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HANNOVER MESSE 2020

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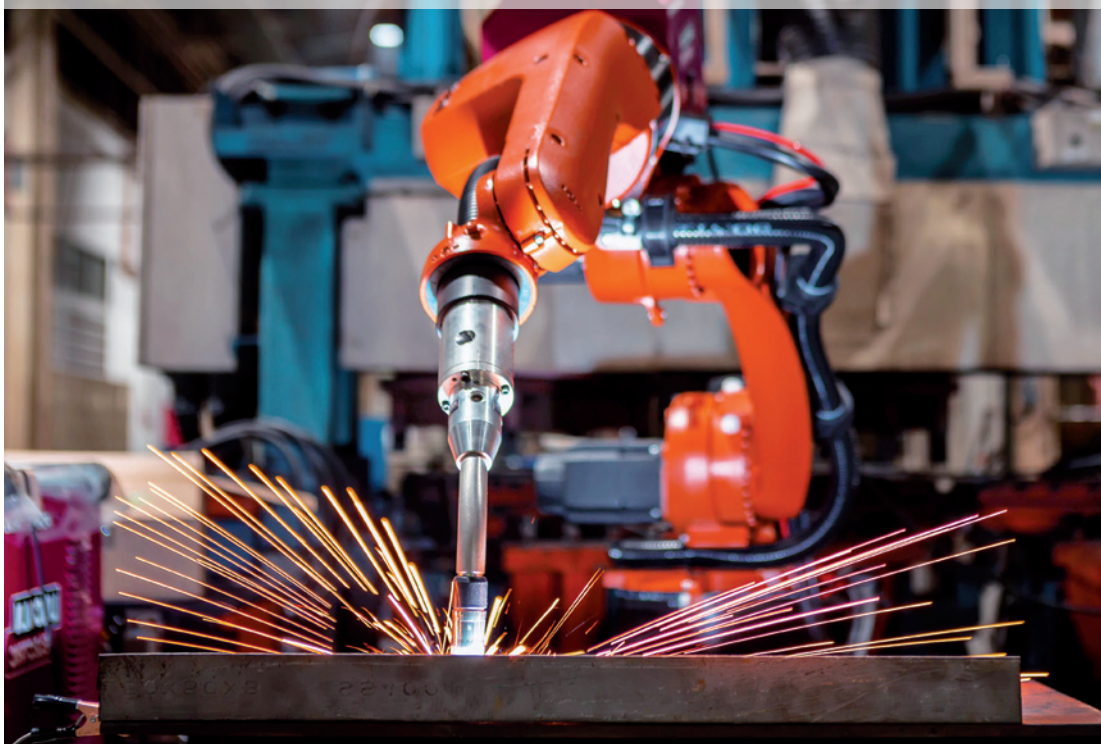

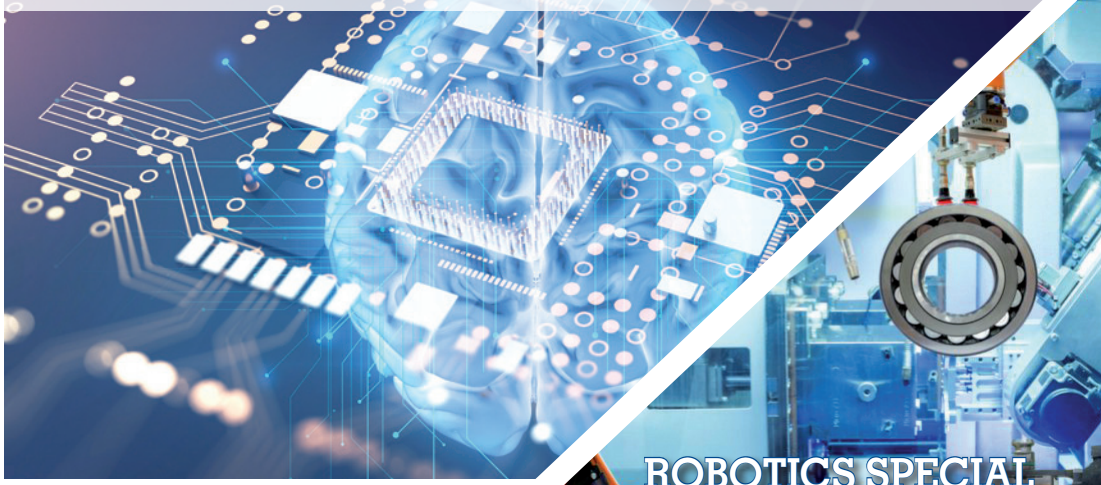

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Dear Readers,

The new year has started with tensions at the international level and the risk of the **outbreak of a new global war.** When we heard about Iran attacking **US military bases in Iraq**, after the assassination of the **Iranian general Qasem Soleimani**, we all probably thought that it was the last straw to break the already damaged relationships between **Iran and the USA**. Finally, the war didn't break out but the ''diplomacy'' efforts are still on the ropes.

Apart from analyzing the complexity of the situation **in the Middle East**, exacerbated by Trump's administration and by the meddling of other powers like Russia and Turkey, it's important to bring attention to **modern war methods**, as they entail a high load of new technologies. Today's wars are far from being on-the-battlefield fights. They are more and more often **drone strikes**, strategically calibrated to hit the enemy's heart of power. It's a question of strategy, espionage, **data theft and misappropriation**.

In the last ten years, the number of nations that dispose of **military drones** has increased from 60 to 95 and the total operational aircrafts globally are estimated to be **around 21 thousand**, with the reserve that the actual number of drones that compose **the fleet of China and Iran** is unknown. The US has far the **largest air force in the world,** with nearly 15 thousand unmanned combat aerial vehicle, and the investments to buy new drones are expected to grow exponentially in the next ten years.

Drones are becoming **increasingly sophisticated technologies,** not only in terms of sensors installed, but also for the amount of **artificial intelligence integrated.** How will the data collected by drones be harnessed in the future? Is it possible to figure out the use of data for **peace keeping?** Or we'd better fear **new war outbreaks**, even in the Western part of the globe?

It's difficult to find concrete answers to most of the questions related to the **next wave of technological progress,** but it's not amiss to keep trying to anticipate the consequences. For instance, the real impact of robotics on the **employment rate** is still undetermined, as much as it is the **actual harm potentially caused by 5G.** But governments and countries must work mutually to limit damages and maintain or improve global equilibria. At least, this is what we hope and expect from them.

Sara Ibrahim

Field Editor IEN Europe Network

In the next issue:

Embedded Technology

Hannover Messe 2020 Focuses on Digital Ecosystems

Processes and technologies will be presented together in an integrated overview of process flows and solutions, and not as separate elements as usual, at Hannover Messe 2020. "In the current age of Industry 4.0, the focus is on flexible manufacturing, standalone yet integrated machines and systems, and autonomous exchanges of process information," said Hubertus von Monschaw, Global Director Digital Ecosystems at Deutsche Messe. "And the key to it all is the software that maps and manages these processes. At Hannover Messe, all theme areas relevant to this will be clustered in the Digital Ecosystems display.'' Among the exhibitors in this part of the show will be big-name regulars like Autodesk , Atos, Amazon Web Services , Cisco , Dassault , EPLAN , HUAWEI, Kaspersky, MPDV , Microsoft , PSI , SAP , Siemens PLM, Software AG and Telekom. There will also be a number of prominent newcomers such as Google, proAlpha , McAfee and Knapp . Their displays will span a range of themes, including predictive maintenance, machine learning, MES, logistics, data analytics, CAD, PLM, business platforms, ERP.

PLCs, Inverters, Servos and I/O Modules Working with CC-Link IE TSN

At SPS 2019, the CC-Link Partner Association (CLPA) showcased the first products that support its latest open network technology, CC-Link IE TSN. They shed light on the growing interest and acceptance for the association's gigabit Ethernet with Time-Sensitive Networking (TSN) capabilities and are key tools for Industry 4.0 applications. The CLPA contributed to the digital transformation of businesses theme by showcasing the first CC-Link IE TSN compatible automation products from Mitsubishi Electric. The CLPA, Mitsubishi Electric and other prominent partners generated excitement as they announced the next generation of open industrial Ethernet, CC-Link IE TSN. The range of solutions highlighted included PLCs from Mitsubishi Electric's iQ-R and iQ-F series, FR-A800 inverters, MR-J5 servos, GOT HMI as well as remote I/O modules. "We are proud to be taking CC-Link IE TSN products a step further by now integrating high performance motion control over TSN" John Browett, General Manager at CLPA Europe.

Spetec Moves to a Larger Building and Gets Ready for the Expansion

Spetec recently moved to a new company building in Erding-West, Germany. With this move, the German manufacturer of clean room technology, laser safety products and laboratory technology demonstrates that it is ready for further expansion. The new site measures almost 9000 m² and ensures ideal working conditions for the 65 employees in 2500 m² of production and office space. This is made possible by an innovative concept for efficient space utilization within the building and a new, automated warehouse system. The relocation has also brought with it other changes in the shop floor. Some of the work processes were restructured, the production areas were expanded, two automated high-bay warehouses were introduced and modern logistics processes were implemented. Founded in Erding in 1987, Spetec supplies custom solutions to meet the increasing requirements of cleanliness and particulate-free, sterile environments in industrial areas such as production, packaging, laboratories and research.

Remo Bütikofer is the new CFO of Dätwyler Cabling Solutions

Remo Bütikofer was appointed as Chief Financial Officer (CFO) of Dätwyler Cabling Solutions as of January 1st 2020. Remo Bütikofer was born in 1982 and previously worked as CFO of Datwyler IT Services for two years. From 2016 to 2017, he was Group Controller of the Distrelec Group, part of the Technical Components Division of Datwyler Holding. Before joining Datwyler Remo Bütikofer was Corporate Controller at the Swiss Kolb Distribution. From 2002 to 2013 he held various leading positions in the Finance & Controlling department of Steiner AG in Zurich. Remo Bütikofer holds a Master of Advanced Studies Degree in Corporate Finance (MAS) of the University of Applied Sciences and Arts in Lucerne and a diploma as Swiss Certified Accounting and Controlling Expert. The new CFO of Dätwyler Cabling Solutions AG takes over from Daniel Nägeli who moved to Swiss ERNI International as CFO.

Remo Bütikofer, CFO at Dätwyler Cabling Solutions

Advantech To Drive the Digital Transition with 5G, AI and IoT

At its Industrial IoT World Partner Conference in Taiwan, from December 5 to 7 2019, Advantech explained and demonstrated its strategy to drive the digital transition through 5G, AI and seamless IT-OT integration

By Sara Ibrahim

Advantech outlined and demonstrated at its Industrial IoT World Partner Conference - held at the company's headquarters is Taipei, Taiwan, from December 5th to 7th 2019 - how the digital transformation will deeply change business models. In this process, AI and computer vision are meaningful to accelerate problem solving for specific scenarios.

Creating ecosystems by combining different technologies on powerful cloud platforms is at the core of the strategy presented. ''About a year ago, Advantech held its IoT Co-Creation Summit in Suzhou, Shanghai, which attracted more 6000 participants eager to co-create the future of the IoT world. Now, we have more than 450 people joining our event here in Taipei from more than 40 countries,'' said Linda Tsai, President of Industrial IoT at Advantech.

The aim of the conference was also to show the evolution of the co-creation strategy and the main innovations released in collaboration with partners. ''We have 16 partners demonstrating their solutions co-created with Advantech,'' Linda Tsai added.

Partnering for Success

Advantech explained that its co-creation strategy is bearing fruit. Partnership is the key to success in the medium and long term, as it brings mutual commitment and a culture of mindsharing. This in turn generates engagement and co-involvement in business developments, while creating new values

and growing trust, all elements of a strong business success. ''We go alone, we go very fast. But only if we go together we will go far,'' stated LindaTsai at the end of her intervention.

