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01 FEATURE STORY (Page 5-11) 02 INSIGHT OUT (Page 13-32) **OB** SUCCESS STORY (Page 34-37) 04 PRODUCT COMMUNIQUE (Page 39-51) 05 GREAT OPPORTUNITY (Page 53-55) 06 TECHNOLOGY FLASH (Page 57-66)

IN THIS ISSUE

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FOR EDITIORIAL CONTRIBUTION L WIZARD@INDUSCRIALGUIDeasia.com

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Dear Friends

It is June!

June is the sixth month of the year, has 30 days, and is named after the Roman goddess Juno. Many celebrations take place in the month of June, especially marriages. According to one etymology, June is named after the Roman goddess Juno who is the goddess of marriage and a married couple's household. It is considered lucky to get married in this month.

2020 is an epic year where Couples get married Virtually. Having a birthday party virtually, some stage funerals, birth of their baby, home based learning, training, selling and almost everything else. Have we thought that it has been almost 6 months and people has become distance and human touch is either eerily or become a deadly longing? Everything happens before a screen of mobile gadgets. 14.0 has become an overnight simplification, no longer require a 40 mins explanation. Robots has been deployed to do the dangerous work and human staying behind screen studying data. Should we say that the Propaganda for i4.0 has reach its purpose?

In times like this, many has come together, be in unity, have shown much compassion and assistance to strangers, with the new social distancing.

This issue we look into how Precision Engineering and Metalworking is shaping and changing manufacturing forward from this pandemic.

Manufacturers are developing plans for "lights out" factories and supply chains – evidence that the rapid migration to digital technologies driven by the pandemic will continue into the recovery. Companies will need to ensure that their digital channels are on par with or better than those of their competition to succeed in this new environment. This will be a new normal for all. Some companies have temporarily shuttered factories in response to government restrictions or falling demand, but others are facing significant increases in demand for essential supplies. Surely, this challenges mankind to the ultimate test. We shall anticipate the new normal on how to Protect workforce, Manage various risk and challenges while Driving productivity at a distance.

Coming August edition, we will be touching on the Addictive Manufacturing, Plastic & Rubber Technology and Print & Packaging Industry. We will keep up and publish the latest story during this Covid 19 recovery period. Till then, we hope that everyone keeping safe, healthy and productive in this transition.





Sending you good vibes **Team Industrial Guide Asia**

Additive Manufacturing: What You Need to Know



manufacturing process that suits me and keeps costs down for me.

Additive manufacturing always involves two things: precise 3D printers and high-performance materials. What requirements do such materials have to meet?

We focus on wear resistance when manufacturing special parts. This is the be-all and end-all. Comparative tests in our test laboratory have shown that the wear resistance of the additively manufactured parts is absolutely comparable with the corresponding injection molded parts. Nevertheless, the material selection in 3D printing is currently still significantly less than in injection molding. In injection molding, for example, there are reinforced materials that we cannot currently process in this way.

What trends can you see in the development of new materials for 3D printing? What will be possible soon? In principle, many materials can already be processed using 3D printing, for example ceramics, metals, standard, technical plastics or, as with us: high-performance polymers. The industry recognizes that well-known material suppliers have now also gotten involved in the topic. There is the ability to develop materials specially adapted for 3D printing and thus qualify previously impossible materials, for example for filament printing. This also makes the materials easier to process and the parts much more resilient. This allows the use of this technology in demanding areas and industries.

Additive manufacturing refers to a process by which digital 3D design data is used to build up a component in layers by depositing material. It is becoming more widely used, and has many advantages. Paul Gomer, an additive manufacturing development engineer at igus, offers insight on additive manufacturing.

How do you rate the development of additive manufacturing? Will it replace or replace other procedures? Which are they?

Additive manufacturing is becoming increasingly important in production. The advantages are obvious: I can produce customer-specific components in a short time, without any tool molds or changeover costs. The customer benefits immensely from this because he receives his specific part quickly and at a lower price. That is why we at igus have significantly increased capacities in additive manufacturing. In addition to the FDM and SLA printers, the majority of the 3D-printed special solutions are now produced on SLS printers with two available Tribo materials. Nevertheless: in comparison, injection molding today still allows a significantly higher output at lower costs. It always depends, do I only need one or two parts, a small or medium series or do I go into mass production. Depending on the answer, as a customer I choose the

05

What are the challenges?

The FDM process is currently more suitable than the SLS process because the technology is less demanding but more flexible. Due to the higher productivity of the SLS process, the handling of multi-materials needs to be further developed. The challenge remains for the user and the designer to offer an established and broader selection of materials with reliable and traceable material properties. One topic here is to improve the orientation-dependent and process-specific anisotropic property differences. Another aspect is compliance with quality assurance standards, which are required in many industries such as automotive or aviation.

How do you go about developing new materials? First and foremost, when developing a new material, we respond to specific customer requests that result from the wide range of applications. At the same time, materials must meet industry-specific requirements and be easy to process. In the area of 3D printing, materials have to be developed specifically for the respective manufacturing technology, since the additive processes differ significantly in detail. Our primary focus in material development is the evaluation of the process capability of a material and the early analysis of wear resistance. Standard test components are manufactured and extensively tested on our test benches.

What needs to be considered for special solutions such as cosmetics and food? Are there other special solutions? In the area of the cosmetics and food industry there are special requirements, for example by the EU. With iglide 1150, we have therefore developed a filament that complies with EU Regulation 10/2011. This is particularly easy to process using the FDM process. Industries and applications in hygienically sensitive areas, for example in the pharmaceutical and food industries, benefit from iglide 1150.

What does the 3D printing service include? What are the advantages for the customer? In the 3D printing service, the customer can upload the STEP file of their desired component, after which they have the option of choosing the right material for their application. So, he also determines the manufacturing process. For example, if the customer would like to produce a part ready for series production from an iglide material that we cannot process using 3D printing, the Print2Mould process is ideal. Here we manufacture an injection molding tool in 3D printing, which is then inserted into the injection molding machine. Alternatively, the customer can also have their part manufactured using the SLS process with our two laser sintering materials iglide I3 and iglide I6 or use 3D printing of their part using the FDM process with one of our 7 tribologically optimized FDM materials. The customer always has a wide selection of materials, as well as a transparent cost overview and can easily order their desired part online at any time.



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$\mathbf{06}$



COVID-19: What It Means for Metals Manufacturing

Practical steps for responding to the coronavirus crisis

The COVID-19 pandemic and its disruption to industrial production has begun to impact metals production, especially steel. This comes on the heels of a difficult period for the industry in 2019, when it struggled with tariffs and experienced early signs of a demand slowdown. Now, the industry is in a dayto-day mode of monitoring and forecasting the demand for products from endusers, including the automotive sector, oil and gas industries, and others, such as white-goods (large home appliances) manufacturers.

As this crisis plays out, metals manufacturers will need to improve forecasting related to the potential for slackening demand among downstream steel consumers — especially industries that may be classified as "nonessential." For instance, the automotive industry, a major consumer of US steel, may already be slowing down production in numerous plants.

The engineering and construction industry may experience its own slowdown — with some construction sites locked down — which could also contribute to reduced demand for steel products. Additionally, aluminum producers and makers of specialty metals such as titanium should look closely at the aerospace and defense industry for possible signs of market demand, both on the upside and downside. However, the operational nature of the metals industry — with long leads required to idle and then restart mills and smelters — presents challenges that require nimble and swift reactions to market dynamics.

A misalignment of supply and demand could trigger an over-supply of inventories that could lead to sudden price drops. Going forward, the decision on whether metals manufacturing companies (particularly steel producers) and their major end-users are nationally classified as "essential industries" may determine the level of impact on the industry. Meanwhile, metals companies are shoring up their cash liquidity and looking to short-term borrowing to help cover operating costs. Currently, about 80% of manufacturers expect that the pandemic may have a financial impact on their business, according to a recent survey of the National Association of Manufacturers (NAM). That compares to 48% of cross-industry companies that expect the same, according to a recent PwC survey of CFOs. The majority (53%) of those in the sector expect COVID-19 to impact their operations, according to the NAM survey. Indeed, we're already seeing these dire expectations materialize in the sector, amid plummeting oil prices, supply chain bottlenecks, recession fears and spending slowdowns. Plant closures (even partial) at downstream, steel-consuming industrial manufacturers could be necessary for manufacturers in hard-hit regions for a prolonged period.





Crisis management and response

Metals manufacturers may experience downward pressure on demand, production and revenues as the COVID-19 pandemic intensifies. Manufacturers of metals for industrial use (copper, aluminum and steel , among others) may experience a pull-back in demand as endusers of these metals and metal products — such as the automotive, oil and gas, and engineering and construction sectors face their own slackened demand. If reduced demand persists, metals manufacturers may face cashflow liquidity challenges and difficulties in managing debt obligations. The industry may see end-users struggle to recover depending on how robust and effective any government support may be, and how long the COVID-19 crisis lasts.

Workforce

As metal-consuming end-users reduce demand for inputs, the sector may experience a prolonged reduction in capacity and cost structure — and that could translate into possible staff reductions and related measures. Companies also should brace for the possibility of widening outbreaks of COVID-19 affecting their workers, and should evaluate the possibility of outsourcing some corporate functions (e.g., moving IT to the cloud or shifting internal non-core operating functions to contractors). Such changes can help to lower operating costs and eliminate maintenance capital.





Operations and supply chain

With much of their supplies and feedstock locally sourced, metals manufacturers may not be as vulnerable to supply chain bottlenecks as other industrial products sectors. However, their customers' domestic and global supply chain complications may have an impact on metals demand. As with previous downturns, the industry is likely to quickly move to cut discretionary and capital spending to support operations. A key question for metals manufacturing companies is Do you have the financial reserves to weather the storm or even to capitalize on potential tumult in the industry?

Financial reporting

Disruption in the sector may lead to numerous financial disclosure implications. Stakeholders are making it clear that they expect transparency from companies, disclosures about actual and anticipated impacts, and, most important, the risks and vulnerabilities to the business.

Tax and trade

Some metals companies may be contenders for governmentprovided financial assistance. Extending lines of credit, reducing infrastructure costs, providing short-term funding, lowering the tax burden and offering supply chain assistance are helpful measures that governments are likely to explore.



$\mathbf{08}$





Coronavirus: A Response Framework for Advanced Industries Companies As the coronavirus causes worldwide challenges for healthcare systems and economies, advanced industries companies are looking for strategies to navigate the difficult, evolving situation.



Although patient health is the paramount concern, corporate leaders are also evaluating the business mplications of COVID-19, including the disruptions resulting from factory shutdowns, lost wages, and product shortages. For companies in advanced industries, including electronics, automotive, and aerospace, such economic repercussions could be particularly severe, given the extent of their global footprints and the complexity of their deeply multitiered supply chains (see sidebar, "Why COVID-19 could be especially challenging for companies in advanced industries"). Some companies in advanced industries

COVID-19 continues to spread rapidly around the world, straining healthcare systems and creating a humanitarian tragedy. The number of new cases caused by the coronavirus (SARS-CoV-2), appears to have crested in China, where the disease originated, but other countries are now reporting increases. The situation changes daily, prompting governments to announce quarantines, travel restrictions, and other measures tominimize risk.

also follow a sales model that requires human contact (for example, at automotive dealerships), intensifying the impact of low foot traffic.

Companies in advanced industries understand the seriousness of the situation and have already begun implementing changes to sustain their operations as COVID-19 continues its inevitable spread. Our recommendations for immediate and midterm actions focus on five areas (Exhibit 1). These recommendations will help companies plan ahead, set priorities, and accelerate their response during supply chain disruptions or lowered production capacity. We offer these recommendations to assist advanced industries companies with their long-term planning and recovery efforts.



