance for embedded systems. The RZ/G2L microprocessor from Renesas includes a Dual Cortex®-A55 (1.2 GHz) CPU, 16-bit DDR3L/DDR4 interface, 3D graphics engine with Arm Mali-G31 and video codec (H.264). ″While the MRZG2LS SoM integrates the single/dual Cortex®-A55/Cortex®-M33, the MRZV2LS is equipped with a Cortex®-A55 (1.2GHz) CPU and built-in AI accelerator 'DRP-AI' for vision applications,″ explained Andreas Widder, Managing Director of ARIES Embedded. ″Our new SoMs are ideal for applications such as entry-class industrial human machine interfaces (HMIs), embedded vision, edge artificial intelligence (edge-AI), real-time control, industrial ethernet connectivity, and embedded devices with video capabilities.″ With the MRZG2LS and MRZV2LS, ARIES Embedded provides their first SoMs compliant with the SMARC® 2.1 standard by SGET.

▶▶ 64143 at www.ien.eu

HIGH-POWER PROCESS APPLICATIONS DRIVE

Combination of rectifier and inverter modules

The latest **Nidec Leroy-Somer**'s variable speed drive solution is 100%-connected and includes all equipment needed for protecting, controlling, interfacing and running the application up to 3800 kW with full safety. Powerdrive MD Smart is the result of a combination of rectifier and inverter modules, all of them being easily accessible and interchangeable. Compact, robust and ready-to-use, Powerdrive MD Smart is available in a wall-mount version up to 250 kW and above in free standing, either in IP21 or IP54 protection, whether air- or liquid-cooled. For specific markets, the IP00 chassis version is also available. Powerdrive MD Smart is fitted with a 7″ colour touch interface which includes the Systemiz unique all-in-one app, providing a simple and convenient use. Combined with IE5 Dyneo+ motors, Powerdrive MD Smart offers optimum energy performance for the control of pumps, fans or compressors. Nidec is a specialist of motors, drives, generators and related products

▶▶ 64144 at www.ien.eu

MID-TORQUE GEARHEAD

Minimizes heat and enhances efficiency

Portescap's new R22T gearhead is the latest addition to its existing 22mm gearbox portfolio. As a mid-torque gearhead, the R22T fills the gap between their light-torque R22 and high-torque R22HT gearheads. It is also fully compatible with Portescap's brush DC and brushless DC slotless motors. This gearbox features a 22mm diameter, a full metal design, and delivers continuous torque up to 1.5Nm. The standout feature of the R22T is its lower heat generation, staying an average of 20% cooler at desired working points than competitive solutions. This results in improved energy utilization, decreased energy wastage, and an extended lifespan. The R22T is an excellent choice for applications that require mid-range performance in a powerful, compact package, such as those in Robotics, Industrial Power Tools, and Aerospace and Defense. Specific examples include Control Actuation Systems (CAS), window shade actuation, grippers, pruning shears, and powered screwdrivers.

▶▶ 64107 at www.ien.eu

2/3-INCH ZOOM LENS

For high radiation environments

Resolve Optics has launched a new 2/3-inch format motorised version of its popular Model 357 radiation tolerant zoom lens. Purpose designed for use with colour 2/3 inch tube and CMOS cameras in high radiation environments, the Model 357-004 provides true HD quality images over a 10x (12-120mm) zoom range. Rob Watkinson, customer support manager at Resolve Optics commented ″The Model 357-004 was developed to provide better HD colour images for the nuclear industry. Offering full motorised control of zoom, iris and focusing this robust lens is easily integrated with most nuclear cameras and sensors″. He added ″The Model 357-004 zoom lens uses specialised non browning glasses to produce clear sharp images free of the strong yellow tint that has traditionally been a limiting issue when using radiation tolerant lenses on colour sensors. The glass used in these lenses can withstand long-term exposure to radiation up to an accumulative dose of one hundred million RAD and temperatures up to 85°C without loss of transmission″. Operating at f/3.6, the Model 357-004 zoom lens provides high image resolution and minimum geometric distortion from 400 to 770nm and can image objects from 1300mm to infinity. The 357-004 is a tracking zoom lens, meaning that once it has been set up, it will maintain focus throughout the entire zoom range.

▶▶ 64091 at www.ien.eu

ULTRA COMPACT 6 WATT DC/DC CONVERTER

With high power density of 1,6W/cm3

Traco Electronic's TEL 6 & TEL 6WI are two series of isolated 6 Watt converters which come in an ultra compact DIP-16 metal package. Indeed, they feature a 6-side shielded metal case with insulated baseplate. They solidify the new package standard in this power range with a power density of 1,6 W/cm3 by almost doubling the power density compared to 6 Watt converters in DIP-24 packages. The TEL 6 and TEL 6WI offer wide 2:1 or 4:1 input voltage ranges respectively and feature a high efficiency of up to 87% which enables an operation temperature of up to +70°C at full load and up to 85°C with 60% load. With only a single input capacitor (SMD) the converters comply with conducted and radiated emission standard EN 55032 class A. Overall they feature an economical solution for space critical and cost sensitive applications in instrumentation, IT and industrial electronics. Protected against short circuit and overload, these products come with a 3-year product warranty.