KC Liu, CEO at Advantech showed how the company will accomplish the mission of co-creating the future of industrial world in the IoT world in 2020 and beyond. According to the AIoT overall industry value chain and market share, the traditional business of edge computing and edge devices takes 25% of overall IoT market; communication devices - including wires, wireless, switches, routers etc. - take

another 10%, as much as software platforms, such as Advantech's the WISE-Paas solution.

''The rest and the biggest part (55%) will belong to domain solutions and industrial apps, therefore to our customers, which are domain solutions integrators. At Advantech, our traditional businesses for more than 30 years have been edge computing and industrial communication, or what we call the 'Phase I business' '' explained KC Liu. Phase I and Phase II (the WISE-Paas) together were Advantech's core business.

To penetrate Phase III, the domain solutions part, Advantech is leveraging partner co-creation and joint ventures. ''If we want to get to Phase III, we need to overcome the obstacle of the so called 'Industral App decoupling', to be able to get to the stage 2.0 of the WisePaas. This will happen in 2020. The next breakthrough will be closed platform sharing 3.0. After that, we can enable a real big growth of domain innovation stage 4.0. In four or five year, we will enjoy the big boom of IoT,'' KC Liu forecasts.

New portfolio of solutions to face the wave of growth

Software decoupling is a really important concept that will enable an enormous growth through the integration of all the apps in a single software solution. Since advanced digital transformation is a must, Advantech unveiled that they will announce a new I.Apps portfolio on WISE-Paas Marketplace 2.0 to keep up with the expectation of growth coming from decoupling. Among the main drivers of innovations, besides IoT, we find AI and 5G.

5G and AI are enabler of IIoT

For Linda Tsai ''the integration of 5G and AI are essential to make IIoT happen. Applications are already there; we just need to be prepared for the new technology coming. That's why Advantech presented its high-security 5G-ready network management solutions, the ICT-4000, that guarantees low latency, high bandwidth, high capacity and low power.

The newly introduced xNavi software series also goes in this direction.

This edge computing software enables machine vision inspection, production traceability, equipment monitoring, and predictive maintenance, and supports most of Advantech's products. By bringing AI to the edge, high computer power and industrial efficiency are guaranteed.

Europe as one of the key markets

Advantech wishes to strengthen its position in Europe, considered a strategic market in terms of innovation and potential growth. ''With its variety cultures, countries and languages, Europe is the cradle of innovation. Working in Europe with prominent pioneers of industrial automation like Siemens, Schneider Electric and Bosch gives us the possibility not only to consolidate our global presence but also to enhance our know-how and understand customers' requirements and expectations,'' claimed Chaney Ho, Co-founder, Executive Director of Board at Advantech.

At this stage of Advantech's expansion, it's deemed essential to improve the company's global footprint. The US is currently the biggest market for Advantech, followed by China and Europe, where the growth is expected to be around 4 percentage points in the next five years, as a result of the investments made in engineering projects and localization. According to Mr. Ho: ''In our company culture, we believe that diversity creates innovation. And Europe is the best melting-pot to open new perspectives and deliver progress.''

"We Can Train Machine Learning and Deep Learning Models up to 10 Times Faster"

Created in 1995 by the Engineering Faculty of the University of Mons, the research innovation center of Multitel has adopted IBM® Watson® Machine Learning Accelerator to harness the power of deep learning (DL) and tackle some of the biggest challenges of our time. Jean-Yves Parfait, AI Team Leader at Multitel and Franz Bourlet, Power Systems Expert at IBM, explain why ML is an added-value for industrial players

By Sara Ibrahim

IEN Europe: How long has IBM researched in AI and Machine Learning?

F. Bourlet, IBM: Arthur Samuel is one of the pioneers of machine learning. While working at IBM, Arthur Samuel wrote a Checker's playing program on IBM's first commercial computer 701.

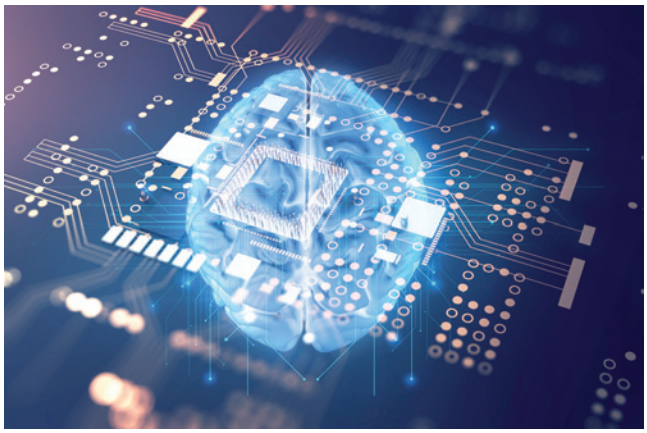
IBM Research has been exploring artificial intelligence and machine learning technologies and techniques for decades. We believe AI will transform the world in dramatic ways in the coming years - and we're advancing the field through our portfolio of research focused on three areas: Advancing AI, Scaling AI, and Trusting AI. We're also working to accelerate AI research through collaboration with like-minded institutions and individuals to push the boundaries of AI faster - for the benefit of industry and society.

IEN Europe: Who are your main partners when it comes to AI and ML?

F. Bourlet, IBM: Founded in 2017, the MIT-IBM Watson AI Lab is a unique academic / corporate partnership to spur the evolution and universal adoption of AI. The MIT-IBM Watson AI Lab focuses research on healthcare, security, and finance using technologies such as the IBM Cloud, AI platform, blockchain and quantum to deliver the research to industries.

IEN Europe: Speaking about ML, what's the main added value for industrial players?

J-Y. Parfait, Multitel: Industrial players may find value in machine learning in different ways: 1) create new business opportunities through innovative services, 2) personalize the relationship with the customer 3) enhance the efficiency of internal processes (administrative processes, energy efficiency, foster innovation like in drug or material discovery,...).



IEN Europe: Which challenges in the industrial space could ML help solve?

J-Y. Parfait, Multitel: ML best complement the humans in the following cases: 1) the number of observable patterns, 2) processing speed, 3) the number of decision variables are beyond what a human can handle. Some big industrial challenges ML is likely to help solving are: production flow analysis/scheduling (potentially based on IoT data), predictive maintenance, quality control, automation of administrative processes.

IEN Europe: Could you give practical examples?

J-Y. Parfait, Multitel: Some examples inspired from Multitel' past and ongoing projects:

- Production flow analysis/scheduling: Impact analysis of production line capacity upgrade on the current company internal processes and human resources, impact of changes in plant organization on productivity...
- Predictive maintenance: vibration sensors combined with ML can help to estimate the remaining time of life of production assets allowing plant managers to schedule maintenance operation in an economical way.
- Quality control: 3D laser-camera technology combined with ML can be used to detect defaults in products on very-high throughput production lines.
- NLP and chatbots can be used by operators to browse product technical documentation.

IEN Europe: How can your IBM® Watson® Machine Learning Accelerator harness the power of deep learning?

J-Y. Parfait, Multitel: Thanks to IBM Watson Machine Learning Accelerator we can now train machine learning and deep learning models up to 10 times faster—reducing the total training time from weeks to just days. Training our machine learning algorithms faster frees up more time for us to test and refine these models, which in turn enables us to speed up downstream development.

▸▸ 58495 at www.ien.eu

The Benefits of Electrical Asymmetrical Field Flow Fractionation

Postnova Analytics. This white paper demonstrates how Postnova Analytics' novel Electrical and Asymmetrical Field Flow Fractionation (EAF4) technology can be used to separate a wide variety of nano-sized materials while simultaneously determining surface charge. Drawing upon this proprietary technology, the Postnova Analytics EAF2000 is the only field-proven system that combines the principle of Electrical and Asymmetrical Field Flow Fractionation in a single platform. In an EAF2000 system, Electrical and Cross Flow Fields are applied together across the FFF channel enabling separation by size and simultaneous measurement of particle charge based on electrophoretic mobility. Combining these two powerful separation techniques in a single platform opens the door to characterizing complex samples that have proven impossible using other techniques. With installed systems in leading academic and government research institutions as well as major pharmaceutical laboratories in Asia, Europe and North America - Postnova Analytics' pioneering EAF2000 system is proven to separate and characterize complex proteins, antibodies and viruses as well as charged nanoparticles, colloids and polymers.

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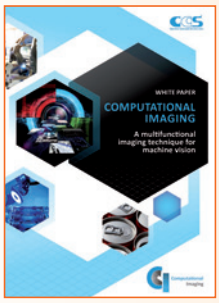
A Multifunctional Imaging Technique for Machine Vision



CCS. The machine vision industry is a dynamic and continually evolving environment which embraces new techniques and new technologies to enhance the information that can be made available using imaging methods. It is well known that the wavelength and direction of machine vision illumination is critical in determining the information available in the image. How the light strikes the target determines how it will appear to the camera since the properties of the light allow different features to be highlighted. Computational Imaging (CI) makes use of this fact by using a multi-shot approach to acquire a sequence of images, each having different lighting or optical configurations. Data can be extracted from each image and combined to create an output image that contains details that are most relevant to the particular application. This is a versatile approach that, with an appropriate choice of lighting, optics and sequencing, can create many different imaging solutions by producing better images or images with unique characteristics. Typical examples include providing increased contrast and higher resolution color.

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"Exhibitors Must Adopt New Technologies and Processes to Overcome Today's Challenges"

In this interview, Arno Reich, Senior Vice President of Hannover Messe at Deutsche Messe, gives an overview of this year's Hannover Messe. From digital transformation to carbon-neutrality, individualization and demographic change, Hannover Messe provides a neutral platform where industrial companies and leaders can find mutual solutions to overcome today's challenges

By Sara Ibrahim and Kay Petermann

With the industrial transformation knocking at the door and the urgency of fighting climate change, no company is immune to the numerous challenges that this fast-changing world is bringing. This year's Hannover Messe shows how digitalization is still the top priority, follow by sustainability and innovative approaches towards production and the recruitment of key human resources to make the transformation happen. Always projected to boost international dynamic and innovative industrial markets, the upcoming show will have Indonesia, one of the biggest digital economies in Southern Asia, as partner country.

IEN Europe: The lead theme of this year's Hannover Messe is Industrial Transformation. How is the industrial world changing if you look at your exhibitors?

A. Reich: Four trends - digitalization, individualization, carbon neutrality and demographic change - are driving industrial transformation. As a result, customers today face very different challenges compared to only a few years ago, and exhibitors must adopt new technologies, processes and recruiting initiatives in order to help their customers overcome these challenges.

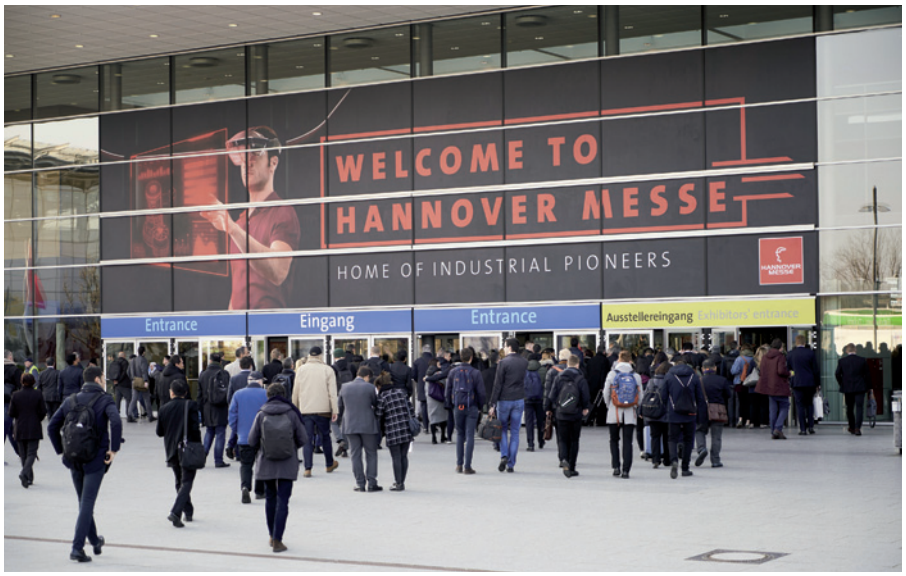
IEN Europe: Does the decision to choose Indonesia as Partner Country go in the direction of this transformation?