$\mathbf{09}$



Establishing a nerve center as the central crisis steering organization

Companies in advanced industries need a nerve center—a dedicated team in a central location—to coordinate their response to COVID-19 across locations and business units. Staffed with a crossfunctional team that has decision-making power about important issues, a nerve center could focus on the following deliverables:

- Creating a threat-map dashboard
- Establishing a risk log
- Developing an integrated plan

A nerve center typically has a simple meeting cadence and follows agile principles to eliminate bureaucracy in decision making. It also encourages transparency, providing employees, suppliers, customers, and shareholders with frequent updates about the potential risks of COVID-19 and the company's response. From inception, a nerve center can serve as the main source of information and single source of truth, with its leaders creating communication plans and aligning on key messages.

Protecting employees

Companies are acting to protect employee health and quickly relay information about potential threats throughout their organizations. The



advanced ndustries sector is no exception, with businesses taking measures that include splitting shifts to minimize employee contact, distributing protective gear, curtailing travel, providing on-site health monitoring, and increasing on-site sanitization. The specific measures will vary by role, location, and company.



Since employee safety comes first, some plants will function under capacity or find that their suppliers may not meet delivery dates. Their response to such challenges is critical and will help set the stage for a quick recovery. For instance, companies could set new production priorities if their capacity falls, looking at factors such as the strategic importance of each customer, the potential for product shortages, and possible revenue decreases. Leaders from the production, supply chain, and marketing and sales functions will likely collaborate on these decisions.

10

Screening and safeguarding the supply chain

Advanced industries companies have large and complex supply chains that stretch across continents and include hundreds or thousands of vendors. Beyond their direct suppliers, company leaders may have little insight about supply issues. But with COVID-19 disrupting production globally, more transparency is essential. For example, automotive OEMs cannot simply determine if their weatherstripping suppliers are functioning; they also need information about disruptions at the companies that provide rubber to the weather-stripping suppliers.

If critical suppliers shut down operations, companies could establish recovery plans that describe how they will deal with shortages, support their vendors, and promote recovery. Leaders could also work with individual business units to determine how supply chain disruptions could affect

production.

Companies that depend on Chinese suppliers have not yet experienced the full impact of the shutdown, but they will likely do so in the coming weeks as their direct suppliers cannot get the parts or materials needed for production. Some Chinese suppliers have begun to recover, and companies can monitor these developments closely.

When possible, companies might want to build stock, either of components or finished products, so that they can continue to meet customer needs for as long as possible.



Adapting marketing and sales to suit new consumer behaviors

In-person contact is essential to many purchases, especially those within the automotive sector, where customers traditionally have extensive interactions with salespeople at dealerships as they seek product information, consider their options, and evaluate available models. COVID-19 has changed this dynamic in hard-hit areas, since many people are staying at home, either voluntarily or because of quarantines and travel restrictions. To serve these regions, automotive OEMs can strengthen their online marketing and sales channels, such as by allowing customers and dealers to make offers and purchases through their computers. For many customers, online

information cannot substitute for a test drive. In these cases, OEMs could consider supporting dealerships in providing at-home demonstrations and test drives for customers. Such strategies limit personal contact while also giving customers the on-road experience

they need

Maintaining financial health during disruption

COVID-19 will affect profits and liquidity by increasing procurement expenses and capital costs while simultaneously forcing customers to defer purchases. In some cases, these consequences are already apparent. To protect their business and rebound as quickly as possible, companies will benefit from financial stress tests in which they examine their current cash flows and balance sheets. They can then determine how company finances might evolve if any of the scenarios defined by their nerve centers materialize.









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WEG Supplies Special Motors For Mega **Project of Water Ponds in Chile**

An association with a global pump manufacturer solves the lack of drinking water in the metropolitan region of Chile.



According to the United Nations (UN) and the United Nations Development Program (UNDP), Chile is one of the Latin American countries that suffers the most from the effects of climate change. It is for this reason that the sanitary companies have made several investments to face in a timely and effective way, the eventual emergencies of natural origin that affect their clients.

The project aims to strengthen the reserves of the potable water production system and increase safety in Santiago's water supply. In rainy seasons the fallen water clouds the flow of the Maipo river, where 85% of the water supply of the sanitary company Aguas Andinas comes from, making it impossible for the

company to operate its treatment plants. The project contemplates the construction of a raw water reserve pond facility that will increase the autonomy from 11 hours to 34 hours, when the water treatment plants cannot operate in case of extreme turbidity. The water segment is one of the several segments served by WEG through specialists who are always evaluating opportunities to supply their products and solutions suitable for the most severe applications. In this specific case, WEG through its commercial branch in Chile has supplied five 1000HP motors, 4,160V rated voltage, from the HGF High Thrust line, vertical application on pumps, which will work in these reserve tanks. For WEG, this supply expands its references in the water segment and reinforces the company's technical capacity to develop and manufacture electro-electronic products and solutions for specific market segments.

The Pirque Ponds, as the project is called, constituted the Construction of six mega reserve ponds to store raw water from the Maipo River in normal times, which can be used to produce potable water in emergencies. They have a capacity of 1,480 million liters, and their surface is equivalent to 50 soccer fields. With the construction of these ponds, Santiago will increase from 11 to 34 the hours of autonomy of drinking water without drawing water from the Maipo River.

The importance of this supply is to bring autonomy to the capital Santiago, the main city in the metropolitan region, where nearly 40% of the inhabitants of Chile are concentrated.



SAP Cloud ALM **Enhances Support for Cloud-Based Solutions**

SAP SE announced multiple updates to the SAP Cloud ALM solution. The cloud-based application lifecycle management (ALM) solution helps track and manage the needs of customers of cloud solutions from SAP.

As a result of the update, SAP Cloud ALM will support additional SAP solutions – including SAP S/4HANA Cloud, SAP SuccessFactors solutions, SAP Customer Experience solutions and SAP Ariba solutions. SAP Cloud ALM was redesigned with improved capabilities to simplify the implementation and operations experience as more customers move to the cloud.

"As the cloud landscape advances and cloud solutions become more important, it's critical to continuously update SAP Cloud ALM to meet expectations of a cloud customer mind-set," said Marc Thier, SVP, Application Lifecycle Management, SAP. "Over the last year and a half, we've focused on simplicity and evolving SAP Cloud ALM so the platform can be used by business and IT roles with no need for technical knowledge."





SAP Cloud ALM benefits customers during various innovation cycles, including:

• Easy deployment for companies that choose SAP S/4HANA Cloud and **SAP SuccessFactors solutions:** SAP Cloud ALM helps with team onboarding and fit-to-standard workshops for configuring the customer's cloud solution. It tracks project progress by guiding customers through the implementation process and reports project status automatically.

Integration for customers who use more than one cloud service:

When managing multiple cloud services – such as SAP S/4HANA Cloud, SAP SuccessFactors solutions, or SAP Cloud Platform Integration Suite – customers must monitor the integration themselves, a process which SAP Cloud ALM can help them manage.

• Outlook for managing hybrid solutions: Customers adopting the

Intelligent Enterprise will see increased support for on-premise solutions like SAP S/4HANA. Monitoring the integration of on-premise or other cloud products is an additional discipline SAP Cloud ALM will focus on in the future.



14

Insight Out Coronavirus: Bosch Puts Fully Automated Mask-Production Lines Into Operation



Bosch designs a production line for face masks

In combination with other hygiene measures, face masks are an effective means of reducing the risk of new Covid-19 infections. Developed by Bosch's special-purpose machinery unit in just a few weeks, identical, fully automated production lines for face masks are now being set up at several company locations. In addition to the lead plant for Industry 4.0 in Stuttgart-Feuerbach, where two lines are planned, mask production will be ramped up at the Bosch locations in Naganathapura, India, and Juárez, Mexico, in successive weeks. A facility at the Rexroth plant in Erbach, Germany, will round off the manufacturing network. Overall, by the end of June, the production volume of the five lines is set to exceed ten million masks a month.

In the fight against coronavirus, Bosch has now turned its hand to the fully automated production of face masks. Dr. Volkmar Denner, chairman of the board of management of Robert Bosch GmbH, today launched the first special production line for face masks at the Bosch plant in Stuttgart-Feuerbach. "Containing coronavirus is a challenge for society as a whole. By equipping our associates with masks we make ourselves, we are helping to relieve the burden on the market. Moreover, we are doing the groundwork that will enable us to safely resume operations and protect our associates," Denner says. Following a coordinated ramp-up that will run until the end of June, the company will make over half a million masks a day on five production lines at four locations worldwide. The lines were designed by Bosch's specialpurpose machinery unitBosch has already received inquiries from over 30 companies regarding the designs of the special production line.

In-house production to relieve supply bottlenecks

The face covering is primarily intended to impede the spread of pathogens from the wearer's nose and throat. At the same time, the mask acts as a barrier to bodily fluids produced by people in the immediate vicinity. Bosch is manufacturing surgical mask types I and II, which comply with the European DIN EN 14683 standard, and will use them mainly to protect its roughly 400,000 associates worldwide. Bosch wants to make any excess capacity available to third parties, provided there is demand and the masks satisfy country-specific standards. Furthermore, Bosch is making the designs, technical drawings, and assembly instructions of the lines available to other companies free of charge, as well as information about how the masks are packaged and distributed. "Our special production lines give us greater independence, since masks can be made directly on site, right where they are needed," Denner says. Bosch's special-purpose machinery unit offers interested companies expert advice and supplies complete systems on request.



15



After evaluation of the selected tracks and the equipment necessary for automated operation, the testing will be carried out with two Coradia Continental regional trains owned by the Regionalbahnfahrzeuge Großraum Braunschweig GmbH. Alstom has long been a world-leader in ATO for metro systems, but this test will be a world-first for regional passenger trains. "In the future, automated trains will optimize regional rail operations, reduce energy consumption, and increase ride comfort. In this way, highly automated driving will make a decisive contribution to climate protection and contribute to the development of a modern, attractive railway system. Following the development and successful testing of the world's first hydrogen train Coradia iLint, Alstom is once again the innovative driver in rail transport with the pilot for regional trains in automated operation," says Jörg Nikutta, Managing Director of Alstom in Germany and Austria For this project, two trains based on Alstom's successful Coradia Continental platform will be equipped with a European Train Control System (ETCS) and additional Automatic Train Operation (ATO) equipment. The equipment will enable the trains to operate automatically, testing different grades of automation (GoA): GoA3 in regular passenger operation and GoA4 during shunting. GoA3 describes a fully autonomous train journey, but with an attendant who can intervene in the operation in case of emergency. GoA4 denotes unattended operation with no staff aboard, but with the possibility of remote control. Congratulations on the nationwide award of the Innovation Prize were expressed by Lower Saxony's Minister of Economics and Transportation, Dr. Bernd Althusmann: "After the successful operation of the fuel cell train in the Elbe-Weser Triangle, the Alstom site in Salzgitter is once again setting standards for tomorrow's local transportation with this project. The fact that we in Lower Saxony are now able to drive forward the testing and further development of automatic train operation in addition to the test field for automated and networked mobility on the road is a decisive step for the future of passenger transport by rail. The new model project promises a high degree of innovation, which we need for climatefriendly and efficient mobility services. Of course, I am particularly pleased that with Alstom, another company from Lower Saxony underlines our reputation as an important source of innovation".

World-First: Automatic Train **Operation for Regional Passenger Trains To Be Tested in Germany**

The German Federal Ministry of Economics has presented Alstom with the "Innovation Prize for Regulatory Sandboxes", related to a planned test project to implement Automatic Train Operation (ATO) in daily passenger operation of regional trains. The project will begin in 2021 together with the Regional Association of the greater area of Braunschweig, the German Aerospace Center (DLR) and the Technical University of Berlin (TU Berlin).

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Although nearly 1 in 4 adults in the U.S. face some type of disability, an industry sample has found that in 2020 over 98 percent of home pages had a detectable accessibility error. Accessibility can be forgotten or left until too late in the process when it is difficult to retrofit the site or application. Knowledge, discipline, and tools are all essential to building in accessibility throughout a development process.