▶▶ 64063 at www.ien.eu

WATER VAPOR MONITORING SOLUTION

Designed for observation networks

Vaisala's DA10 is a differential absorption lidar (DIAL). Its research-grade and industry-tested water vapor vertical profiler provides local forecasters with access to critical intelligence to predict severe weather. While globally coordinated upper-air observations obtain an overall picture of humidity patterns, this solution continuously measures water vapor within the boundary layer in any location and under any conditions. When combined with weather and climate modeling, the information can enhance nowcasting and forecasting to detect the most severe storms within the next 12 hours with superior reliability and accuracy. Vaisala's DA10 makes this information accessible by utilizing the foloowing core features: Firstly, advanced modeling and data assimilation allow near real-time information for nowcasting and long-term modeling through Numerical Weather Prediction (NWP). Secondly, autonomous, easy setup and use for localized forecasting. No operator is needed, and little-to-no maintenance is required. Moreover, uninterrupted and secure operation 24/7, keeping robust design and cyber and data security top of mind. Last, patented transmitter technology to deliver the industry's first research-grade DIAL technology for operational networks.

▶▶ 64152 at www.ien.eu

FANLESS EMBEDDED SYSTEM WITH HAILO-8

Enables to perform inference directly at the edge

ICP Deutschland offers with the new E310-10EHI an embedded system, which is prepared for the use as an inference system. The E310-10EHI offers the possibility to be extended by a Hailo-8TM KI IC. The Hailo-8TM extension enables the E310 to perform inference directly at the edge. Data can thus be processed and analyzed directly at the machine and decisions can be made in "real time" without relying on the cloud. The E310-10EHI is equipped with an Intel® Elkhart Lake Celeron J6413 processor. The processor unit has four processor cores and four threads and operates at a base clock speed of 1.8GHz which can be ramped up to 3.0GHz if required. Other processors from the 11th Elkahrt Lake generation are optionally available. Up to 32GB of RAM can be installed in the two DDR4 SO-DIMM slots. For connecting monitors, the system offers an HDMI and a Display Port connection with a resolution of up to 4K. Storage media can be installed in the E310-10EHI's 2.5" slot, in the M.2 2280/2262/2242 SSD slot, as well as in the mSATA slot. Furthermore, the E310-10EHI offers two GbE ports with Intel® I211-AT network IC, four USB 2.0, two USB 3.2, and two COM interfaces. The E310-10EHI-J6413 can be operated fanless in a temperature range of -20 °C to 60 °C with an input voltage of 8~24V. On request, ICP Germany supplies the E310-10EHI-J6413 as a ready-to-use system with suitable industrial memory modules and solid state disks.

▶▶ 64150 at www.ien.eu

ACTIVE HARMONIC FILTER

Eliminates the work losses and production inefficiencies

Elektra Electronik produces the first and single active harmonic filters of Turkey under the DynamiX brand. This product eliminates the energy quality issues originated from harmonics and high neutral grounding voltage, which means electrical pollution, in the factories as well as commercial facilities. Targeting at eliminating the work losses and production inefficiencies, Elektra Elektronik is positioned with the DynamiX as one of the companies which produce the highest performing active harmonic filters in the world. Having a more dynamic structure than system technology with conventional analogue processor, DynamiX active harmonic filter stands out with higher speeds, more advanced and state-of-the-art technology, and its dynamic structure thanks to its processor. DynamiX active harmonic filter plays a critical role in terms of energy quality in the iron steel, maritime, health, textile, automatic and banking industries for which safe and stabile electricity system is of a paramount requirement. Product prevents failures caused by harmonics, or electrical pollution, mitigating the risk of a facility coming to a complete halt, facilitating the machineries have a longer life cycle.

▶▶ 64151 at www.ien.eu

index

Companies in this issue

ORANGE FOR COMPANIES ADVERTISING IN THIS ISSUE

upcoming events

NOVEMBER

SPS
14 – 16
Nürnberg
www.sps.mesago.com

AUTOMA
27 – 28
Vösendorf
www.automacongress.com

2024

JANUARY

EMPACK
25 – 26
Zurich
www.empack-schweiz.ch

MARCH

MECSPE
06 – 08
Bologna
www.mecspe.com

WWW.IEN.EU

- **Fast loading time**
- **Responsive design**
- **Relevant contents**
- **On-demand Webinars & Podcasts**
- **Clear request form**
- **Integration of Twitter live feed**