A. Reich: Yes. Indonesia has set the ambitious goal of becoming Southeast Asia's biggest digital economy by the end of 2020. In order to achieve this goal, it launched the initiative "Making Indonesia 4.0", which focuses on areas such as digitalization of industry, energy reform, education, innovation, and foreign investment.

IEN Europe: Logistics is now one of the major themes at Hannover Messe, after CeMAT in 2018 was still a parallel event to the trade fair. Why did you take this step towards integration?

A. Reich: We took the step to ensure that visitors fully experience how software, IT and automation interact with logistics. Beginning this year, logistics systems providers will be located with automation companies, while lo-

Arno Reich, Senior Vice President of Hannover Messe at Deutsche Messe



gistics software providers will be located with IT companies.

IEN Europe: A look at the side events reveals some innovations. After the "Industrial Pioneers Summit" was held for the first time in 2019, the "Global Manufacturing and Industrialisation Summit" will be added in 2020. What impulses can these events in the direct trade fair environment provide?

A. Reich: Hannover Messe features more than 80 conferences, forums and special displays that offer visitors a broad range of technical and business expertise as well as networking opportunities. For example, the Global Manufacturing and Industrialisation Summit (GMIS) brings together 3,000 participants to discuss the topic "Glocalisation: Towards Inclusive and Sustainable Global Value Chains".

IEN Europe: The technological change comes with a period of political and economic instability, trade wars and manufacturing downturn in Europe. How to respond to these bad trends?

A. Reich: Hannover Messe provides a neutral platform where industrial companies as well as business leaders and politicians gather to discuss the issues you mention. Therefore, we believe in more cross-border cooperation, not less.

IEN Europe: The world is becoming more and more aware of the disasters caused by climate change and the need to stop it. Industry can do a lot to influence a sustainable approach on a global level. Are industrial companies doing enough? What could be or must be improved?

A. Reich: Industry is responding to climate change by developing innovative technological solutions for CO_2-neutral production. Industrial companies understand now that environmentally friendly production is not only a cost-saving measure, but also an indication of social responsibility. As far as improvements, tempo and global cooperation need to increase.

IEN Europe: Finally, a practical question: what is the situation with regard to digitisation when visiting the trade fair? What opportunities can trade visitors use to make their visit as efficient as possible and take advantage of all the interesting opportunities?

A. Reich: We maintain a number of digital channels that visitors can use to optimize their visit, including our website (hannovermesse.com), the Hannover Messe App, Social Media, and a Newsletter. We also offer exhibitors a digital visitor analysis through Waytation, which helps them fine-tune their exhibits and product presentations for visitors.

▶▶ 58455 at www.ien.eu

AI-based Predictive Maintenance can Significantly Increase Robot Availability

Outdated maintenance procedures waste valuable resources and can impact on safety. Modern predictive techniques however reduce the costs of both scheduled and unscheduled downtime and are a key contributor to increased machine availability. Now these same technologies are available for robots, helping to deliver improved productivity

By Oliver Giertz, Product Manager EMEA for Servo/Motion and Robotics at Mitsubishi Electric Europe

A recent Frost & Sullivan report estimated the cost of unplanned downtime for industrial manufacturers in excess of €45bn. It noted that 42% of unplanned downtime was primarily caused by factory equipment failures. The cost of unplanned downtime extends much further than lost production. Unplanned outages force a reactionary and costly approach to maintenance, repair and equipment replacement in an effort to get the line up and running as quickly as possible. Predictive maintenance, in contrast, provides an early warning of failing or deteriorating parts. Having this information gives service teams the opportunity to perform any maintenance well in advance of any actual failure, so reducing unplanned downtime.

Modern predictive maintenance technologies are becoming ever smarter. Indeed, the same Frost & Sullivan report estimated that these technologies could drive productivity gains of 66% among maintenance teams.

Predictive maintenance as game-changer

We are already seeing the integration of predictive maintenance tools such as Mitsubishi Electric's Smart Condition Monitoring (SCM) technology, which provides early warning of impending failure on rotating machinery. But there is more to come, with artificial intelligence (AI) offering the potential to take predictive maintenance to a new level.

Applying AI-based machine learning algorithms drives even greater insights into the machine's operation, not simply comparing current performance with pre-established baselines but going further to base decisions on real-time data and past trends.

Oliver Giertz, Product Manager EMEA for Servo/Motion and Robotics at Mitsubishi Electric Europe

AI-based predictive maintenance in action

A good example of AI-based predictive maintenance in action is the application of Mitsubishi Electric's MELFA Smart Plus to its latest generation of industrial robots. This integrated technology precisely monitors the length of time each of the main robot components is in motion; and derives maintenance schedules according to actual operating conditions. It also offers simulation capabilities to predict the robot lifetime during the design phase of the application and to estimate the annual maintenance costs. This gives engineers the opportunity to modify the robot's operation to extend the lifecycle.

MELFA RV-8CRL industrial robot

Mitsubishi Electric's MELFA RV-8CRL will be the latest industrial robot to benefit from the Smart Plus technology. This robot has been built from the outset to minimise maintenance requirements. It incorporates features such as a beltless coaxial drive mechanism for reduced wear. It also uses the latest servomotors from Mitsubishi Electric which eliminates the need for batteries to back-up the robot's internal encoder. Combining these advanced design features with AI-based predictive maintenance can significantly increase availability by preventing unscheduled downtime.

There is still much more to come from AI-based predictive maintenance, and Mitsubishi Electric is at the forefront of these technologies, enabling companies to derive the maximum gains from artificial intelligence.

▶▶ 58451 at www.ien.eu

"Manufacturing Companies Must Automate their Production to Stay Ahead of the Curve"

As the adoption of collaborative robots is rapidly growing in the manufacturing industry, we have interviewed Terry Arden, CEO at LMI Technology, which has integrated its 3D snapshot sensor into UR cobots. The Canadian company is currently working to simplify robotic integration and set the standard for successful factory automation

By Sara Ibrahim

IEN Europe: The use of robots in the manufacturing industry is massively growing everywhere. What new challenges is factory automation bringing to manufacturing companies? And what does it change for end users?

T. Arden: Integrating robots into a manufacturing line challenges process control engineers to rethink part flow and learn how both robot and 3D sensors can work together to achieve faster, more efficient production. Manufacturing companies must automate their production and distribution systems to stay ahead of the curve, or they face being beaten by competitors who successfully embrace these technologies to leverage lower cost, higher production output, and a more dynamic infrastructure to quickly respond to customer demand for lower volume, specialized products.

IEN Europe: How did the project to integrate the Gocator 3D Snapshot Sensor into a robot originate? Do you plan to partner with other robot designers besides Universal Robots in the future?

T. Arden: This project got started because LMI foresaw the rapid adoption of collaborative robots in the manufacturing space. UR is a strong innovator in that space, and we share their vision to simplify robotic integration through software/integration partnership programs (UR+ program).

In response to the second part of this question, yes definitely, LMI is working with other robot designers to simplify the required integration steps involved with Gocator. As there are no standard robot communication protocols that exist today, LMI has had to be proactive and invest time and effort into adapting our sensors to the different proprietary interfaces developed by each of the robot suppliers. That said, we would love to see a set of standards emerge soon that simplify integration with our sensors!

IEN Europe: At SPS 2018, LMI announced the achievement of the official certification for the integration of the Gocator® 3D snapshot sensors with Universal Robots. What's your assessment after one year from the certification?

T. Arden: The feedback has been great and it has certainly opened up a lot of possibilities using 3D smart sensors together with a variety of robot applications. We would love to see other robot manufacturers create 3rd party programs like UR+!

IEN Europe: How does 3D robot vision guidance work? In which cases a robot needs to have "good eyes" to perform its tasks?

T. Arden: Probably the most common vision guided robotics (VGR) application is pick and place, where a sensor is mounted over a work area in which the robot carries out pick and place movement (e.g., transferring parts from a conveyor to a box).

Another common VGR application is part inspection, where the manipulator on a robot moves a sensor to various features on a workpiece for inspection (e.g., gap and flush on a car body, or hole and stud dimension tolerancing).

Finally, the most sophisticated application of VGR is where the manipulator on a robot picks up a "jig" that contains a number of sensors, and is programmed to pick up a workpiece and guide it for insertion into a larger assembly using sensor feedback (e.g., door panel or windshield insertion).

IEN Europe: What's the next step in the development of this technology? Do you see further integration - with the robot and the sensor perfectly matching in a single product - possible or desirable in the future?

T. Arden: The next step in the advancement of smart 3D robot vision technology would be to leverage machine/deep learning to achieve more complicated robot manipulation, thereby optimizing completion time and improving the ability to handle complex and/or occluded parts. Integrating the vision sensor inside the robot itself is also a definite possibility at some point down the road. Hopefully we get there first!

IEN Europe: Can you describe LMI Technologies in 3 words?

T. Arden: FactorySmart 3D Solutions!

▸▸ 58452 at www.ien.eu

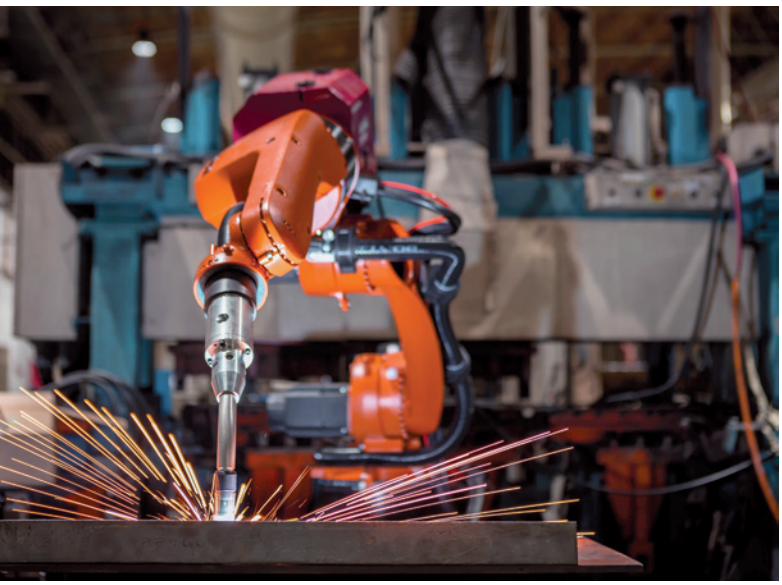
What's in the Future of Robotics?