As we near Global Accessibility Awareness Day, I am excited to announce a new open source offering and design toolkit that give designers and developers the tools they need to make their websites and applications accessible.

• The IBM Equal Access Toolkit is a public set of guidelines that deliver phase-based guidance about accessibility to all members of a team creating an enterprise offering. • The Accessibility Checker is part of an open suite of automation tools. It is a browser extension that allows developers or auditors to evaluate a web-based component or solution for accessibility issues.

0 0 0 0 **IBM Launches Equal Access Toolkit to Help Developers Build Accessible** Websites and Applications Ensuring all team members are responsible for accessibility

All of the tools are built on the same rules engine that is kept up to date to meet the latest accessibility standards and share guidance elements so that all team members can be responsible for accessibility. Each guideline comes in bite-sized snippets to highlight where team members should focus their attention and get the most value at the most efficient pace. The toolkit enables product teams to create accessible tools along the way without the need for an accessibility expert or formal education. At the same time, designers and developers can fill in gaps as they go without a loss of continuity.

> IBM's long and storied history with diversity and accessibility has taught us that incorporating those aspects into our work creates better innovation and outcomes. We understand it is not always easy to find the best practices or guidance to fully understand or test accessibility solutions. This is why we wanted to establish an open source platform that empowers offering teams to conceive, design, develop, ship, and report on their accessible offerings regardless of their accessibility expertise.





GE Researchers Demonstrate Grainsize Gas Sensor with Bloodhound-like **Sensing Capabilities Ideal for** Wearable or Drone-based Formats in Industrial Safety

Similar to how bloodhounds can isolate the smallest traces of specific smells among a multitude of other smells and interferences, GE Research has demonstrated an extraordinary new gas sensor design that achieves a level of performance previously thought unfeasible with conventional gas sensors. The findings were reported in the cover story of the May issue of Nature Electronics. And for additional details, listen to this podcast with lead author Radislav Potyrailo.

The new research, partially funded by the Centers for Disease Control and Prevention (CDC)'s National Institute for Occupational Safety and Health (NIOSH), describes how industrial researchers dissected the problems and limitations of conventional gas sensors and found the solutions to allow an ultra-broad range of detected gas concentrations, high response linearity, boosted sensor stability, and eliminated effects of ambient temperature.

"We have found that by providing electrical excitation of conventional sensing materials in very specific and targeted ways, we can achieve highly desired sensor performance characteristics, unavailable using conventional techniques," said Radislav Potyrailo, a GE Principal Scientist and the lead author of the Nature Electronics article. "In our studies, we show that modern low power electronics components, which are the result of accumulated decades-long technological advances, can allow sensor performance to compete with traditional analytical instrumentation."

"This sensor design shares the mathematical principles of multiple outputs with traditional analytical instruments but without their large power, size, and cost limitations," said Bernard Bewlay, GE Services Chief Scientist. "Such a design opens up opportunities for 24/7 monitoring of assets with new, desired capabilities and the ability to deploy these sensors in wearable, drone-based, and wireless sensor formats."

Contemporary gas sensing combines microelectronics, materials science, packaging, and machine learning data analytics to provide monitoring solutions for the modern world, ranging from detection of gas leaks in industrial and residential sites, to surveillance of environmental pollutants and hazardous industrial areas, cabin airquality alarms in automotive applications, monitoring of indoor air quality, to breath analysis and homeland security screening. Despite tremendous advancements with gas sensors in miniaturization and power reduction, the status quo of poor stability, non-linearity, and environmental effects severely hinders their expansion with these and many other emerging applications. This most recent article discusses a dielectric excitation



strategy that was developed by the team and implemented to transform the understanding and appreciation of what sensors can deliver.

HCL and Google Cloud Expand Partnership to Digitally Transform Commerce

HCL Technologies (HCL), a leading global technology company, and Google Cloud today announced the expansion of their strategic partnership to bring HCL's software offerings, starting with HCL Commerce, to Google Cloud. Google Cloud will be the preferred cloud platform for HCL Commerce, providing global, secure and elastic infrastructure to power businesses' eCommerce strategies. Under this partnership, HCL also intends to leverage Anthos to enable multi-cloud and hybrid-cloud deployments of HCL Commerce. HCL Commerce is a leading, cloud-native Commerce platform used by innovative businesses across multiple industries and around the world to drive more than \$100 billion in annual client revenues. With a strong track-record of delivering rock-solid performance, scalability and functionality, HCL Commerce today is at the forefront of many organizations' digital commerce strategies. It stretches far beyond an initial transaction and enables businesses to respond to evolving market conditions. It creates innovative merchandising strategies and rapidly launches new channels for both business-to-business and business-to-consumer use cases on the same platform. Bringing HCL Commerce to Google Cloud will enable businesses to maintain their investments in HCL's trusted Commerce platform while also taking advantage of the global reach, security, and elasticity of Google Cloud. In addition, businesses across industries will be able to develop positive, datadriven customer experiences online by leveraging Google Cloud's capabilities in artificial intelligence, machine learning and analytics.

"The collaboration between Google Cloud and HCL Commerce is helping customers rapidly execute their digital transformation strategy that is rooted in the new normal. With the support of our global implementation partner ecosystem, we can now deliver a proven, comprehensive commerce solution across all industries, handling the challenges of today and in the future," said Darren Oberst, Corporate Vice President and Head of HCL Software.

"It is more important than ever for firms spanning all industries to deliver strong, customer-centric eCommerce experiences," said Kevin Ichhpurani, Corporate Vice President, Global Ecosystem at Google Cloud. "We're proud that Google Cloud infrastructure will power HCL *Commerce, helping businesses leverage the elasticity and reliability of Google Cloud and ultimately delivering positive eCommerce experiences* for customers around the world." "By partnering with Google Cloud as a preferred cloud provider for HCL Commerce, DFS has taken advantage of HCL Commerce's unique industry leading capabilities that support the dynamic business and volume scalability that is the new normal, reacting quickly by deploying functional changes with ease, while also significantly lowering our total cost of ownership" said Russ Harte, Chief Technology Officer at DFS, the UK-based furniture retailer.





Successful Year and A Half of Trial Operation of The World's First Two Hydrogen Trains, Next Project Phase Begins



After 530 days and more than 180,000 driven kilometres, the successful trial operation of the world's first two hydrogen trains was officially completed at the end of February. Two pre-series trains of Alstom's Coradia iLint model have been in passenger service since September 2018. From 2022, 14 Coradia iLint series trains will replace the existing diesel multiple units. LNVG was the first company to believe in hydrogen, investing in it with the order of 14 Coradia iLint trains and thirty years of maintenance and power supply. This project showcases the importance of green mobility for the state of Lower Saxony. As one of the leading rail vehicle manufacturers in Europe, Alstom will produce the fuel cell trains for LNVG and will be responsible for the maintenance of the vehicles at its site in Salzgitter. The gases and engineering company Linde will build and operate a hydrogen filling station for the series trains near Bremervoerde station.

"Our two pre-series trains of the Coradia iLint have proven over the past year and a half that fuel cell technology can be used successfully in daily passenger service. This makes us an important driving force on the way to emission-free and sustainable mobility in rail transport", comments Jörg Nikutta, Managing Director for Germany and Austria of Alstom Transport Deutschland GmbH. "We have also obtained valuable data from the trial operation of the fuel cell trains for the further development of the propulsion technology."

"We are proud that we were the first railway company in the world to be allowed to operate the first two fuel cell trains on the Weser-Elbe network. From the very beginning, our passengers were very curious about the trains and their new propulsion technology. Besides its very low noise level, the hydrogen train was able to score with its emission-free operation, especially in times of climate change. The operation of the iLint was a very special motivation for our train drivers", said Andreas Wagner, head of the SPNV division and authorized signatory of the Eisenbahnen und Verkehrsbetriebe Elbe-Weser GmbH (evb).

Carmen Schwabl, Managing Director of LNVG, adds: "With the successfully completed trial operation, the requirements for continuous operation of the hydrogen trains from 2022 are fulfilled. LNVG thus contributes to the implementation of sustainable, innovative and ecological mobility solutions, especially in rural areas".

















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DMG MORI and Nikon concluded a memorandum of understanding for a comprehensive business alliance including sales consignment in March 2020. Both manufacturers combine their mutual resources to offer innovative solutions to customers.

As part of the alliance, DMG MORI will install the Nikon's noncontact laser scanner "LC15Dx" to some of its machine tools as an option. "LC15Dx" is able to efficiently measure a wide variety of workpiece with non-contact, including many parts that are too small or complex for a touch probes. It is especially ideal for

Source: seisanzai-japan.com

instrumenting and measuring large-sized gears and turbine blades for aircraft, construction machinery, and the energy industry. DMG MORI plans to launch a machine tool equipped with LC15Dx in this autumn.

Meanwhile, Nikon launched a metal 3D printer "Lasermeister 101A" in May 2020. Nikon will be able to use DMG MORI's global sales network with the business alliance and expand sales of new products together with DMG MORI.





The two companies are working together to develop new hospital engineering, construction and operations processes by leveraging Dassault Systèmes' 3DEXPERIENCE platform and Aden Group's Akila Care smart and connected hospital concept. The solution relies on a virtual collaborative environment for the design, simulation and development of hospitals that can be built and operational within 100 days and remain operational for many years, as well as for optimizing their operations and maintenance throughout their entire lifecycle. As part of the collaboration, the two companies plan to assemble a consortium of companies specialized in medical equipment, engineering and construction to offer the solution to countries needing it most.



"In a global context where decisiveness and rapid action are essential to help in the fight against COVID-19, combining quickly buildable modular architecture with a digital platform can accelerate the construction of a cutting-edge medical facility and ensure it is fully operational in record time," said Francois Amman and Joachim Poylo, co-founders, Aden Group. "By using the 3DEXPERIENCE platform, we hope to develop a solution that would enable us to reduce engineering changes, maintain a rapid development schedule, and meet delivery commitments quickly and effectively, as well as ensure long-term hospital maintenance and safety in anticipation of further pandemics."

Once developed, the hospital solution would provide a virtual collaborative environment in which employees and suppliers are invited to use a virtual twin of a hospital to optimize space planning, module design, negative pressure isolation rooms and other features, simulate manufacturing and equipment, and train for its construction. After the hospital is built, the solution will be used for digital asset management by connecting the facility with state-of-the art medical equipment to monitor digitalized hygiene procedures and hospital floor robots.

Dassault Systèmes and Aden Group Collaborate to Develop Smart and Connected Turnkey Hospital Solutions in Fight Against COVID-19

Dassault Systèmes and Aden Group, one of Asia's largest integrated facility management companies, today announced their intent to collaborate on the development of a turnkey, ready-to-use infectious disease hospital solution, Akila Care, that could be quickly deployed and easily maintained in countries severely impacted by COVID-19 and urgently in need of high quality medical facilities. This new initiative comes in light of the successful world premiere Wuhan hospital experience set up in a few days.



24

Danfoss Launches MBS 1600 Pressure Transmitters – **Specifically Designed for The Wind Turbine Industry** With the new MBS 1600 OEM pressure transmitters, Danfoss is expanding its wide portfolio of robust pressure transmitters tailored to meet the most demanding requirements within the wind power industry.



The MBS 1600 pressure transmitters are built tough to withstand the harsh environments that wind power applications face. The dedicated range of pressure transmitters comes with all the needed electrical and pressure connections for easy integration into the nacelle.

Its robust design ensures relentless monitoring of the pressure in pitch cylinders, brake systems, power packs, gearboxes, and cooling systems – to allow for higher performance, quicker corrections, and predictive maintenance.

"We basically started with a blank piece of paper – looking into the various requirements from the major wind turbine manufacturers. This resulted in the unique and spot on fitting pressure transmitter MBS 1600," said Market Segment Manager Per Sønderriis.