Industrial robotics is growing at a fast pace, even though a big question mark hangs over the consequences of this massive adoption. To anticipate what the future of robotics will look like and which technologies will be likely to take hold, we have analyzed some data and current trends

By Sara Ibrahim

While the world witnesses the disclosure of the first ''living-robot'', which is able to swim around humans and to self-heal, and the CEO of Sutton Trust, Lee Elliot Major, declares that "the rise of robotics is taking away the traditional ladders of opportunity in the workplace," we continue to see the industrial robotics market fast-growing. Even despite the general downturn, especially in the automotive sector, and the commercial war between China and the USA. The latest report of the International Federation of Robotics estimates that more than 2.4 million industrial robots (the exact number is 2.439.543) are currently in use in factories worldwide. The report shows a record also in terms of global sales, with values hitting 16.5 billion USD.

According to Oxford Economics, the global stock of robots will multiply at an incredible pace in the next 20 years, achieving 20 million units by 2030, the majority of which (14 million) will cover just the Chinese market. If these figures turn to be right, the consequences of this booming technology can be unpredictable and out of our control. It is sure that the employment market is set to change and we can easily imagine that there will be a massive impact on manufacturing jobs.



Chetan Khona, Director of Industrial, Vision, Healthcare & Science Markets at Xilinx

All technologies in one robot

But how could we define industrial robotics? For Chetan Khona, Director of Industrial, Vision, Healthcare & Science Markets at Xilinx, robotics is a combination of all technologies that are key to the operation of an industrial system.

With robotics you can get multiple functions – such as industrial control, communication, vision, AI, machine learning, HMI, functional safety, cybersecurity – all in the same system. ''In robotics, all these technologies are coming together, everything has to be rolled into one single robot, whereas if you just take a piece of an industrial automation system you don't have the same conjunction of different technologies at the same time,'' explained Chetan Khona.

For Xilinx, a US semiconductor company that develops FPGAs, programmable SoCs, and the ACAP, robotics means not only traditional robotics

but also collaborative robotics and automated guided vehicles for factory floors and warehouses. These are three of Xilinx's major robotics applications in the industrial sector. ''Our solutions are used by the most important players of robotics around the world, especially in critical applications,'' Mr. Khona added.

An ascendant growth

The high complexity of industrial robotics has not stopped its growth from 1960 until now. The great variety of applications, sizes, machines and technologies can outline the extent of this complexity. Currently, the robotics sector is growing at a fast pace. According to a McKinsey report released in July 2019, the total market for robot systems – which takes into consideration auxiliary hardware, software and programming, installation, robot arm, and accessories – accounted for 48 billion USD in 2017. Investment expectations are also high, especially in the automotive industry: already in 2018, McKinsey's Global Robotics Survey highlighted that 88% of the 85 OEMs interviewed anticipated an increase in investments in the sector. As for the type of robots installed, traditional robots, AGVs and cells are the most adopted technology, but the installation rate of collaborative robots is growing, especially in the electronics industry.

Cobots on the rise

With its built-in safety system, the ability to interact with workers, and the simplicity of connection and run, collaborative robots are becoming more and more popular in the industrial space. This explains why a strong growth is expected, with more than 100,000 units estimated to be shipped in 2020.

''The robotics sector is growing in two directions: on the application side and on the collaborative robot side. Collaborative robots are the fastest-growing market segment with a significant growth curve above the average rate. This is because there are a number of tasks that are variable in nature and cannot be given completely over to robots,'' said Chetan Khona. Cobots can be better tasked with works that require a high degree of customization and accelerate them, helping humans be more efficient.

For Xilinx, the impact of the collaborative state in the industrial environment will be prominent in the future and will create a shift in the market as employees are upskilled and their responsibilities pivoted, for example managing robots on the production line.

Expected evolution of industrial robot communication protocols

When addressing industrial robotics, it is interesting to analyze how robots talk to each other. Currently, there is not a standard for robot communication. ''Before, it was just a matter of making the robot controller communicate with other parts of the network and send messages in the inherent electronics of the robot. EtherCAT was perfectly fine for that. But in the future, we believe that the communication will use more distributed technology,'' Mr. Khona illustrated.

This trend has already resulted in the increased adoption of Data Distribution Service (DDS) in robotics. DDS is an open-source connectivity standard that is ideal for critical IoT applications since it provides low-latency data connectivity, extreme reliability, and a scalable architecture. It is a way of distributing communication. ''DDS is a sort of distributed database where every element has some piece of important information in a decentralized way. DDS has become more integrated into collaborative robots with the introduction of Robot Operating System (ROS) 2.0,'' explained Mr. Khona.

One of the things that Xilinx has contributed to clear through customs for the next generation of robotic systems is running ROS, in conjunction with DDS, over Time Sensitive Networking (TSN). ''Having this deterministic networking as part of robot systems is something that we see as a major trend moving forward.''

▶▶ 58453 at www.ien.eu

How to Tie Metrology to Robotics for Quality Control

The optimization of manufacturing processes has become a priority for the vast majority of the automotive and aerospace industries. The parts designed, developed, and produced today are becoming more complex, requiring more advanced and extensive inspections with more accurate and reliable measurements

By Jérôme-Alexandre Lavoie, Product Manager at Creaform

Today, when a part is designed, developed and produced, more points must be controlled, and more data are needed for the inspection. These numerous data are obtained by measuring many parts, and these numerous acquisitions are obtained by carrying out several controls and manipulations. While such repetitive tasks, essential to the quality control of these complex assembly designs and free forms, can be carried out by human resources, there is no added value to having people perform them. Following the trend of assembly lines, robots are more than capable of executing these repetitive tasks of taking measurements and acquiring data. This way, human resources can be relocated to other responsibilities that require their contribution of skills and knowledge - robots are there to replace tasks, not people.

In the current context of lack of manpower and limited working time, robots offer a valuable solution because they can be used to complete certain repetitive tasks, freeing up human resources for work that adds value. This solution proved to be effective on the assembly line, and it can be applied to quality control in the same way to increase productivity.

Turnkey Automated Inspection Solutions

The best option for the non-experts in robotics who want to use robots to increase productivity is to go with a turnkey automated quality control solution. This type of solution, already packaged, offers a large number of advantages such as accessibility, flexibility, and simplicity.

Manufacturing companies can increase productivity with robots

Accessibility

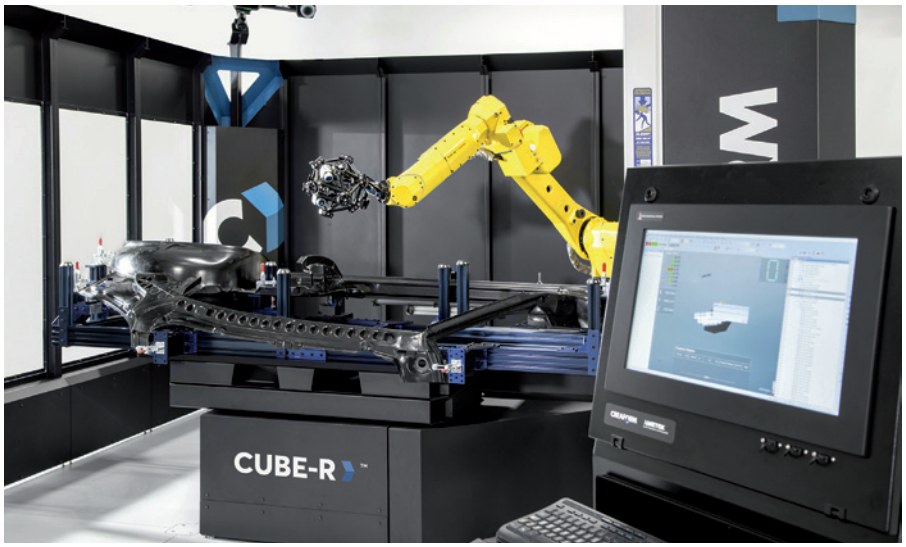
Implementing robotic cells in production usually involves three phases: design, deployment, and operation. Turnkey solutions enable metrologists to skip the first two steps, as the cell has already been developed and is ready to be deployed. This way, they can start using the inspection solution more easily and quickly. In addition to saving time, there is also money savings, because the company does not have to pay for the design and integration phases.

Moreover, turnkey automated inspection solutions have been designed with the needs of non-experts in mind. Therefore, they are easily and quickly accessible. They are also optimized for repetitive tasks in order to increase the productivity of manufacturing processes while offering the best accuracy in an industrial context. The Creaform CUBE-R is an excellent example of such a turnkey solution.

CUBE-R

The Creaform CUBE-R is an accurate turnkey 3D scanning CMM. This solution consists of a MetraSCAN 3D-R—a powerful robot-mounted optical 3D scanner—and an enclosure ready to be installed in the manufacturing process, directly at the production line. Its interface is easy to use, maximizing automatic inspections and minimizing interactions with the operator. Its design is robust, adapted to industrial environments, and optimized for inspections on the production floor.

By comparing a machine such as the CUBE-



Creaform CUBE-R is an accurate turnkey 3D scanning CMM

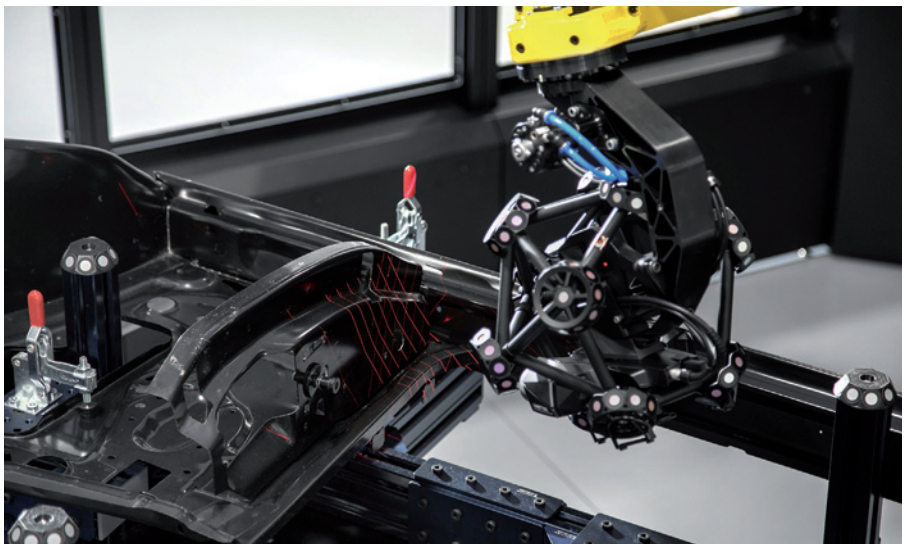
R—made of a robot and a scanner—with a traditional machine made of a CMM and a touch probe, it is clear that the first allows for an increase in productivity without a loss in accuracy and volumetric precision. Quality control managers, who are non-experts in robotics, will be able to use a turnkey solution to optimize the repetitive tasks for which human contribution does not offer added value. Thus, they will be able to relocate these human resources to more important tasks.

Flexibility

The productivity needs of manufacturing companies differ by industry. In aerospace, the volume of parts is low, while the variability and mix of models are high. In automotive, it is the opposite; the volume of parts is high, while the variability and mix of models are low. Thus, the quality control solution must be flexible because the parts to inspect are likely to change a lot. Moreover, the scanning solution must be flexible enough to digitize any type of finish, regardless of complexity, without surface preparation.

Simplicity

However, such a need for flexibility requires ease in programming. A 3D software platform such as Creaform VXelementsTM combines all of the essential tools needed for data acquisition into a sleek, simplified, and user-friendly interface. This integral part of the turnkey solution combines real-time visualization capabilities with real-time performance indicators and a simple, yet efficient, 3D scanning experience. Thus, the 3D software suite combined with the turnkey aspect of the automated solution makes the quality control equipment even easier to use.



CUBE-R solution digitizes any type of finish

Productivity Gain

With turnkey automated quality control solutions like the CUBE-R, manufacturing companies can increase productivity.

The productivity gain makes it possible to:

- Measure more parts per hour with the same number of dimensions.
- Measure only the critical dimensions on a larger number of parts, increasing the number of parts measured per hour.
- Measure the same number of parts but get more information on each of these parts to build a history in order to present better traceability. Thus, in case of a default, the origin of the problem can be quickly located.
- Measure more parts and more dimensions per hour.

In short, a turnkey automated inspection solution such as the CUBE-R offers the best of both worlds: productivity and accuracy. Above all, the CUBE-R is an accessible, flexible, and simple measurement tool that gives control quality people access to robotics. By incorporating robotics into quality control, the benefits are significant. The increase in productivity is certainly the most important, allowing for more dimensions and more parts to be inspected in less time. Robotics can increase productivity by relocating human resources to value-added tasks and increasing the number of parts and/or dimensions measured, with the ultimate goal of controlling the quality of 100% of dimensions on 100% of parts.

▸▸ 58491 at www.ien.eu

Robotics Solution Enables Flexible Production

Ganahl is a Swiss manufacturer of high-quality bottles for cosmetics, food and pharmaceutical industries. It relied on Omron's eCobra robots for faster, more flexible and less noisy automation processes as well as NX1 controller for holistic robotics support

In a competitive environment, providing reliable quality is more important than ever. This applies to producing high-quality products as well as high-quality packaging. Swiss-based Ganahl AG is specialized in the production of bottles, containers and jars in all conventional thermoplastic resins, while ensuring the highest possible quality. To achieve this, they use injection blow molding machines (IBM) and blow molding tools that are developed and manufactured in-house, as well as the eCobra Scara robots from Omron. Omron's integration partner JKS Engineering AG, a full-service provider from design to production of production facilities, provided expert advice for the implementation.

As a member of the Heinz Plastics Group, Ganahl produces more than 300 million bottles, containers and jars each year, for anything from yoghurt drinks to nasal drops. The containers produced by Ganahl AG are sometimes hot-stamped and used for example in the cosmetics industry for high-quality make-up and personal care products. "When implementing complex jobs, we count on reliable machines and tools combined with comprehensive process knowledge. Our customers benefit from high process reliability and quality." Parts feeding during hot stamping is usually loud and inflexible. We have been able to greatly improve this with the solution from Omron and JKS," says Ralph-Christian Frank, CEO of Ganahl AG.

Bruno Meister, Field Sales Engineer Automation and Drives at Omron Industrial Automation Europe

Fast and adept response to the challenge

Contact with Omron was made at Hannover Messe in 2018: "This was the first time that we became aware of Omron's equipment and technologies. We described our requirements and received an answer within a few hours. At the same time, JKS was recommended as a partner. Both the technology and the speed of support have really impressed us," explains Mr. Frank. The differently sized hollow-bodies work pieces, which are part of Ganahl AG's day-to-day business, have so far been fed through in a vibratory or bowl feeder. This is to ensure that the bottles are in the right orientation for reliable and correct printing. The loud bowl feeders vibrate continuously and are designed separately for each article.

Excellent cooperation for a unique robotic solution

Omron quickly realized that the automation and project goals were very ambitious. In just five months, a new robot cell needed to be in action. "Such a project can only be carried out with a well-functioning team. We are delighted that Ganahl, Omron and our integration partner JKS have succeeded in jointly developing the unique robotic cell within a very short time and implementing it in record time. Partner choice and such projects are very much a matter of trust. We therefore thank Ganahl and Omron for their confidence in us," says Jürg Schulthess, CEO and owner of JKS Engineering AG and Neuma AG. In the selection process, the project managers at Ganahl compared four system providers and five robot manufacturers. "The willingness and flexibility to address our needs and desires was clearly the greatest at Omron," says Mr. Frank. In addition, other systems turned out to be too cumbersome, inappropriate or too expensive. "We conducted feasibility studies with around ten Ganahl products to test and show how Omron can best support them. With Omron, Ganahl benefits from a complete camera technology solution paired with robotics and software, as well as solid support," said Bruno Meister, Field Sales Engineer Automation and Drives at Omron.

The benefits of gentle robot power for flexible production

Ganahl opted for Omron's eCobra robot, which is set to gradually replace the noisy and inflexible vibratory feeders. The new solution allows products to be easily changed several times a day. In addition, the device is

The universal robotic cells based on Omron technology can be used over and over again

equipped with a camera that automatically detects the position of the parts and feeds them correctly one-by-one to the machine. Compared to the old situation, Ganahl does not need to do manual resetting anymore, which cost a lot of time and effort for each new part. The old solution also required a lot of space and hardware since each bottle required its own bowl feeder. Furthermore, the devices that Ganahl used prior to Omron technology were much more prone to errors, the reject rate was higher and the process less stable. The eCobra robot feeds the machine up to 2,500 bottles per hour. Omron's NX1 modular machine controller provides flow, motion and information control. It combines the operation technology from the areas of production with IT, and reduces the development and maintenance costs, making middleware unnecessary. Thanks to the Omron system, Ganahl can operate much faster and more flexibly than before. In the new process, only the recipe needs to be adjusted when a new bottle is to be fed. The precision with which the Omron robot grips the individual parts and feeds them to the machine is impressive. "The surface of the bottles is delicate. A vibratory feeder or an unsuitable robot arm can quickly cause scratches or other damage. Of course, this should be avoided. The single picking with the robot is much gentler than a bowl feeder," explains Mr. Meister. Using a simple gripper, every single Ganahl item is picked out of a variety of items and placed on the conveyor immediately and gently.

Universal cell design provides a robotic solution for various applications

"We have developed a design for universal robotic cells, based on Omron technology, that can be used over and over again. Within a few months, the first system was delivered to the customer," adds Jürg Schulthess, CEO of JKS Engineering AG. Ganahl was able to rely on an experienced contact person for all matters relating to the overall solution, both in terms of the robotics as well as operation, drive technology and safety.

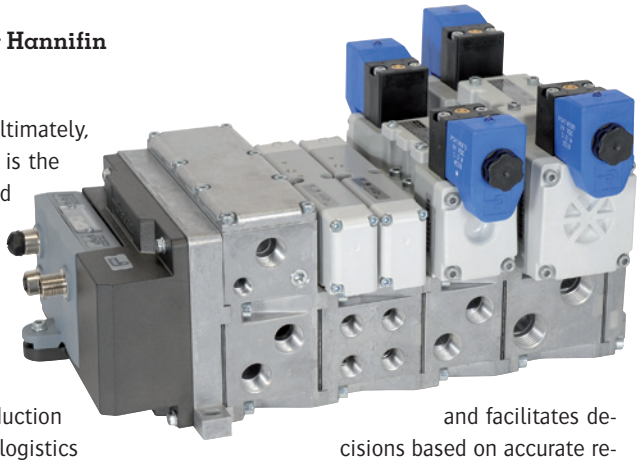
Omron's eCobra robot is currently in operation in a pilot project at Ganahl. Due to the positive experience, the project managers plan to extend the use of the device in the future, so that the system will run 24 hours a day. In the coming years, the company would like to use even more Omron systems. "We had very high demands on quality and execution. That's why we're glad they were implemented so well. Other customers that have seen this system are also very interested," Mr. Frank sums up. "Especially in terms of efficiency and the gentle parts handling, the new technology at Ganahl scored points, and our pricing is also interesting. A thoroughly successful project."

▸▸ 58490 at www.ien.eu

Industrial Ethernet Connectivity in Pneumatic Valves

The increasing popularity of Industrial Ethernet (IE) places certain demands on providers of components such as pneumatic valves, where reliable, rugged, high-performance connectivity is becoming little short of essential

By Patrick Berdal, European Product Manager - Controls at Parker Hannifin



IE is demonstrating an annual growth rate of 22% and currently represents 52% of the connectivity market. In recent years, several IE protocols have been introduced and widely adopted by automation equipment manufacturers due to their advantages over traditional fieldbus networks. Beyond the availability of these protocols and their ever-broadening market acceptance, the rising popularity and usability of IE can also be attributed to a good degree of backwards compatibility and the availability of rugged components (hardwired) that are typically protected from electrical noise.

A further reason for the immense growth in the global IE market is the emergence of cloud technologies and, quite simply, more demand for connected devices. In addition, Industry 4.0 is underpinning the world's desire for more smart factories, which operate in real time with predictive maintenance and built-in diagnostics on equipment. Ultimately, the goal of the smart factory is the elimination of downtime and the enhancement of productivity. For this reason, such facilities must be far more intelligent, flexible and dynamic. Manufacturing processes must be organised differently, with entire production chains - from suppliers and logistics to product lifecycle management - closely connected across corporate boundaries.

Data analytics on IE networks

To achieve these ambitions, smart factories rely on the collection and analysis of data. Data analytics on an IE network means that productivity is enhanced with real-time control of manufacturing to capture and generate data that helps with predictive maintenance and facilitates decisions based on accurate reporting of what is trending on the shop floor. Using analytics can be accomplished in many ways. Data, for example, can be stored and retrieved as needed (acyclic data) or returned through the network in real time for immediate attention (cyclic data).

Ethernet in industrial settings

IE, which can be simply defined as Ethernet applied to an industrial setting, often requires rugged connectors, cables and, most importantly, better determinism – a guarantee that the network will get workloads to their intended nodes on time. In order to achieve better determinism, IE uses specialist protocols. Indeed, several application-layer protocols for IE, such as Profinet, Ethernet /IP, EtherCAT and others, have today been widely adopted across industry as users seek out increased data rates and distances.

Each protocol has its own set of attributes and so selection is application dependent. For instance, Profinet has the compatibility to support a standard TCP/IP stack alongside real-time channels. Alternatively, ordinary switches and other standard IE infrastructures

can be used when using EtherNet/IP, which helps control equipment costs. And with regard to EtherCAT, this protocol introduced the principle of pass-through reading (on-the-fly processing), which eliminates single-node targeting and allows for maximum bandwidth utilisation.

Regardless of which protocol best suits the application, these breakthroughs have been more than sufficient to make IE a major fixture in control systems around the world.

Another benefit of IE is compatibility with standard access points, routers, consumer switches, hubs, cables and optical fibre. Meanwhile, peer-to-peer architectures are able to replace master-slave configurations, giving better interoperability. IE not only saves space and wiring, it simplifies commissioning by offering highly available system integration tools.

How to achieve IE connectivity in automation equipment

Although industry is clearly witnessing greater take-up of IE, the key for automation equipment developers has been achieving IE connectivity in a cost-effective and simple way. Now, however, any engineer tasked with finding a cost-effective means of connecting pneumatic valves to IE, can consider utilising the latest high-capability, high reliability network nodes.

An example is the recently introduced P2M IE network node from Parker Hannifin. Developed with advanced factory automation in mind, the node is easy to configure. As a result, the company's H Universal ISO Series valve, Moduflex valve and H Micro valve families can now connect to the IE network.

This node with integrated diagnostics makes network connectivity a beneficial alternative to traditional hardwired networks. It is right that solutions of this type should help to reduce complexity and cost at the machine, while supporting the simple diagnostics required for alignment with the needs and objectives of smart factories and Industry 4.0.

Parker now offers a full range of IE connectivity options, including EtherNet/IP, Profinet IO, EtherCAT, Ethernet PowerLink, Modbus TCP/IP and CC-Link IE protocols.

Network portal for on-machine flexibility

Also boosting network connectivity is Parker's H Series Network Portal, which provides on-machine flexibility for IE application on the H Series ISO valve with Universal manifold. The network portal handles machine digital or IO-Link I/Os, eliminating the need for additional PLC input and output cards or other remote modules. Having the I/O on the valve manifold via the network portal allows for easy and cost-effective centralised machine application, even in caustic, wash-down or hazardous areas, and even where extreme temperatures are prevalent.