The compact Hex 22 and fully welded design provides excellent EMC immunity for a failsafe measuring signal while also ensuring superior resistance to shock and vibrations, and demonstrating high electromagnetic compatibility. Combined with zero drift, the pressure transmitter provides unrivalled longterm stability. Simply 'fit and forget'.

MBS 1600 is a robust and reliable update to the Danfoss MBS series. The series is globally available with a dedicated program of pressure transmitters and temperature sensors for gearboxes, main bearings, main shafts, and generators in wind turbines.

Overall features and benefits of the MBS 1600 pressure transmitter include:

 Immunity to electrical noise in the harshest environments (direct-coupled, transient, and case noise) Mis-wire protected Short-circuit protected • CE-approved EMC immunity Complying with the standards and product specifications requested by larger OEMs in the wind turbine industry





containerized cloud-native mobile network platform. The two companies will a Japan-made, highly reliable 5GC, based on the 5GC software source code developed by NEC. Subsequent to the launch of its non-standalone (NSA) 5G service in 2020, Rakuten Mobile aims to provide its SA 5G service in Japan in 2021.

The containerized 5GC will also play a key role in the global expansion of RCP, a platform aimed at offering solutions and services for the deployment of virtualized networks at speed and low cost by telecom companies and enterprises around the world, tailored for their unique needs. The 5GC will be offered as an application on the RCP Marketplace, allowing customers to quickly and easily "click, purchase and deploy" a fully virtualized SA 5G core network solution.

"We are very excited to collaborate with NEC on the development of our standalone 5G core network," commented Tareq Amin, Representative Director, Executive Vice President and CTO of Rakuten Mobile. "Our partnership with NEC represents a joint collaboration to build an open, secure and highly scalable 4G and 5G cloud native converged core, that will also become a key feature of the highly competitive services we will offer to global customers through the Rakuten Communications Platform."

"NEC is proud to be the 5GC development partner for Rakuten Mobile's advanced, fully virtualized, cloud-native network. Following the BSS/OSS for the 4G network and 5G radio equipment that we have already begun offering, we look forward to providing a high-quality, highly reliable 5GC and contributing to Rakuten Mobile's 5G services," said Atsuo Kawamura, Executive Vice President and President of the Network Services Business Unit, NEC.

Rakuten Mobile and NEC Agree to Jointly Develop Containerized Standalone 5G Core Network

Rakuten Mobile, Inc. and NEC Corporation announced that the two companies have reached an agreement to jointly develop the containerized standalone (SA) 5G core network (5GC) to be utilized in Rakuten Mobile's fully virtualized cloud native 5G network.

Based on the agreement, Rakuten Mobile and NEC will jointly develop the containerized SA 5G mobile core to be made available on the Rakuten Communications Platform (RCP), Rakuten Mobile's fully virtualized



Rockwell Automation Provides Expanded Linear Motion Control System With Improved Flexibility The iTRAK 5730 small-frame intelligent track system improves throughput in multi-product for Food and Beverage Packaging applications

Food and beverage manufacturers are constantly under pressure to package a wider variety of products in more types of packaging without compromising productivity. Now they can answer these trends while increasing throughput using the new iTRAK 5730 small-frame intelligent track system from Rockwell Automation. The system uses independent cart technology to support smart, flexible and efficient machines.

Independent cart technology offers many benefits over traditional gear, chain and belt conveyors, including unlimited machine flexibility, better traceability and increased uptime. By using magnetic propulsion, the individually controlled carts can quickly start and stop with high precision, which reduces machine wear and is highly energy efficient. The technology also quickly manages changeovers using pre-configured move profiles that can be implemented with the push of a button from an HMI.

The iTRAK 5730 system has the smallest footprint within the Rockwell Automation independent cart portfolio. It has a 50 mm minimum pitch that makes it ideal for primary packaging applications, such as flow wrapping, end load cartoning, and form-fill-and-seal pouching. The system also easily integrates into a manufacturer's architecture, providing analytics that help optimize energy use, monitor parts wear and reduce downtime.

"The iTRAK 5730 system extends the flexibility and productivity benefits of iTRAK to meet the growing demand for customized food and beverage products," said Michaela Kaufmann, iTRAK product manager at Rockwell Automation. "The technology is truly scalable. Your system can have as little as a 50 mm pitch in a small, standalone machine, or be as large as 100 meters and part of a large, complex line."

In addition to delivering a smarter form of motion control, the iTRAK 5730 also offers integrated safety. Features such as safe torque off, Safe Stop 1, a SIL 3, PLe safety rating and the ability to create safety zones help increase confidence in machine safety. Safety zones, for example, can increase safety without compromising productivity by allowing motion to continue outside of the safety zone, even after a trip inside the safety zone.

Furthermore, simulation capabilities allow users to calculate throughput on the iTRAK 5730 system. Users can also create a digital twin that can be used to virtually design, commission and demonstrate the system, and to virtually train workers. Standardized object-oriented libraries also can help create a consistent user experience and accelerate time to market.







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ABB and Metsä Fibre Sign Agreement to Supply Electrification and Drive Technology for New Finnish Bioproduct Mill

ABB and Metsä Fibre, part of Metsä Group, have signed a preliminary, binding agreement according to which ABB Finland will deliver electrification and drive technology solutions for Metsä Fibre's planned bioproduct mill in Kemi, northern Finland.

The agreement is subject to Metsä Group's final investment decision, which will be made earliest in autumn 2020. The order is worth approximately EUR 40 million. Production at the new mill could start in 2023. The production capacity is 1.5 million tonnes of pulp per year, as well as many other bioproducts.



"We are extremely pleased that our expertise and products will be part of this planned investment, which if realized will be the largest ever investment in the forest industry in Finland. Our deliveries for the project would contribute to ensuring the high availability of the mill as well as reliable and efficient production and efficient ABB Finland has more than 30 years of experience in demanding pulp and paper industry electrification and overall delivery projects, both in Finland and globally," said ABB Finland's Managing Director Pekka Tiitinen.use of energy.

"ABB represents the values we require from our partners: a commitment to safety, on time delivery and quality delivery. A high degree of domestic content is also essential. We are moving towards the common goal of building a fossilfree bioproduct mill in Kemi, which is the most efficient wood processing plant in its field. We have all the prerequisites to implement a successful major project together with a competent partner," said Ismo Nousiainen, CEO of Metsä Fibre.

According to the preliminary agreement, over 1,000 electric motors for the planned Kemi bioproduct mill will be manufactured in Finland at ABB's factories in Vaasa and Helsinki. The mill's protective relays and safety switches would be supplied by ABB's factories in Vaasa, and over 600 drives would be supplied by the world's largest drive factory in Pitäjänmäki, Helsinki. Furthermore, ABB Power Grids Finland is responsible for the transformer deliveries for the Kemi project. The main transformers for the mill would be manufactured at the ABB Power Grids transformer factory in Vaasa.

The planned mill would make comprehensive use of ABB's newest and extremely reliable energy-efficient electrification and operations technology. The electric motors for the mill would be controlled by ABB's latest intelligent motor control system. To save energy, ABB's new range of drives would control half of the mill's electric motor power. The mill is planned to use ABB's latest generation of highefficiency motors as standard. The mill's electrical system and drive technology would be integrated into ABB's Ability™ condition monitoring and remote support system.



29

Applied Materials Appoints Teri Little As Senior Vice President and Chief Legal Officer APPLIED MATERIALS ® Applied Materials, Inc. today announced that Teri Little has joined the company as senior vice president and chief legal officer. Previously, Ms. Little served as executive vice president, chief legal officer and corporate secretary at KLA

Corporation where she led the legal affairs of the company worldwide, including corporate securities and governance, M&A, intellectual property, commercial, employment, compliance and litigation.



"As our new chief legal officer, Teri brings broad legal experience as well as deep knowledge and understanding of the semiconductor industry and our customers," said Gary Dickerson, president and CEO. "As we enter the era of artificial intelligence and big data, Applied's opportunities have never been greater and Teri's leadership and insight will help accelerate our strategy."

"I am very excited to be joining Applied Materials, the industry leader and a company that I have long admired," said Teri Little. "I look forward to working alongside Gary, the legal team and groups throughout the company to pursue new opportunities and markets where Applied can bring unique advantages."



Prior to her 18 years at KLA, Ms. Little was with the law firms of Wilson Sonsini Goodrich & amp; Rosati, as well as Heller Ehrman White & amp; McAuliffe. She received her J.D. from Stanford University Law School and a B.S. in finance from San Jose State University.

Tom Larkins, senior vice president and general counsel of Applied Materials, announced his decision last fall to retire after leading Applied Materials' law department since 2012.

"I want to thank Tom for his contributions to Applied Materials. Today, our legal team is better than ever. Tom built a very strong team that is a great partner all across the company. Tom will support Teri during the transition, and I wish him well for the *future,"* said Dickerson.



30



A program that combines local Indigenous knowledge with Western science to track and protect the bilby population in Australia has shown great promise and reflects the biodiversity theme of World Environment Day.

Habitat destruction and greater numbers of predators such as foxes and cats have seen a decline in the number of bilbies, with the population confined to lands managed by Indigenous people in the north-west of the state.

Martu Traditional Owners, Kanyirninpa Jukurrpa (KJ) rangers have collaborated with scientists to design a monitoring program for mankarr, which means the greater bilby. The "Martu mankarr search" method is based on Martu knowledge of desert ecology, classification of habitat types, fire patterns, food resources, threats and management practices that affect desert animals.

Over time, the monitoring program will detect trends in the bilby populations and give information to Mart to make decisions about burning, or controlling feral animals and weeds.

The program also provides ongoing employment and training opportunities and strengthens awareness of the importance of animal tracking, desert ecology and caring for Country.

"The method encourages an organic process of planning and thinking about fire, the landscape and mankarr needs," Dr Anja Skroblin from the University of Melbourne said. "The new methodology is much more suited to the needs of Martu rangers to track bilby populations on their country."

This project is a collaboration between KJ, the University of Melbourne, the Nature Conservancy and is supported by BHP, the National Environmental Science Program's Threatened Species Recovery Hub, National Indigenous Australian Agency Working on Country program along with other agencies.

World Environment Day: BHP Supports Martu Ranger Program to Protect Bilbies



ST Engineering and NUS to Develop Network Encryption Solutions That Offer Superior Security by Using Next-Generation Quantum Technology

ST Engineering and the National University of Singapore (NUS) have joined forces to develop network encryption solutions that provide superior security by leveraging quantum cryptography technology. The collaboration is supported under the National Research Foundation's (NRF) Quantum Engineering Programme (QEP).

Current leading security standards such as those used in ATM machines or online transactions do not use quantum technology and this may pose a security risk when quantum computing technology becomes readily available. While these keys can still adequately protect digital communication, there have been reports of breaches and there is a need to explore alternative technologies.

Quantum key distribution (QKD) technology uses the laws of quantum theory to distribute secret keys over an insecure network. It uses the highly sensitive nature of quantum signals and can detect any attempts on eavesdropping, offering a secure form of encrypted communication.

The secret key is transmitted using a sequence of carefully prepared single-photon quantum signals. If the secret key is intercepted, the quantum signals will be disturbed and keys will be rendered useless. This enhances the security of digital communication as data cannot be intercepted or eavesdropped.

The collaboration between ST Engineering and NUS will take this to the next level by using "measurement-device-independent" QKD (MDI-QKD) technology to heighten cybersecurity defence against increasingly sophisticated threats. It also operates efficiently under real-world conditions.

NUS researchers and ST Engineering engineers will make advanced quantum cryptography more accessible to the wider market and further advance this technology by developing a new class of "quantum-resilient encryptors". These encryptors provide a highly scalable and costeffective solution that can be deployed with minimal disruption to existing digital infrastructure. This addresses the current limitations in the market as products are designed for point-to-point communication and are not scalable. This will also accommodate a larger number of users, and will benefit numerous applications – from financial services institutions, to government agencies, and hospitals.