Demanding automation applications, such as motion control and safety, are ideal candidates for IE as both can benefit from the reliability and extra bandwidth that this connectivity solution brings. Ultimately, low-cost connectivity with integrated diagnostics has at last become reality, further reducing complexity and cost at the machine, while aligning with the needs of smart factories and Industry 4.0.

Future horizons

Looking to the future, IE networks are likely to continue growing and become a mainstay in industrial communications, helping to control industry and infrastructure by connecting different devices, machines, systems and users, regardless of location. The IE compatibility of key automation components such as pneumatic valves is vital if industry is to leverage the full benefits that total and reliable connectivity can bring.

▶▶ 58497 at www.ien.eu

Optimized Drying Process to Cut Energy Consumption

In late 2017, the Belgian company Isolava began a project to optimize its drying process. The first step was to install humidity sensors in the dryer in order to get a better understanding of the dynamics of the process

Isolava was founded in 1963 and is part of Knauf group since 1990. The company manufactures gypsum plaster blocks for the construction industry. The most energy intensive part of the production process is drying, where the wet blocks are loaded into carts and carried through a four-stage drying oven. Process control has traditionally been solely in the hands of thermometers - until now.

Understanding a complex process

The goal of any industrial drying process is to ensure that the moisture level of the product is as uniform as possible. In order to optimize the drying process, it was crucial for Isolava to understand the drying dynamics of gypsum blocks – but there is no easy and reliable way to measure the moisture content of a gypsum block until after drying is completed.

Drying a solid material is a mass transfer process, meaning that the moisture evaporates from the object to the surrounding environment. The environment inside the oven is controlled using gas burners to generate warm air, ventilation to remove excess humidity, and fans to circulate the drying air evenly between the product surfaces. The process starts by warming up the products to oven temperature. Next is the constant rate phase, where the material contains so much water that there is a liquid surface. Finally, during the falling rate phase, there is no free moisture left on the product surface and the movement of moisture from within the material to the surface dries the product.

Vaisala DRYCAP® DMP6 is designed for humidity measurement in industrial drying applications in with very high temperatures up to 350°C. High temperature tolerance is achieved using a passive cooling set that conducts heat away from the probe and reduces temperature to optimal range for the sensor

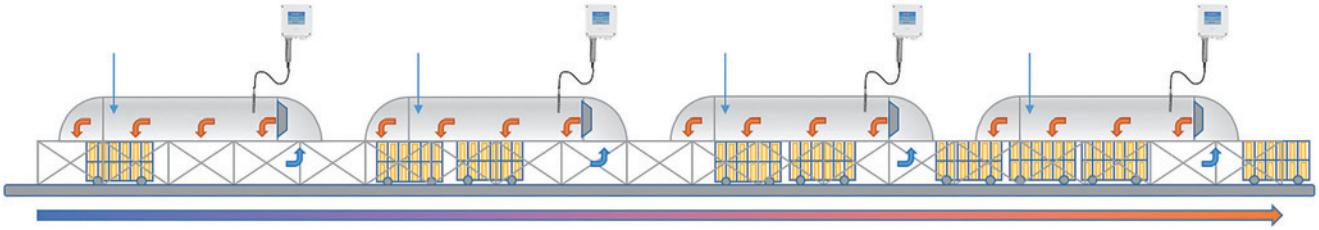
Project Engineer Peter Vameyghem (on the left) and Vaisala Sales Manager Marc Mangelschots

In addition to having the typical drying mechanism of a hygroscopic product, gypsum has another variable that must be taken into account: it consists of different salts, some of which are water soluble. During the process, the dissolved salt is transported to the surface of the block, where it crystallizes when the water evaporates.

"We studied the microstructure of the dried blocks using an electron microscope and found out that uncontrolled drying in the early stages of the process may lead to a lower drying rate in the later stages, when the capillaries of the material are closed," explains Peter Vaneyghen, the engineer who is leading the project. "In addition to a lower drying rate, this can also be observed as discoloration of the product," he continues. Relative humidity and temperature measurement probes have been placed into all drying zones to ensure the best possible product quality.

Savings through optimization

"By drying less in the early stages of the process and controlling the water reduction, we found we can modulate the last drying stage and



Relative humidity and temperature measurement probes have been placed into all drying zones to ensure the best possible product quality

minimize moisture variation in the final product. In light of this, a new, advanced control scheme was implemented by measuring the temperature and humidity," Vaneyghen explains.

The results are impressive: the consumption of natural gas alone has decreased by some 20% and the annual savings across all ten dryers add up to hundreds of thousands of euros. In addition, the final moisture level in the finished product has been stabilized despite the speed variation in how fast blocks travel through the dryers.

"Drying is an interesting and intriguing topic for me. Finding a working solution that has been sought for a long time is rewarding. However, this requires intensive and in-depth work."

Vaneyghen also points out that the right instrumentation has played a significant part in the success of the new solution. Currently, the Wielsbeke plant is running 40 Vaisala HMP7 humidity and temperature probes with Indigo 201 transmitters.

"From a serviceability point of view, the interchangeability of the probe is a big advantage. If a sensor needs to be calibrated, it can be easily changed without disconnecting the transmitter."

An ongoing project

The next step is to optimize the drying of Isolava's drywall board products, and Vaisala's high temperature tolerance dew point transmitters are currently being tested for this purpose.

"This process involves a long time between the initial and final material moisture measurements, which makes it challenging from a control point of view," Vaneyghen explains.

"We are incorporating machine learning and dew point measurements for improved control of board drying."

Indigo compatible smart probes for this type of a drying process

Vaisala HUMICAP® HMP7 is an interchangeable humidity and temperature probe with Modbus RTU output, and is compatible with Vaisala Indigo series transmitters. The probe includes the latest-generation Vaisala HUMICAP® R2 sensor, which provides excellent accuracy and long-term stability and can tolerate temperatures of up to 180°C.

Vaisala DRYCAP® DMP6 is designed for humidity measurement in industrial drying applications in with very high temperatures up to 350°C. High temperature tolerance is achieved using a passive cooling set that conducts heat away from the probe and reduces temperature to optimal range for the sensor.

▸▸ 58489 at www.ien.eu

Vaisala HUMICAP® HMP7 is an interchangeable humidity and temperature probe with Modbus RTU output, and is compatible with Vaisala Indigo series transmitters. The probe includes the latest-generation Vaisala HUMICAP® R2 sensor, which provides excellent accuracy and long-term stability and can tolerate temperatures of up to 180°C

COMPRESSION LOADCELLS

Engineered for truckscales and tank/silo weighing

Tuna's factory creates compression loadcells, pancake loadcells, double shear beam loadcells, shear beam loadcells, bending loadcells, S type loadcells, tension loadcells, loadpin and other equipment for industrial use. The Turkish manufacturer provides different models of indicators and transmitters which are small sized but can feed more than 10 loadcells at once. For instance, CT Model loadcells are made of stainless steel and alloy steel. Designed for vehicle scales and wagon scales, their fully laser welded measurement zone is IP68 protected and operates in harsh industrial environments. Highly accurate, they are mostly used for truckscales and for tank and silo weighing. Their capacity goes up to 10.000 kg - 50.000 kg. Last, they have OIML and CE certification.

▶▶ 58220 at www.ien.eu

PDF

OPTIMIZED RESISTIVE TOUCH SOLUTIONS

Meet the most diverse requirements

Schurter offers optimized resistive touch screen solutions for specific applications requirements. They come with features such as robustness, EMC conformity, closed front without dirty edges, IP67 and are available in diagonals up to 24". They are tailor-made for specific requirements. The combination with membrane switches for the needed tactile feedback fits the use for control panels in harsh environments. A broad selection of optimized resistive touch solutions is available with GFG: Glass-Film-Glass Touchscreen, LR: Low Reflective Touchscreen, TW: Touch Window / FT: Framed Touch, RMT: Resistive Multi Touchscreen, MFO: Multi-Finger Operation Touchscreen, and HLT: High Light Transmission Touchscreen.

▶▶ 58224 at www.ien.eu

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AI EMBEDDED EDGE COMPUTER

Optimized for deep and machine learning

Syslogic offers a wide portfolio of Embedded Box PC, with various models available to fit all industrial requirements. Among those, the AI Embedded System (Edge Computer) is built upon a Jetson TX2 module by Nvidia with a quad-core processor platform that combines two computation modules with Denver 2 microarchitecture with four Cortex-A57 cores and a Pascal GPU. This module is specifically optimized for real-time use of artificial intelligence, thanks to the 256 shader core of the Pascal GPU. The design is robust and does not feature moving, which makes the product maintenance-free and prolongates its availability. It can operate in temperatures ranging from -40°C to +70°C. It suits applications in the field of machine vision, intelligent control, deep learning and machine learning.

▶▶ 58226 at www.ien.eu

PDF

RFID READ/WRITE MODULES WITH IO-LINK

Provide fast data transmission in harsh applications

During SPS 2019 **Contrinex** showcased their robust RFID read/write modules with IO-Link. They enable faster communication through their optimized RFID firmware: they offer bit rates up to 26.5 Kbit/s and an IO-Link interface. These RWMs come in a compact C44 format (40 x 40 mm) with a read/write distance of up to 80 mm. IO-Link RWMs use ISO 15693 for communication with the RFID transponder. Integrated into the automation system via an M12 connector and IO-link, they are made suitable for Industry 4.0 applications. The electronics are housed in a robust PBTP plastic with protection class IP65/IP69K. Moreover, the RWMs provide the operating modes "Automatic Mode" (user friendly), "Scan UID" (in which only the user ID is read), and "Scan Read/Write (in which read and write access is possible).

▶▶ 58223 at www.ien.eu

SMART SLIP RINGS

Facilitate industry 4.0 integration

Kübler designed a new line of slip ring specifically optimized to transmit Industrial Ethernet and analog signal and enable Industry 4.0 solutions. The Slip ring SRS250 features integrated sensors that permit condition monitoring, lifetime histograms and predictive maintenance. The automatic creation of electronic data sheets simplifies asset management. The SRS250 allow transmission of current up to 600 V / 100 A, the optimal supply for powerful drives. The slip rings are characterized by a robust modular design that makes them easy to maintains dn prolongates their service life. Moreover, they are available in various connection options, made to fit every application. This makes Kübler's slip rings adaptable and easy to integrate in existing systems, maximizing efficiency.

▶▶ 58225 at www.ien.eu

CABLE PROTECTION TUBING

Made of regenerated polyamide

Reiku's new cable protection tubing is made of 100% regenerated polyamide 12. The extended product range has a nominal width ranging from 7 mm to 95 mm for the entire field of application from cobots to large industrial robots. The halogen-free, self-extinguishing, non-flame-propagating re-compound are produced and supplied by Reikus's partner Agiplast. Reiku's managing director David Guitton explains: "In extensive tests, our supplier Agiplast was able to prove that polyamide offers exactly the same short and long-term mechanical properties as our conventional materials. And we naturally also make sure that the products we make from this re-compound comply with the most demanding specifications with regard to fire and also has the required very high flexural fatigue strength."

▶▶ 58245 at www.ien.eu

PDF

ADDITIVE MANUFACTURING METAL POWDERS

Derived from sustainable sources

The first metal powders for additive manufacturing derived from sustainable sources are made by **6K**. This process has the unique ability to convert certified chemistry machined millings, turnings and other recycled feedstock sources into premium AM-ready metal powder. The powder products are made of the combination of two core technologies. On the one hand, 6K alloy reclaimation technology can reclaim metals and alloys from subtractive manufacturing and other operations. On the other hand, 6K UniMelt plasma system refers to the microwave production scale plasma, with a highly uniform and precise plasma zone with zero contamination, and capable of high throughput production of advanced battery powders, phosphors, AM materials, and more.

VIDEO

▶▶ 58247 at www.ien.eu

ARU ROGOWSKI COILS

Enable electrical measurement up to 300,000 A AC

At SPS 2019, **LEM** announced the development of the Rogowski coils range to measure current up to 300,000 A AC with accuracy class 0.5. The ARU range reaches IEC 61869-10 class 0.5 without the need for additional components. The range takes advantage of the 'Perfect Loop' technology, which is a unique patented coil clasp that eliminates the inaccuracy caused by sensitivity to the position of the conductor inside the loop. This technology provides an innovative, robust and fast 'Twist and Click' closure. The ARU range can be installed outdoors as it complies with UV, water, dust and ice resistance standards. The material used is ruggedized to be durable in harsh environments. The range is offered with an internal shield to protect against external fields.

PDF

▶▶ 58255 at www.ien.eu

120-960 W POWER SUPPLIES

Equipped with a new IO-Link module

Wago provides its Pro 2 Power Supply, with units ranging from 120-960 W. The Pro 2 can connect to both a PLC and IoT gateway via a snap-on type communication module. The data from the Power Supply Unit (PSU) can be saved and analyzed for energy optimization. The central PLC can switch off distributed PSUs in parts of the system via a hardware signal or bus command to activate standby mode to save energy. The unit's monitoring functions provide information about current power supply or connected load data. Moreover, the slimline power supplies combine great high-power density with high efficiency, requiring less space and generating less heat in the control cabinet. The energy conversion efficiency is of up to 96.3%. Furthermore, the high-performance TopBoost or PowerBoost ensure maximum system uptime.

PDF VIDEO

▶▶ 58256 at www.ien.eu

SURFACE-MOUNT CURRENT SENSORS

For applications from robotics to electrical vehicles

The high current fully integrated ACS772/3 current sensor "CB" package family from **Allegro MicroSystems** now benefits from new ease-of-use enhancements. These surface-mount, automotive grade high voltage isolation current sensors already provide economical and precise solutions for both AC and DC current sensing up to 400A. The surface-mount leadform option provides a flexible solution for space constrained applications. The enhanced feature set helps engineers simplify their bill of materials and improve efficiency in tough applications. The current sensors now benefit from a small form footprint, a fast 2.5µS response time, improved working isolation voltages up to 1300kV+ for basic DC voltage, and 650V+ for reinforced isolation DC voltage. There is no need for opto-isolators or other isolation techniques.

▶▶ 58257 at www.ien.eu

PUMP PROTECTION VALVES

Increased and reliable pump performance

Schroedahl released the self-modulation TDL Automatic Recirculation Valves (ARVs) in more than 35% lighter cast material. These all-in-one pump protection solutions are made to keep pumping systems in process, firefighting, refinery, power and chemical applications modulating and running smoothly, without cavitation or overheating. Unlike control valve packages, the self-operated flow-sensitive ARVs function without a separate power supply or any control system, and begin protection immediately once installed. The ARVs combine a high-quality main-line check valve and the automatic bypass control system in an innovative and durable design. They feature a self-actuated integrated bypass control function to deliver minimum flow rate.

PDF VIDEO

▶▶ 58258 at www.ien.eu

SEMICONDUCTOR TEST CONTACTORS

New generation with user-friendly mounting procedure

Yamaichi Electronics improves its product range with a new further development of the Y-RED semiconductor test contactors. The new Generation Y-RED combines high-grade technology, standardized single parts and a user-friendly mounting procedure. It starts with the standard hinged-type socket for evaluation and reliability applications such as HAST, HTOL and Burn-in. The socket can be equipped with spring probe pins starting from 0.3mm pitch. Its operating range goes from -40° to +150°C. The Y-RED sockets can be used for the packages LGA, QFN and BGA / (WL)CSP's from sizes 3x3 to 11x11mm. The New Generation Y-RED uses a mounting plate which comprises already the screws. This mounting plate sticks to the backside of the PCB by press-fit or can be easily hold by hand.

▶▶ 58259 at www.ien.eu

MICROCONTROLLERS WITH ETHERCAT

Support the miniaturization levels required

At SPS 2019 **Renesas**' presented the new RX72M family of Microcontrollers. The RX MCUs feature an EtherCAT slave controller for industrial Ethernet communication. They provide a high-performance, single-chip MCU solution with large memory capacities for industrial equipment requiring control and communication functions such as compact industrial robots, programmable logic controllers, remote I/O, and industrial gateways. The RX72M Group achieves the performance of a 1396 CoreMark score (Note 1) at 240MHz and is capable of both application processing and EtherCAT communication. It is the first RX MCU group to comprise an EtherCAT slave controller featuring the RX family's highest SRAM capacity, 1 MB of SRAM and 4 MB of Flash memory.

▶▶ 58262 at www.ien.eu

ALARMS & CONDITIONS SERVER

Completes the OPC UA automation

Bachmann electronic offers a fully integrated OPC UA Automation with Alarms & Conditions (A&C) server for their M1 automation system that gives alarms and status information from the control & field level. This information is now transferable from a PLC to other machines, operator panels, supervisory control or ERP. To detect critical value or status changes, there is no need for programming since the installable module detects itself these values. Moreover, the control logic is able to trigger alarm status changes from the control program via an API. The forwarded changes to HMI devices, control stations or A&C clients are secure, with optional encryption available. The A&C server allows OEMs to transmit alarms to higher levels. The visualization software, atvise® HMI and control console package, atvise® scada, fully support the A&C server.

▶▶ 58280 at www.ien.eu

CAST ALUMINUM OIL RESERVOIRS

Easy handling and great cooling efficiency

These hydraulic reservoirs with nominal sizes from NG 3.5 to NG 130 from **R+L Hydraulics** have usable volumes ranging from 3 to 123 liters. Made of cast aluminum, the oil reservoirs are easy to handle and stack thanks to their low weight, in addition to their great cooling efficiency. For instance, the NG 130 has a cooling capacity of 2.1 kW at an ambient temperature of 40°C. Consequently, in many applications, there is no need for an oil cooler. With a weight of 25 kg, even the largest reservoir can be handled easily. The oil reservoirs can be fitted with oil level indicators and filters for filling and venting. Moreover, they are available optionally with cast iron feet and castors, and baffles can be installed as well.

▶▶ 58281 at www.ien.eu

FILTERS FOR LIGHTING EQUIPMENT

Operate in single-phase and industrial applications

The FN 2580 power line filter family from **Schaffner** is made for lightning equipment. This new single-phase EMC filter has a 350 VAC rating and can be used in typical single-phase applications (120 VAC and 230 VAC). It also fits the use in industrial applications when utilizing phase to neutral voltage off three phase power, for example: 480 VAC P-P / 277 VAC P-N and 600 VAC P-P / 347VAC P-N. The filters are engineered specifically for lighting applications with enhanced EMC performance at target frequencies along with an extended operational temperature range. REACH and RoHS compliant, they also have all the required safety approvals such as UL, CSA, ENEC and CQC.

▶▶ 58282 at www.ien.eu

INFRARED TEMPERATURE SENSOR FOR OEM

Precise measurement with a response time of 240 ms

The PyroMini OEM from **Calex Electronics** is a new infrared temperature sensor designed for OEM machine builders. Equipped with a miniature sensing head (55 mm in length) with right-angle cable entry, it can be used in ambient temperatures of up to 120°C without the need for cooling. The separate electronics module has a small, lightweight housing that also fits into restricted spaces in machinery. It's fixed emissivity setting of 0.95 makes it very simple to set up and enables it to measure non-reflective non-metal surfaces with industry-leading accuracy and repeatability. With a response time of 240 ms, the sensor delivers a near-instant measurement of the surface temperature. The PyroMini OEM can measure materials such as rubber, paper, wood, thick plastics, textiles, asphalt, resins, or organic materials.

▶▶ 58502 at www.ien.eu

COMPACT INDUSTRIAL EMBEDDED SYSTEM

Comes with AMD Radeon E9175 extension

The TANK-870E9175 from **ICP Deutschland** is an industrial embedded system with five display ports specifications. This system provides a balanced performance per watt with its AMD Radeon E9175 extension. The AMD graphics unit offers five mini display port connections with a maximum power consumption of 35 watts. Five independent displays can be operated simultaneously with 4K resolution. Provided in two variants (with Intel® Skylake CoreTM i7 or i5 processor and supports a maximum of 64GB RAM on two DDR4 SO-DIMM banks), the embedded system offers four USB 3.0, four USB 2.0, four RS-232 with overvoltage protection up to 2.5KV, two RS-232/422/485 each, two GbE LAN as well as an 8-bit digital I/O interface.

▶▶ 58305 at www.ien.eu

SPE PUSH-PULL CONNECTORS

Compatible with unshielded and shielded twisted pair

Single-pair Ethernet (SPE or 1000Base-T1) is integrated into new generations of automobiles, based on transmission standards (IEEE 802.3). 1000Base-T1 is designed to operate over a single twisted-pair copper cable supporting an effective data rate of 1 Gbit/sec in each direction simultaneously. **LEMO** offers two types of insulators 0B.511 (2 contacts) and 1B.512 (4 contacts + screen) compatible with Unshielded Twisted Pair and Shielded Twisted Pair. The product is also available in a watertight version in the T series connector (for the automotive and industrial data transfer). Additionally, the role of SPE is to gain space and weight also in other applications such as machine, robots and rail technology. The push-pull connectors are IP 50 protected and operate in a temperature range from -55°C to +250°C.

▶▶ 58306 at www.ien.eu

CLEAN ROOM STATION

Designed for highly sensitive measurements

Spetec's CleanBoy clean room station helps store samples in clean room conditions and create the optimum conditions for highly sensitive measurements in the field of elemental analysis. CleanBoy clean room station is available as a floor-standing or table-top version. Easy to assemble and immediately ready to use, it consists of a SuSi (Super Silent) or basic size 75 series laminar flow module and a support frame manufactured from anodized aluminum profile sections. On the tabletop, it is possible to work under class 5 clean room conditions, for both the CleanBoy Mini (table-top version) and CleanBoy Maxi (floor-standing version). The main filter is housed in a filter cartridge that is screwed to the module. As a result, the filter can be replaced very easily from below.

▶▶ 58308 at www.ien.eu

15 V GALLIUM NITRIDE TRANSISTOR

Suitable for ToF applications

Efficient Power Conversion expands AEC Q101 product family with the EPC2216, a 15 V gallium nitride transistor optimized for high-performance lidar systems where increased accuracy is critical, as in self-driving cars and other time-of-flight (TOF) applications including facial recognition, warehouse automation, drones and mapping. This 15 V, 26 m□ , eGaN FET with a 28 A pulsed current rating in a tiny 1.02 mm2 footprint fits the use for firing the lasers in lidar systems, because the FET can be triggered to create high-current with extremely short pulse widths. EPC's eGaN FETs complete AEC Q101 testing through rigorous environmental and bias-stress testing, including humidity testing with bias (H3TRB), high temperature reverse bias (HTRB) and high temperature gate bias (HTGB).

▶▶ 58312 at www.ien.eu

OPTICAL GAS IMAGING CAMERA

Drone-mounted or handheld, it helps detect gas leaks

In an application spotlight, **Flir Systems** shed light on the role its Optical Gas Imaging (OGI) cameras are playing in detecting gas leaks from oil and gas pipelines. When the pipes fail, the leaks released into the environment can be caught early but this is challenging when there are many miles of pipelines in a system. To solve this issue, thermal imaging technology can be of help to quickly inspect pipelines for leaks, onsite or offsite. For instance, the Flir GF620 thermal camera helps maintenance teams complete onsite inspections for temperature problems and hydrocarbon gas emissions. For remote inspections of pipelines, an unmanned aerial vehicle allows operators to easily inspect both above ground and buried pipelines. Moreover, the drone-mounted Flir solution enables the user to quickly assess the information and relay issues to a control room for corrective action.