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Additive Manufacturing for Serial Production of Orthopaedic Implants Solution

Croom Precision Medical (CPM) sits at the heart of Ireland's thriving medical device industry. Founded in 1984, CPM has been supplying Class I, II and III medical devices to the orthopaedic market for over 35 years. Because these devices will ultimately end up impacting people's lives, it is essential that rigorous quality procedures are applied to help achieve safety and effectiveness of the device, both during and following implantation.

CPM operates an Integrated Management System (IMS) which encompasses ISO 9001, ISO 13485 and ISO 14001 accreditation. In order to demonstrate compliance with the standards, CPM must maintain transparency and traceability at each stage of the manufacturing process.

Challenges

Medical implant designs are advancing rapidly. Manufacturers are increasingly incorporating novel and complex structures into implant designs, with the aim of improving implant performance and longevity. Making such structures with traditional manufacturing techniques can be challenging and is not always economically feasible.

In order to assess the quality of parts, CPM carries out a series of offline tests to check the chemical, mechanical and morphological properties of the implant. Whilst these tests are essential to measure mechanical and chemical consistency of the implants, they can be time consuming and add to the overall cost per part. CPM's ambition is to transform their production so that it sees more of the monitoring taking place during the manufacturing process.



CPM has invested in a RenAM 500M additive manufacturing system, which they use to 3D print medical devices in titanium. Renishaw's AM technology can produce complex structures in one manufacturing operation. As an example, CPM has begun assessing the use of gyroid lattices on acetabular cups, a design feature which would not have been economically feasible to produce before their investment in AM. The resulting implants have stood up to rigorous quality testing, and CPM report notably good density and Young's modulus values. To promote quality and consistency in their parts, CPM has also chosen Renishaw as their partner in precision metrology equipment, employing Renishaw's technology at various stages in their testing and part validation. The team had long been familiar with Renishaw's reputation for producing reliable, robust metrology equipment: "When you go around to the multinational companies, and you see all the Renishaw products on the shop floor, they have a name for being repeatable and reliable and well able to operate in harsh environments consistently', commented Byrnes. CPM exemplifies how Renishaw can supply an end-to-end solution, with technology to aid the manufacturing of technically ambitious parts as well as the quality verification.

technology to the same end in the medical sector.



34

Born out of the aerospace sector, Renishaw has a proven track record of supplying solutions to help achieve manufacturing efficiency and part safety in highly regulated environments. CPM are applying Renishaw's

Success Story

Results

CPM report an increased market share, which they directly attribute to their investment in AM technology. "We've managed to gain a new market share in international markets, in East Asia and North America, that were not feasible for us before. It's only the last two years that these markets have opened. We chose Renishaw as a development partner, not just as a product, whereby we see the next few years being a strategic partnership with Renishaw in growing our additive manufacturing base here in Ireland."

Healthcare is one of the industries at the forefront of AM development. Whilst a lot of progress has already taken place, there's still room to grow. CPM sees Renishaw as a strategic partner in driving the advances in AM technology. Byrnes adds: "Approaching AM for us has been a journey, it's a completely different way of thinking. It's much more of a laboratory environment, more of a cognitive way of approaching a process, rather than conventional engineering."

Over the next few years, CPM will continue to apply the knowledge they have gained from their rigorous development programs, as well as work closely with customers and regulatory bodies, to carry additive manufacturing technology forward and support advances in healthcare.





VISI Helps Mouldmaker Rise To

Alpha Precision say they push the boundaries of what's possible in precision engineering, through state-of-the-art software. In particular, this helped them through the recession in their native Irish Republic by giving them a competitive edge to work in high-end markets. Alpha Precision, based at Tubbercurry in County Sligo, operates an almost full suite of VISI modules, which Director Brendan Feely describes as a seamless communication tool.

"Several years ago Ireland experienced an exodus of toolmaking contracts as work went overseas, particularly to China. At the same time, the specialist VISI CAD/CAM software for the mould and die industry was rapidly developing and adding new features. Even companies which weren't computer literate were investing in the technology to survive. The software had a huge effect on the toolmaking industry, giving us a competitive advantage to weather the storm."

He says it's now "high end all the way" for Alpha Precision – high end staff building high end mould tools with high end software. "The technology promotes a more automated process, and means our staff need a different skillset nowadays, to use VISI to its full potential."



35

Having revamped their corporate image and website in the last few weeks, an injection mould manufacturer welcomes new challenges, and is pushing ahead with important medical, aerospace and automotive contracts.
Success Story

And he describes VISI as the glue in the complete toolmaking environment. "We have a variety of different machines doing different jobs, so our operators have different skills. The software's applied on the back of the machining, and because there are several disciplines, such as design, milling, wire and spark eroding, the software fits naturally into its given area. The operator in that area is just trained on the one particular VISI module."



VISI Electrode & amp; Wire also powers Alpha Precision's EDM machines for spark eroding, and Mitsubishi wire erosion. He says parts of the tool will have been cut on each of the machines, and when it's ready for shipping it is a very fine-micron, accurately controlled finished tool for, typically, the medical or automotive industry.

Having invested in many VISI modules including Modelling, Analysis, Flow, Mould, Progress, the wire cutting and electrode systems, along with 2D Milling, 3D Milling and High Speed Milling, the software is used at every stage of their process, beginning with providing an accurate quotation for the customer. "We use VISI's analytical tools to check the drafts and all the different features we'll need to build into the mould, such as the core and side pieces.

"When the order's been placed, we work closely with our customer's moulders on the design concept, including flow analysis and tool layout. Once the 2D design is broken down and we have the tooling in full 3D we really begin to see the huge power of VISI, which controls everything from design, through milling to wiring in one environment. Because we're not going across translators there's a perfect understanding within the technology, taking it right through every stage."

VISI ensures that all milling for hard prepping and high-speed finishing is handled quickly and accurately, which he says is vital to their operation. "We make a lot of one-off custom components for each mould, meaning we only run a program once. As pattern cutters we need to be very good at generating CNC code time after time, and VISI is exceptional at doing that job for us."

He compares the toolroom to a group of people from different countries, with none of them speaking a language other than their own. "One language is design; others include flow analysis, milling, wire eroding and spark erosion. VISI is the common language that unites all those processes, ensuring everything moves fluently through the toolroom from one discipline to another."

With VISI programs running their high speed milling on Röder, and F3 and F5 Makino machining centres, the challenges posed by the medical industry requiring very fine micro levels, are readily overcome. "We use high-end 42,000 rpm spindle speed for very small detail finishing, and cut our electrodes on the Makino F3, with high definition being done on the F5. And we can also machine a cavity in just one night, that would otherwise take a week. Using VISI Machining we can quickly produce a highly polished medical part with fine detail, a milled finish, and a split line within micron accuracy."



36

Success Story



For several years running, STRAUSAK's 5 Axis CNC-Tool Grinding Machine, known simply as U-Grind, has been providing customers with a reliable, efficient and highly accurate system for their grinding and re-sharpening needs. Designed essentially for small batch sizes, U-Grind's limited tool charging capacity restricts its autonomy to shorter working cycles, a problem for the growing number of customers wanting to run their machines throughout the night.

SOLUTION - A perfectly integrated robot arm "Integrating a 6-axis machine with its own commands and without taking lots of space is a true puzzle", explains Pierre-Alain Badoud, Director of R&D at STRAUSAK. But that's exactly the solution the company found with Stäubli's TX60L series, an option to the U-Grind that has been available since June 2015. Because the robot is totally integrated into the machine enclosure, it doesn't take up additional floor space. It also sits outside the machine working area, giving operators unrestricted access for set up. The TX60L has a considerably wide range of motion and its fast load and unload capacity makes it perfect for unattended, large batch production. "Only Stäubli, with the model TX60L, worked for the space we wanted, with the flexibility and precision we needed", says Badoud.

Autonomy, ease of use and production

Thanks to the hands-on technical assistance provided by Stäubli, the team at STRAUSAK saved considerable time during the integration phase of the robot. "Very quickly we arrived at the level of autonomy we wanted", says Badoud. Clients also save time: the fast load and unload times of the robot arm allow U-Grind to work more efficiently and with fewer interruptions. Another noteworthy benefit for STRAUSAK customers, including Helical Tool in the United States, is the robot ease and simplicity of use. All the necessary commands for the robot are seamlessly integrated into STRAUSAK's core software, which the clients already know. The result is an efficient, high-speed machine that is easy to use, can be adapted to customer specifications, and increases output by facilitating uninterrupted production runs in large batches.

Honing In on The Challenge of Autonomy

Improving machine autonomy

Founded in 1923 in Switzerland as a mechanical repair shop, STRAUSAK, today a subsidiary of ROLLOMATIC HOLDING SA, served the watch making industry until diversifying its product range in the early 1970's. Since 1973, the company has been producing high precision tool grinding machines for the textile, electronics, automobile and aerospace industries. Active in 23 markets, STRAUSAK delivers more than 500 grinders each year to customers around the world.





Incorporating with

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Precise All-Round Alignment: New 360-Degree Line Lasers from Bosch for DIYers



All-round visibility: With the AdvancedLevel 360 and the UniversalLevel 360, Bosch introduces two 360-degree line lasers with green diodes for DIYers for the first time. When leveling, their laser lines are up to four times more visible than the red laser lines of comparable tools – even in bright environment. Their working range is thus extended from 20 to 24 meters. The tools offer different laser configurations – DIY enthusiasts can choose the device that suits their needs and realize their projects in the best possible way. The AdvancedLevel 360 is the first 360-degree line laser on the market that additionally offers two vertical lines as well as a plumb function. It is therefore suitable for both horizontal 360-degree alignment, for example, when installing sockets, curtain rods, kitchen and bathroom cabinets on several walls in a room, as well as for classic cross-line laser applications such as positioning of pictures and tiles on a single wall. Its second vertical line makes it easy to position shower cubicles or drywalls at a right angle. In addition, a plumb point on the floor and a laser cross on the ceiling help to place lights or fire detectors exactly where they are needed. The AdvancedLevel 360 thus combines reference points on the wall, floor and ceiling and is a versatile all-rounder. If your projects do not require a plumb point or a second vertical line, the UniversalLevel 360 is the right device. Both line lasers level themselves in less than four seconds and compensate for surface irregularities of up to ± 4 degrees with an accuracy of ± 0.4 millimeters per meter.

Easy handling due to optimized design and operating concept

Thanks to their optimized design, the AdvancedLevel 360 and UniversalLevel 360 are particularly easy to operate, and with one hand. They are switched on and off via a sliding switch on the side of the tool. The desired laser configuration is then conveniently selected using the mode button at the top of the device. A second, smaller button is used to set the incline function, for example for aligning banisters. Both tools can be fastened with their ¼-inch threads quickly and simply onto a tripod or a telescopic pole – and can therefore always be easily positioned. Irrespective of whether you are working on a ceiling suspension or a decorative tile pattern, AdvancedLevel 360 and UniversalLevel 360 make easy all-round and exact alignment possible for DIY enthusiasts.





39





Shaping the future of security and safety

As the world becomes increasingly connected, the Internet of Things (IoT) presents new opportunities for individuals and businesses. However, to take full advantage of the opportunities that the IoT brings, the safety and security industry must embrace change. Bosch is demonstrating the vast potential of the IoT with INTEOX. The INTEOX open camera platform combines built-in Intelligent Video Analytics from Bosch with superb performance, a commonly used open OS, and the ability to add software apps securely. The new powerful platform supports latest technologies. For example neural network based analytics, the next step in machine learning and Artificial Intelligence. INTEOX enables app developers and integration partners to take advantage of its built-in intelligence and capabilities to easily develop unlimited software apps based on a common language. At the same time, system integrators can customize their security solutions to meet specific and changing customer requirements by adding apps and deploy them into INTEOX cameras. "As sophisticated sensors with Intelligent Video Analytics built-in as standard, INTEOX cameras can provide valuable data that can be analyzed and used in a wide variety of new and beneficial ways, many of which the

Bosch Launches The First Fully Open Camera Platform

Bosch has announced the launch of INTEOX, a new camera platform designed to modernize the security and safety industry. The first fully open platform of its kind, INTEOX gives users, system integrators, and application developers unlimited freedom for innovation and customization.

industry can only imagine. Bosch supports the platform with the highest levels of data security and privacy protection, and the quality and simplicity that comes with working with Bosch", says Michael Seiter, senior vice president, responsible for the Bosch Video Systems & Solutions business.

An open platform approach has already proven successful in the computer and mobile phone market, where software and apps have become an integral part of daily life. For example, apps provide immediate information, instant communication and connection, improved work productivity, and simplified daily tasks. These benefits extend to security cameras. By having an open platform, developers can work with integrators to address their customer's business challenges.







Δ1 **Advanced Energy's Artesyn Embedded Power Announces Open Rack Version 3 Power Shelf to Support Open Compute Project** and Evolution to 48-Volt Infrastructure

Advanced Energy announced its Artesyn Embedded Power product group is introducing a new Open Compute Project Open Rack version 3 (OCP) ORv3) power shelf, designed to support the move to 48-volt data center infrastructure.



"We are highly engaged in the development of OCP Open Rack standards and specifications, with input from multiple leading hyperscale data center customers," said Brian Korn, senior director, data center solutions for Advanced Energy's Artesyn Embedded Power product group. "We are enabling the market adoption of this next generation 48-volt power distribution architecture through collaboration across multiple companies to address shared challenges, offering OCP compatible solutions while retaining our differentiating intellectual property."

The new OCP ORv3 power shelf will be a key technology enabler in the growing adoption of 48-volt rack power distribution in hyperscale data centers. Artesyn products deliver rack power solutions in the \$1.9 billion data center computing embedded power market, which is fast-growing thanks to the acceleration of data generation and use, growing cloud adoption across enterprise IT, and an increased workload driven by artificial intelligence and machine learning.

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raditionally, data center racks have used 12-volt power shelves, but igher performance compute and storage platforms demand more power, which results in very high current. Moving from 12-volt to 48-volt power istribution reduces the current draw by a factor of four and reduces onduction losses by a factor of 16. This results in significantly better nermal performance, smaller busbars and increased efficiency. his new standards-based design has been developed in collaboration ith major OCP users and is intended to create a common power latform for multiple customers across deployments, increasing adoption nd creating economies of scale to benefit the whole OCP community.



SOGA Gallenbach GmbH in Pforzheim, Germany, designs and develops special machines. One special machine is a multiple screwing unit that joins profile rails in reliable process operation for ROMA, one of the leading manufacturers of sun protection systems. SOGA supplied a system with multiple mounting heads that reliably monitors screw depth and tightening torque. The drive technology needed for the axes of the heads, such as synchronous servo motors, planetary gear units, rack and pinion drives as well as drive controllers, all come from STOBER. The extremely compact and dynamic LeanMotor is also used. This new, encoderless STOBER motor class is an inexpensive and rugged alternative to the synchronous servo motor. As a partner in the project, STOBER also took care of the mechanical design and dimensioning.

"We offer our customers special developments they can use in production immediately after delivery," says Managing Director Fabian Gallenbach. With his ten employees, SOGA Gallenbach GmbH in Pforzheim designs and develops special machines as well as solutions for fixture constructions and 3D printing and sells pneumatic components. The customers come from industries such as medical technology and aerospace engineering. "These industries have an

especially high demand for precision," Gallenbach says. And he knows a thing or two about precision. Gallenbach completed his trained at a Swiss watch manufacturer, where he learned to cut a micrometer in half. When founding the company, his goal was to take the precision he had learned and use it in machine building. This enables the company to meet customers' constantly increasing requirements. "We hardly ever get simple requests anymore," the managing director notes. When executing these demanding solutions, SOGA Gallenbach relies on the support of selected suppliers—or, better yet, partners. STÖBER Antriebstechnik GmbH + Co. KG, also headquartered in Pforzheim, has been one such partner for years.

Screwing without Rework

SOGA developed a screwing unit able to monitor different screwing depths and tightening torques for reliable processes. "We developed a strategy specifically for plastic screw connections in which our pneumatic screwdriver operates with pressure pulses," Gallenbach explains. Plastic does not require the final torque to be any higher during the final tightening process than at any other point. This means that the unit has to be sensitive. The engineers also equipped the system with two drawers for loading the profile rails. As a result, the machine supplies profiles for processing either separately or synchronously. The components are manually inserted and clamped.



HARTING is A Powerful Partner for Industry 4.0 and **IoT: Our Product News**

For many years, HARTING has been seting milestones for future-proof connectors that meet these rising requirements, particularly with regard to their stability in challenging environments. HARTING turned the RJ45 into the RJ Industrial®, created modular M12 interfaces with X-coding and PushPull locking, and set the next major milestone in Industrial Ethernet with the miniaturized ix Industrial® interface – which is 70% smaller than an RJ45, yet significantly more robust. ix Industrial® is one of the most important components in the HARTING solution portfolio for its All for Ethernet segment. A compact and powerful Ethernet infrastructure is the key to the networked industry of tomorrow!

Industrial standard interface for SPE T1 Industrial available ex stock

Users can now make investments with a reassuring measure of security: IEC 63171-6, published on 23 January 2020, sets the basis for future lloT networks. The international standards bodies ISO/IEC and TIA have declared the IEC 63171-6 interface as the standard for SPE in industrial applications. On this foundation, a comprehensive portfolio for the Single Pair Ethernet market is now emerging.



Han® S: Safe contacting of modular energy storage systems

In Han® S, HARTING is – for the first time introducing a special connector for battery storage modules. Global demand for electricity storage systems is booming. The new series meets the technical requirements of the latest standards for stationary energy storage systems (including UL 4128) and offers users optimum safety for the connected units. The single-pole connector solution with a 200A high-current contact is mechanically coded, is coloured red and black for easy identification, and locks intuitively. In this way, Han® S enables fast, reliable contacting of storage modules and enables the processing of large volumes.

Han® 1A: Miniaturised rectangular connector ideal for networking

The Han® 1A features two new inserts for fast and secure data transmission. This can be used to supply end devices with up to 100 Mbit/s Cat. 5 Fast Ethernet for Profinet-based communication; a 10 Gbit/s, Cat. 6A version for High-Speed Ethernet is also available. The latter is used for live camera system applications.



5 Times Smart: igus Launches **Its First Catalogue Range for** Intelligent Plain Bearings



Presented last year as a prototype, igus has now developed its first isense plain bearing series with five iglidur materials for predictive maintenance. Whether in the food industry, textile machines, forklifts or construction machines, with the intelligent isense plain bearings, users receive a durable and lubrication-free solution that provides information about their wear. Maintenance can be planned in good time and machine and system failures are prevented.

Wear-resistant parts such as plain bearings must withstand extreme loads in machines and plant. If one of these bearings fails, there will be big trouble. For this reason igus presented the first study of an intelligent plain bearing at the Hannover Messe 2019. The principle: technology integrated in the bearing detects wear in advance and gives the user a signal in good time when the wear limit is reached. Maintenance can be planned in advance, and unnecessary replacement and unplanned machine and system failures are avoided. After many series of tests in the 3,800 square metre in-house

test laboratory, igus has now developed the first isense standard range for its lubrication-free iglidur plain bearings. "The catalogue range includes five materials with which we can cover a large part of highly stressed applications", says Stefan Loockmann-Rittich, Division Manager iglidur Plain Bearing Technology at igus GmbH. The FDA-compliant material iglidur A180, which is specifically designed for use in the food industry, the heavy-duty bearing iglidur Q2E for use in construction machinery and agricultural engineering, the all-rounder material iglidur G, the endurance runner iglidur J as well as iglidur P210 as a specialist for pivoting and rolling applications are also included. igus offers all intelligent plain bearings in three dimensions each with an inner diameter of 20, 30 and 40 millimetres. Further sizes and materials will follow.



System connection according to customer requirements To connect the isense plain bearings, igus has four suitable cables with an oil-resistant and media-resistant PUR outer jacket, in four standard lengths of one to ten metres, in its portfolio. In addition, the user has the choice between two connector types. The sensors measured data can be integrated by the machine and equipment operators into their systems in different ways.

44

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AAEON SD-WAN Solutions Powering Work-From-Home to Keep Business Running

AAEON SD-WAN Solutions are helping to keep businessing running by enabling employees to work from home safely, reliably and securely.

The current COVID-19 pandemic situation has forced many companies to turn to conducting business remotely, with many employees working from home. AAEON, a major hardware manufacturer of network computing platforms and uCPE white box solutions, is providing stable, secure network solutions to power work from home with SD-WAN technology.

As communities and governments around the world implement stay-at-home orders, many businesses are looking for ways to keep employees connected and working as best they can. However, there are several challenges in place, such as cybersecurity threats, providing stable connections for video conferencing, and deploying such a system quickly. One technology that is helping businesses stay connected with their employees is the Software-Defined Wide Area Network (SD-WAN).

AAEON has been focused on developing hardware built for Software-Defined Wide Area Networks (SD-WAN) since before the outbreak of the COVID-19 pandemic. Built for connecting remote branches with a centrally managed network, SD-WAN allows companies an easy way to quickly deploy secure, stable networking with data encryption and other networking tools to allow for continuous connections between branch and central server.



AAEON provides uCPE white box solutions with the FWS-7360 and FWS-2360 to help customers quickly set up and deploy SD-WAN infrastructure. These innovative SD-WAN platforms power network application which allow admins to manage Virtual Private Networks (VPN) for remote connections, virtual firewalls to provide data encryption, and ensure secure VPN connections. With SD-WAN network platforms from AAEON, businesses can also provide stable connections for downloading business-related apps, as well as video conferencing and VoIP, ensuring smooth communication between employees. AAEON uCPE white box solutions offer customers and users flexibility and are easy to deploy rapidly to any network. The FWS-7360 is equipped with seven Ethernet ports (including two 10 GbE optical ports), two built-in 2.5" SATA hard drives, and two USB 3.2 Gen 1 ports. The FWS-7360 also features a NIM module slot, providing customers with expandability and flexibility to add on more connections. The compact FWS-2360 features six Ethernet ports (two optical fiber Ethernet ports optional), along with two USB 3.2 Gen 1 ports, 16GB eMMC storage or optional 2.5" SATA hard drive. Both products provide uninterrupted network function with LAN bypass to ensure a reliable, continuous connection. Both platforms also offer support for Wi-Fi, 4G LTE and 5G wireless network connectivity, providing even greater flexibility in network deployment and setup.



Tungaloy Adds New Cutter Diameters to Its TungForceFeed High Feed Mill Line



Tungaloy has expanded its TungForceFeed line of small-diameter high feed milling cutters by adding new cutter diameters.

TungForceFeed features a large rake angle and positive inclination angle on the cutting edge that provide excellent chip control while reducing spindle loads and energy consumption. This allows a higher feed rate or greater depth of cut to be applied for improved efficiency and, by working in synergy with the cutter's high insert density design, produces 130%-150% gain in metal removal rates.

A strong insert corner is built with an added thickness that withstands high cutting force and prevents the cutting edge from fracturing. The toolholder has robust M2 screws that makes handling easier and reduces screw neck shearing that can be a common occurrence during high cutting force applications.

The proven success of the TungForce-Feed line of indexable high feed milling cutters has promoted an expansion to include cutters in 20 mm and 25 mm metric diameters and 0.75" and 1.00" imperial. These new cutter diameters join the existing range from 8 mm to 16 mm. This addition enhances the cutters' application range in exotic materials for cutting depths of 0.5 mm or less.