▶▶ 58441 at www.ien.eu

TRENCH SCHOTTKY RECTIFIERS

Provide low voltage current and low forward voltage drop

Taiwan Semiconductor released 45V and 60V Trench Schottky rectifiers in SMPC4.6U package and AEC-Q101 qualified. The TSUPxM45SH & TSUPxM60SH Schottky rectifiers come with a Tj max 175°C and offer low leakage current and low forward voltage drop. Optimized for automotive applications with low power loss and high efficiency, the series' maximum leakage current is of 20mA at high temperature operation. It also comprises 5A/10A/15A forward current and the maximum VRRM is 45V/60V. These features are packed into SMPC4.6U (TO-277A compatible) package. SMPC4.6U has a wettable flank package that enhances the solder joint and AOI testability. Thus, designers benefit from a very low profile with typical height of 1.1mm. The series is RoHS compliant and halogen free.

▶▶ 58309 at www.ien.eu

INNOVATIVE HYDRAULIC SYSTEMS

Set to be the new standard in premium hydraulics

Gates provided the National Fluid Power Centre (NFPC) with hoses and couplings from the new Gates MEGASys™ MXT™ hydraulic systems range now fitted to a hydraulic system training rig in NFPC's Technical Centre 3, in Worksop, Nottinghamshire. The MEGASys MXT hydraulics product range has set new standards for product performance, efficiency, durability and speed of installation. The hoses meet the performance and dimension standards such as EN 853 2SN and EN 857 2SC, as well as ISO 1436 R2, ISO 11237 R16, R17 and 19. The lightweight OE quality hoses contribute significantly to the weight saving targets without compromising on strength and durability.

▶▶ 58380 at www.ien.eu

ULTRASONIC FLOWMETERS

Titan reports on increasing use of its atrato

Over recent years, ultrasound flow measurement has been promising in medical applications and more recently with time-of-flight systems like the Atrato ultrasonic flowmeter from **Titan Enterprises**. Indeed, Titan reported on increasing use of the Atrato for medical applications including real-time drug monitoring, metering of coolants for chemotherapy treatment and blood flow systems. Based upon a patented time-of-flight technology, Atrato can operate over highly broad flow ranges (200:1), providing great accuracy (better than ±1.0% of reading), linearity and repeatability, which are critical parameters for medical applications. Moreover, Titan Enterprises Metraflow ultrasonic flowmeter provides the additional advantage of a clean bore with no inclusions or distortions and has proved adequate at responding to the dynamics of several medical blood flow systems.

▶▶ 58417 at www.ien.eu

SENSOR-TO-CLOUD SYSTEM

Provides intelligent condition monitoring

iCOMOX is a sensor-to-cloud platform from **Shiratech** for intelligent condition monitoring. This end-to-end solution is a smart predictive-maintenance solution to boost industrial productivity and improve safety. Fast to deploy, it comes ready to use with embedded software and on-board time-domain, as well as FFT analytics for condition-based maintenance (CBM) of industrial assets such as machinery, production lines and structures. It is housed in a compact and rugged IP66-rated enclosure and is CE and FCC certified. iCOMOX benefits from a wide selection of five high-quality sensors for vibration, magnetic-field, temperature and acoustic monitoring. User-configurable sensor interrupts give flexibility to activate the system on detection of specific events and thresholds.

▶▶ 58415 at www.ien.eu

COMPACT ELASTOMER COUPLINGS

For applications where zero backlash is required

Realized by precise manufacturing of hub and elastomeric stars, the plug-in elastomer couplings (Jaw Couplings) from **Enemac** are designed as "free to play". Thus, the involute, elastic tooth star connects the two hubs, can compensate small misalignments and is also electrically insulating. The elastomer couplings are available with clamping hub, conical hub (high balancing capability) or now new clamping with split hub. A safe, non-positive shaft attachment is always guaranteed. In addition, the clamping hubs can be equipped with a keyway. The compact couplings are available for torques between 8 Nm and 1000 Nm at an operating temperature of up to 120 °C. Due to low mass moments of inertia associated with a symmetrical arrangement of the stars and claws, high driving speeds are possible.

▶▶ 58440 at www.ien.eu

TWO 40 WATT DC/DC CONVERTERS SERIES

Cost-efficient design and high temperature capabilities

Extending their existing 40-Watt product range, **Traco Power** released two new isolated DC/DC converter series for industrial use, the TEN 40E and TEN 40WIE. These series aim to maximize quality in a cost-efficient design developed not to do any concession on quality or reliability, with even improved specifications. Coming in a standard 2″ x 1″ metal package (6-side shielded), they are available as 2:1 (TEN 40E) and 4:1 (TEN 40WIE) input range versions. Their efficiencies are of up to 93%, enabling them to operate in a temperature range (natural convection) from -40 to +70°C without power derating. The models are certified to IEC/EN/UL 62368-1 and are equipped with additional features such as remote on/off and Trim function, and protection against short circuit, overvoltage and over temperature.

▶▶ 58401 at www.ien.eu

BIOS UPDATES FOR MOTHERBOARDS

Meet the requirements for demanding workstations

Kontron now provides a BIOS update to version R1.20.0 for its D3598-B and D3598-G motherboards, both designed by Fujitsu. They now support the latest Intel processors. Both motherboards offer 2xPCI Express® x16, Intel® VROC(TM) support, Dual LAN and Mini-PCI Express®, HW Watchdog and USB 3.1 Gen2 Type C. The D3598-B motherboard now supports the Intel® Xeon® processors of the W22xx series on LGA 2066 with the Intel® C422 workstation chipset. It meets semi-industrial requirements such as 24/7 operation at an ambient temperature of up to +50°C at full-load operation. Up to 512 GB R-DIMM/LR-DIMM (ECC) RAM can be accommodated on the motherboard and SLI certification for Nvidia Quadro is available for the use of a graphics controller.

▶▶ 58421 at www.ien.eu

SAFE GUIDING AND FIXING OF CABLES

Expansion of Stauff's modular system

Stauff expands its product range with a special clamp body version of type CHC for guiding and fixing corrugated conduit hoses. The fixed corrugated cable protection hoses are now held firmly and securely in place, thanks to the special design comprising a single rib in the clamp body. Insert made from thermoplastic elastomer, which reduce the internal diameter of the clamp body to commonly used external cable diameters between 7 and 18 mm, now extend the possibilities to use the system. One essential advantage: The DIN clamps from Stauff can now be used for additional line types - cables and corrugated conduit hoses - with optimum results, while retaining the familiar work processes and without requiring double stock-keeping of metal hardware such as cover plates, weld plates and bolts.

▶▶ 58442 at www.ien.eu

WIRELESS INFRASTRUCTURE MANAGEMENT

The platform has two new pervasive sensing applications

The Plantweb Insight data analytics platform from **Emerson** has been enhanced with two new IIoT solutions. The Plantweb Insight Network Management application provides continuous, centralized monitoring of WirelessHART® networks in a facility, with embedded expertise and guidance for advanced network management. A key feature of the Plantweb Insight Network Management application is a configurable mesh network diagram, providing visualization of network design and connections along with device-specific information. In addition, it provides an exportable record of syslog alerts, network details outlining conformance to network best practices and more.

58443 at www.ien.eu

CONNECTORS AND CABLE ASSEMBLIES

Suitable for robotic manufacturing and surgery

The Freedom™ Series of connectors, cable assemblies and other active devices from **Fischer Connectors** facilitate integration, maximize usability and optimize cable management for robotics applications in sectors such as medical, defense and industrial. Featuring a breakthrough plug & use locking mechanism (360-degree mating, no keycode), their compact, low-profile design enables to meet SWaP (Size, Weight and Power) requirements while reducing cable clutter. Cabled receptacles can be easily inserted into and removed from wearable and portable robots, and cable-free options are possible when plugs and receptacles are directly integrated into the application's housing. The rugged Fischer Freedom™ Series combines power and signal contacts (4 in size 08, 7 in size 14) and endures 10,000 mating cycles and 5,000 rotations (metal version).

58479 at www.ien.eu

COMPACT OPTICAL KIT ENCODERS

Designed for space critical applications

Lika Electronic's optical kit encoders are compact, light, and precise, and their mechanical and electrical characteristics can be customized. Frameless, flat, and bearingless, they are also reduced in size and weight to be directly integrated into space critical applications such as robotics. They have a through hollow shaft for installation in robot joints and through hollow shaft motors, and fit standard motor sizes with shaft diameters ranging from 6 mm to 45 mm. The external diameter is between 25 mm and 80 mm. The optical kit encoders provide position feedback via SSI, BiSS, and RS-485 interfaces. Singleturn resolution is up to 23 bits, multiturn resolution is up to 40 bits. Their accuracy is in the range ±0.010°. An additional incremental track can provide up to 1,024 Sine/Cosine 1Vpp signals for speed feedback and interpolation.

58480 at www.ien.eu

200W POWER SUPPLY

Engineered to simplify the design process

Cosel introduced an industry first, 200W, open-frame, isolated, configurable AC/DC power supply with triple outputs tailored for robotic controllers and factory automation. One of the outputs is dedicated with reinforced isolation (which is ideal for IGBT drive). Based on a unique concept, the RBC200F reduces the need for an extra isolation transformer when connected to a distribution panel. Reducing energy consumption, the power supply is fully digitally controlled on the input and output stages. It accepts input voltages of 84 to 264VAC and delivers an output power of 207W. The product is designed for convection cooling and can be operated from -20 to +70 degrees centigrade at an altitude up to 3,000 meters, 9,000 meters in the case of storage.

58481 at www.ien.eu

LABEL PRINTER WITH I4.0 CONNECTIVITY

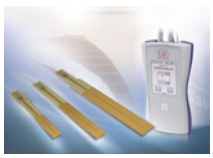
Fully automate PCB traceability in SMT lines

The BradyPrinter A8500 from **Brady** accurately prints and consistently applies even the tiniest 4mm x 3.18mm labels in 600 dpi on printed circuit boards. Through its fast processor and cycle time, it can keep up with the pace of SMT production lines. It can be installed anywhere along the production line and can receive label data from most company ERP-systems. OPC UA ready, it offers industry 4.0 connectivity as well. Brady's UltraTemp Series polymide labels are designed to identify printed circuit boards throughout their production process. It comprises the B-7727 polyimide PCB label developed for auto-apply applications. The label stays attached and remains legible in reflow, wave solder and board washing. It can resist temperatures up to 300°C and the powerful chemicals and cleaning processes used in PCB assembly.

58482 at www.ien.eu

DUAL-CHANNEL HANDHELD GAUGE

Sets up high precision gap measurements



Micro-Epsilon released the capaNCDT MD6-22, a capacitive measuring device made for mobile, high precision gap and distance measurements. Robust and lightweight, this dual-channel handheld gauge is used for commissioning, service and maintenance. Mobile, it can detect gaps in industrial environments to micron accuracy. Measurements are possible on all conductive targets. Thanks to its robust design, it fits the use for measurement tasks where magnetic fields are present. Lightweight and extremely handy, it offers touchscreen operation. Different features are pre-set in the factory such as automatic gap detection, which simplifies parallel alignment of the flat sensors for double-sided measurements. The complete measuring system consists of a dual-channel handheld gauge and a capacitive capaNCDT sensor.

58483 at www.ien.eu

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