TungForce-Feed boasts a higher insert density when compared with competitors' cutters of the same size, allowing higher table feeds to be applied for exceptional manufacturing economy. The cutter is particularly effective and beneficial for manufacturers of exotic material components, typical in the aerospace and heavy industries, who are struggling with machining inefficiency with unpredictable tool life. It allows increased feed per tooth with high insert density for improved metal removal rates and long, predictable tool life

• Enhanced tool lineup for expanded coverage High insert density for added productivity • Robust cutter design ensures process reliability for small inserts Total of 16 cutters to be added including 10 metric and 6 imperial cutters



New Solid CBN TB7020 Grade Inserts and Holders for Cast Iron Machining

KEY POINT

- 1. Solid CBN TB7020 grade Features
- Higher content CBN inserts
- For roughing and high-speed finishing of cast iron
- Ideal for high feed and high depth of cut machining
- Obtuse angle corners for improved economy





TaeguTec has launched a new solid CBN grade for cast iron machining: TB7020 grade including flat type and dimple type inserts with associated holders.





48

2. Dimple (DA) type solid inserts and COMBI CLAMP T-holders **Insert features**

- 4.76 mm thickness double-sided dimple type insert
- Shallow dimple design minimizes insert instability
- Ideal for high feed, high depth of cut and harsh machining conditions
- Obtuse angle corners for improved economy Holder features
- A wide carbide plate for stronger clamping force
- Protruded clamp design for secure clamping of the dimple slope
- M6 screw for improved clamping force
- Carbide plates are replaceable
- Existing CH dimple inserts are not compatible with COMBI
- **CLAMP T-holders**.





The Right Mineral Casting for Every Application





modern manufacturing and highest level of expertise

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Whether the load is 80 grams or 30 tons, SCHNEEBERGER Mineralgusstechnik products offer unbeatable customer benefits. For many years, mineral casting, a "modern material", has represented an alternative to parts made from grey cast iron or steel and is nowadays the superior technology for a vast number of applications. Mineral casting has made new and innovative applications possible in electronics and in the medical devices sector. It is also the technology of the future - CO2 savings per ton of mineral casting are an incredible 1.4 tons of CO2 in comparison to grey cast iron/steel. This is testimony of our goals within our environmental agenda. SCHNEEBERGER Mineragusstechnik saved 15,000 tons of CO2 in 2018 – to the benefit of us all.

SCHNEEBERGER Mineralgusstechnik is one of the world's leading manufacturers of mineral casting. It offers innovative and high-precision mineral casting solutions while also making significant contributions to the "Total Cost of Ownership" (TCO) of completely pre-assembled modules and assembly groups made to customer specification. From our two locations in Europe (Cheb, Czech Republic) and in China (Changzhou), we serve a wide variety of markets and industries worldwide.

The latest alternative to conventional mineral casting is the UHPC-W material techcon® from SCHNEEBERGER Mineralgusstechnik. It also features cold curing, with a special cement mixture (instead of epoxy resins), but has similar physical properties at significantly lower costs compared to mineral casting. Excellent for "second line" products – exchange tooling, support, etc. Mechanical processing can be done to a similar extent as mineral casting. With techcon[®] from SCHNEEBERGER there is now an economical alternative in the area of mineral casting materials for certain applications such as prototypes or small series.



Motion Picture Solutions Invest in SpycerNode Media Storage Following a major long-term investment in R&S CLIPSTER mastering systems, MPS upgrades media storage with SpycerNode, which together improve efficiency & stability of operations at MPS.



location, giving instant backup.

One key feature of SpycerNode is its integration of IBM's Spectrum Scale technology, formerly known as General Purpose File Systems (GPFS). Eric D'Souza, Head of Technology at MPS, sees this being key to the performance that SpycerNode offers his operations. "Spectrum Scale is more advanced than the previous SAN file systems and uses 100gigabit ethernet as the interconnection," he explains. "Unlike layer 2 fibre channel, 100 gigabit ethernet allows redundant layer 3 network topologies to be extended over metropolitan distances. It is also much faster and more affordable. Networking and storage now share a common advanced topology." MPS will version the DCPs based on markets. For a big release they might have 120 shots that need localisation and graphics work. This could include road signs that might be in a particular language that need to change according to the territory, or as on one project, MPS had a shot of a mobile phone that had a vital text message on it and they had to cut that out and write it back out in 32 different languages. They can see advantages in fulfilling versioning within the IMF package, particularly with respect to demand for

VOD. To do another VOD version in its pipeline is relatively straightforward, so the fact that the CLIPSTERs are all IMF-capable was one of the reasons for buying so many of them. Another of the key features for CLIPSTER is the colour processing engine. MPS have to service the HDR market and this allows them to work with Dolby Vision HDR for cinema as well as being geared up to do HDR for VOD.

London-based Motion Picture Solutions (MPS), a leading international film services facility is a major user of Rohde & Schwarz's mastering and distribution platform, R&S CLIPSTER. To support this mission critical investment, the company has recently invested in the new media storage system, R&S SpycerNode.

Now, to support this large CLIPSTER network, MPS has invested in two 5U84 SpycerNode storage systems from Rohde & amp; Schwarz. The two systems are configured in a synchronous cluster spread over two locations. One part of the cluster is in MPS' Mission Hall site in Olympia, London, and the other in a data centre 11km away. They are connected by two diverse dark fibres running 100 gigabit ethernet over CWDM optical multiplexing. The data is immediately copied to another

50



igus Robot Control Software: Free Simulation and Cost-**Effective Control of Robots** Fast entry into Low Cost Automation using a digital twin in intuitive robot control



igus has developed control software for its Low Cost Automation solutions that allows users to easily program their robots.

igus robot control is available online, free of charge, and offers the user an easy introduction to automation. igus, based in Germany, runs its North American operations out of Providence, R.I.

With the new software, different robot kinematics can be programmed and controlled. A digital twin simulates the movements. This allows the user to program a suitable solution before purchase. The robot hardware, for example, a linear robot with switch cabinet, is offered by igus for approximately \$5,400.

Multiple Uses for Robots

Picking up goods from a box, helping to take samples and dispensing items from a machine can all done by robots. Whether it is articulated arm robots, delta robots or linear robots, igus has all three kinematics as Low Cost Automation solutions in its portfolio. To enable users to try out in advance which robot is best suited for their application, igus now offers igus robot control, a software for the simulation and programming of all igus robots.

Easy programming of robots

With igus robot control, the user can freely move all axes of the digital twin via a 3D interface. By means of a teach-in function the robot can be programmed quite easily, even without a robot connection. To do this, the user must manually move the robot to the desired position and define how it is to be moved. The process is repeated until the desired motion profile is created. Matching end effectors, such as grippers, are easy to add and the tool center point adjusts automatically. Virtual boxes can also be installed, for example, to prevent the robot from colliding with a machine. The igus robot control can also be connected to a higher-level control system, either via interface communication with Digital IO or via Ethernet communication using an IP address.









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Great Opportunity

SUTD 3D Printing and Design Innovation Challenge 2020



ENTRY SUBMISSION DEADLINE EXTENDED TO 3 JULY 2020

This competition is organised by SUTD to promote awareness about 3D Printing technologies, and give the participants a better appreciation of the university's unique pedagogy. In this competition, we challenge aspiring designers and engineers to design and 3D-print innovative products to build a better world, in the area of Healthcare Assistive and/or Educational Tools.

Themes



For more information: <u>https://epd.sutd.edu.sg/news-</u> events/event/competition/sutd-3d-printing-and-designinnovation-challenge-2020/

Additive Manufacturing Contest

The SAMPE Student Additive Manufacturing Contest provides an opportunity for students to learn and expand their abilities in additive manufacturing and engineering design. Participants will also receive a free student conference registration.

Structures will be printed by the committee and tested during the SAMPE 2020 Conference and Exhibition.



Great Opportunity



Engineering Medical Innovation Global Competition ENedlC Global 2021

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For more information: <u>http://www.emedicglobal.org/</u>



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EMedIC Global is a global challenge in which teams of university students design and develop clinically-driven and client-centered engineering innovations for the future of medicine & amp; healthcare.

Encourage international creative design exchange, develop creative design talents, express the international image of Taiwan attaching great importance to creative design, and establish the international design status of Taiwan.

Category

Product Design, Visual Design, and Digital Animation

For more information:







Great Opportunity

Rohde & Schwarz Engineering Competition 2021



The Rohde & Schwarz Engineering Competition is an annual technical competition for students from all over the world. Starting in 2004 we issue a technical challenge referring to our current developments focusing on the world of test and measurement, secure communication, broadcast and media or monitoring and network testing.

Build up a team of 3 – 5 people studying electrical engineering, computer science or something similar, compete against other teams from Europe, Asia and USA and win a trip to Munich and up to 10,000 USD.

MAKE IDEAS REAL to ensure a safer and connected world!

For more information: <u>https://www.rohde-</u> schwarz.com/pt/career/events/engineeringcompetition 252747.html

12th Edition of The IoT/WT Innovation World Cup®

The evaluation phase will start as soon as the submission deadline closes, i. e. on September 23, 2020 (23:59 PST). The submissions will be evaluated by the international jury board based on the degree of innovation, business potential and go-tomarket approach. The jurors will select the top IoT and wearable tech finalists, who will be publicly announced and invited to present their solution at the Pitch & amp; Award Ceremonies. Stay tuned for further details about the Pitch and Award Ceremonies. Good Luck!

Prizes

- A cash prize of 10,000 Euro
- Exclusive business connections with international leading tech corporates, potential investors and partners • Free use of production labs, testing facilities and technical supports
- Free DEVELOPMENT KITS powered by STMicroelectronics, Würth Elektronik, EBV Elektronik and Microtronics • Free marketing packages and extensive media publicity at a global level
- Speaking opportunities at worldwide prominent tech events
- Placement on the Hall of Fame of the Innovation World Cup®



For more information:







No corrosion, no additional lubrication, light weight. This is what makes our high-performance plastics special. Less cost and higher service life for moving applications. All motion plastics* can be configured and calculated online. igus-asean.com/dry-tech

MBS, Singapore

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12th - 14th May Booth 1125

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Our comprehensive range matches energy chains and cables to the movement on your machine. From individual components with no minimum order quantity to harnessed, ready-to-install systems. All motion plastics can be configured and calculated online. igus-asean.com/the-chain

igus Malaysia Sdn Bhd, Suite 1601-1, Level 16, Tower 2, Wisma Amfirst, Jalan SS7/15 (Jalan Stadium), 47301 Kelana Jaya Selangor, Malaysia Tel. +603 7803 0618 info@igus.my plastics for longer life

SAP for Me Is **Generally Available** with Expanded Scope Enhancing the Digital

SAP SE announced that its new customer portal, SAP for Me, has successfully completed its beta phase and is now available with enhanced capabilities across products, systems, licenses and consumption to all customers globally.

The SAP for Me portal serves as a companion to SAP customers, providing them with personalized access and a transparent view of their entire product portfolio.

In addition, SAP for Me is planned to become available in June 2020 to partners who hold sales roles, with further functions becoming available later this year. This single access point will enable digital 360-degree collaboration between our partners, customers and SAP.

With SAP for Me available to all customers, SAP achieves its goal of having three primary access points to the digital experience of SAP. SAP.com is the digital front door, which provides interested parties information specific to their preferences. Existing customers will use SAP for Me as their personalized customer portal, and SAP Community serves as the central engagement and knowledge-sharing platform.

A Personal Companion

SAP for Me serves as a central repository, providing users with a personalized view of relevant insights and interactions based on their role and interests. Users can customize the portal's intelligent home screen to receive context-specific key metrics and alerts. The portal provides an overarching picture across a customer's product portfolio by aggregating into one access point all important notifications, metrics and insights, helping to speed outcomes.

Integrated, Easy and Personalized

With SAP for Me, customers are given an instant overview of alerts, metrics and insights mapped to their needs and interests. SAP for Me can provide valuable insight across all product categories (for example, systems, licenses, orders and incidents). Customers can see the number of products licensed to their company, find available learning content and review the status of support tickets and relevant notifications.

SAP for Me conveniently connects customers with their most frequently used actions for faster interactions and outcomes with SAP products and services. By connecting users with the most relevant information of their SAP portfolio, SAP for Me helps customers navigate their digital transformation journey in a personalized, easy and seamless way.

intuitive robot control

igus Robot Control: **Free Simulation and Cost-Effective Control of Robots** Fast entry into Low Cost Automation using a digital twin in

To programme robots with ease, igus has now developed control software for its Low Cost Automation solutions. igus robot control is available online free of charge and offers the user an easy introduction to automation. Different robot kinematics can be programmed and controlled. A digital twin simulates the movements. In this way, the user can programme a suitable solution before purchase. The robot hardware, for example, a linear robot with switch cabinet, is offered by igus from as little as 5,000 euros.

Picking up goods from a box, helping to take samples and dispensing cans from a machine – all done by robots! Whether articulated arm robots, delta robots or linear robots: igus has all three kinematics as Low Cost Automation solutions in its portfolio. To enable users to try out in advance which robot is best suited for their application, igus now offers igus robot control, a software for the simulation and programming of all igus robots. "As a mechanical engineering company, we are very familiar with the different kinematics, so the next logical step for us was to develop a correspondingly simple and intuitive robot control system", says Alexander Mühlens, Head of automation technology at igus GmbH. The special feature: the software is available online free of charge and license-free. In the software there is a digital twin for all igus robots, which can be simulated and taught like the real robot. The robot control system is also used later to programme the robot intuitively. Every programming can be applied to the real robot afterwards. The complete hardware package, for example, a drylin linear robot with integrated control system in the switch cabinet, is available from 5,000 euros.

With igus robot control, the user can freely move all axes of the digital twin via a 3D interface. By means of a teach-in function the robot can be programmed very easily, even without a robot connection. To do this, the user must manually move the robot to the desired position and define how it is to be moved. The process is repeated until the desired motion profile is created. Matching end effectors, such as grippers, are easy to add and the tool centre point adjusts automatically. Virtual boxes can also be installed, for example, to prevent the robot from colliding with a machine. The igus robot control can also be connected to a higherlevel control system, either via interface communication with Digital IO or via Ethernet communication using IP address.

Eclipse fog05 Release Makes Fog Computing a Reality

The first release of Eclipse fog05 establishes a solid platform for provisioning, managing and monitoring infrastructure spanning from the data centre to the deepest edge

ADLINK Technology, a leader in Edge Computing, has made the initial and ongoing contributions to the Eclipse fog05 project with the goal of providing a platform designed ground-up for addressing the industry's most pressing needs for Edge and Fog Computing. fog05 allows for seamless, decentralized management, provisioning and monitoring of infrastructure distributed across the Internet, spanning almost any system from data centre servers to micro-controllers. The first release of fog05 under the Eclipse Development Process is a stepping-stone for accelerating the adoption of innovative Edge and Fog Computing Architectures. This release of fog05 enables users to leverage the power of decentralization in order to exploit local computation and maintain data where it makes the most sense. It also reduces the overall energy consumption of the system, thus contributing to a better energy footprint.

Along with Eclipse fog05, ADLINK's Advanced Technology Office (ATO) is working on core innovations to support Edge and Fog Computing, most notably geo-distributed storage systems and converged data management infrastructures, which manage data in motion and at rest. These technologies are at the core of fog05 and available as platform services to applications such as ADLINK's zenoh. Moreover, the Eclipse fog05 and Eclipse zenoh projects are essential building blocks in realizing

the edge computing vision shared by the members of the Eclipse Edge Native Working Group, of which ADLINK Technology is a strategic member.

ADLINK's Advanced Technology Office innovations are focusing on decentralization and holistic efficiency -- including energy efficiency. As existing management infrastructures are geared toward a centralized data center, they can hardly adapt to address the challenges posed by edge and fog applications with respect to heterogeneity, resource constraints and geographical scale. Eclipse fog05 is the only platform designed from scratch which is focusing on fog and edge computing. Eclipse fog05 is an open source project that addresses highly heterogeneous systems, even those with extremely resourceconstrained nodes. It is currently experiencing massive adoption in the R&D community, for Edge or Fog Computing as well as for Multi-access Edge Computing (MEC). In the past two years alone, Eclipse fog05 has been powering the most challenging demonstration of Edge Robotics, 5G MEC infrastructure. fog05 has also been recognized by ETSI as being compliant with MEC/NFV.

Micropilot FWR30 - Access Storage Tank Level from Anywhere The first cloud connected radar for full transparency in storage and transportation of liquids

With more than 2.2 million applications and 50 years of experience, time-of-flight (ToF) measurement instruments are an important component of Endress+Hauser's portfolio. ToF-devices are used in a wide range of applications, and are a reliable solution even under extreme process conditions. The new generation of Micropilot instruments offers compact design, maximum user-friendliness, as well as application-specific flexibility, to provide solutions for both mobile and stationary plastic tanks.

Benefits

- Reliable and cost-efficient level measurement with 80 GHz radar technology
- Full transparency for storage and transport of liquids
- Simplified solution from procurement to operation
- Access to relevant information from anywhere and at any time
- Scalable software applications from smart monitoring to inventory management
- Battery powered sensor with mobile communication
- Certified cloud service meeting the highest security and
- data protection requirements

The storage of liquids plays an important role in many industries. Liquid fertilizers or irrigation systems for agriculture, additives as well as cleaning agents for the food industry or liquefiers for the production of concrete are only a few examples. Usually, plastic tanks are used for this purpose. In order to ensure continuous production and prevent downtime, the liquids must always be available in sufficient quantities. This is where level measurement is used.

Challenges in level monitoring

Plastic tanks are often located at remote sites and widely dispersed geographically. An increasing number of tanks lead to an even more complex measuring task. In more than 80 % of all production plants, level measurement is done manually. This type of manual monitoring is both time and cost intensive. So, very often, this results in missing stocks only being registered when the tank has already run empty, and the production process has come to a halt. Clearly, a better solution is needed.

Optimized inventory management - simple from the scratch To meet the mentioned challenges, Endress+Hauser has developed a solution consisting of a radar level sensor and software. It considerably simplifies the management of stocks in stationary and mobile applications. As the first 80GHz lloT sensor, the Micropilot FWR30 combines high-end technology and user-friendly digital services in one cost-effective device. Installation is simple and can be done in less than three minutes. An integrated battery allows operation without external power supply.

60

The World Most Comprehensive Metrology Software

ZONE3 Metrology Software represents a totally new way of working with multisensor measurement systems. Its interface clearly displays relationships between parts, sensors, datum alignments, and machine tooling. ZONE3 uses CAD models and other innovative features to automatically and effortlessly generate measurement routines.

Unique High Capacity Benchtop Multisensor Measurement System SmartScope® Flash™ CNC 300 is one of the most versatile benchtop systems OGP offers. With an expansive Z-axis of 250 mm to accommodate large parts, it combines state-of-the-art video and autofocus to deliver high productivity.

NEC Develops Learning-Based Communications Analysis Technology Enabling High Quality Local 5G Without Network Specialists

NEC Corporation announced the development of a learning-based communications analysis technology for private radio communications networks, including local/private 5G networks (local 5G).

This technology ensures that the quality of communications is constantly sufficient, even without the assistance of a network specialist, avoiding quality degradation caused by congestion and competition.

Companies and local governments are considering the introduction of local 5G as a private radio communications network that can be used individually according to their needs.

This cannot be achieved simply by installing local 5G equipment. In the commercial mobile networks operated by telecom carriers, when communications quality degrades, network specialists spend considerable time to adjust the priorities and data rate of communications based on the analysis of communication conditions. However, such analysis and operation is difficult in private mobile networks without such experts.

NEC has developed a technology that offers real-time analysis through artificial intelligence that matches the analytical know-how of trained specialists. This technology facilitates optimal operation of networks that fully demonstrates the capabilities of their performance. The technology achieves this by reliably estimating the amount of communications in realtime by communication type, such as video, still image, and text data, based on the features of the current communications traffic.

1. Hierarchical communications analysis enables highprecision estimation in real-time Hierarchical communications analysis enables high-precision estimation in real-time Conventionally, variations in communications traffic caused by a mixture of application types, such as video, still image, and text data, and the effects of wireless communications, have taken time to analyze and made the results less accurate. This new technology uses hierarchical clustering to first identify the wireless communications among the current communications traffic and to then identify the application types. This has resulted in highly accurate estimations of communications in real-time.

2. Learn autonomously and track changes in usage conditions automatically

The method for learning beforehand requires enormous amounts of training data every time there is a change in the installation environment and the use situation of communications. This new method is based on unsupervised learning. The technology automatically updates model parameters based on the similarity between the past and the most recent model, allowing changes in usage conditions to be tracked.

Siemens Smart Infrastructure announced the launch of Siveillance Thermal Shield. This solution package quickly measures the body temperature of a person seeking to access a building and enables the results to be integrated into the video and access systems of corporations. Thermal imaging cameras are used to measure, in a contactless way, the body temperature at a distance of up to two meters, ensuring the safety of monitoring staff. If the camera screening indicates an elevated body temperature, a second reading must be taken using a medical thermometer to confirm the finding. This solution package integrates the third-party screening camera with the Siveillance Video security platform and other security systems from Siemens. This allows the measurements to be seamlessly integrated into the workflow of the corporate security solutions. Using Siveillance Thermal Shield at the entrance to a factory building, for example, offers a quick and easy way to screen employees as part of routine access control procedures. This is particularly useful in the food industry where the Covid-19 pandemic has made production more challenging. Other possible use cases include hospitals and border crossings.

Siemens Body Temperature Solution Minimizes Infection Risk in Buildings

"Siveillance Thermal Shield improves the safety of all occupants in buildings or facilities", said Joachim Langenscheid, Solution and Service Portfolio Head Europe at Siemens Smart Infrastructure. "We also advise companies on how they can use Thermal Shield for their industry-specific applications to optimize their security systems and procedures, and we support them in the technical implementation."

To ensure the highest level of accuracy, the cameras measure the body temperature near the eyes. A positive result triggers acoustic and visual alarms. The temperature is measured for each person individually to ensure accurate and reliable results. If a person shows an elevated body temperature and this finding is confirmed by a second reading obtained with a medical thermometer, the follow-up steps defined in the workflows are initiated automatically.

Shorter Scans and Better Image Quality: Deep Learning-Based MR Image Reconstruction Tech from GE Healthcare now FDA Cleared

GE Healthcare announced U.S. FDA 510(k) clearance of AIR Recon DL. This pioneering technology, using a deep learning-based neural network, improves the patient experience through shorter scan times while also increasing diagnostic confidence with better image quality across all anatomies. AIR Recon DL, developed on GE Healthcare's Edison intelligence platform, seamlessly integrates into the clinical workflow to generate AIR Recon DL images in real-time at the operator's console. Until now, there was an inherent compromise in MR between image quality and scan time. Better image quality achieved through higher signal-to-noise (SNR) and/or spatial resolution needed to show anatomical detail necessitated long scan times. Shorter scans, aimed to improve patient comfort and productivity, compromised image quality and diagnostic confidence. Now with AIR Recon DL, clinicians and technologists will no longer have to choose between image quality and scan time. Unlike conventional post processing-based approaches that can obscure image detail, AIR Recon DL is a deep learning-based reconstruction engine making full use of raw data for maximum image quality. In addition to improving SNR, this technology features a unique intelligent ringing suppression that preserves fine image details, helping address two common pain points for radiologists and technologists—image noise and ringing. AIR Recon DL was developed in partnership with global institutions and has been evaluated on thousands of cases across a wide range of anatomies and patient demographics. Feedback from clinical users has been overwhelmingly positive, including users noticing sharper and less noisy images enabling shorter scan times, increased reader confidence, reducing the need for repeat scans, and more scan-to-scan consistency.

"We are proud to bring the next generation of MR image reconstruction to the industry leveraging the latest technological revolution in artificial intelligence," said Jie Xue, president and CEO of GE Healthcare MR. "AIR Recon DL benefits clinicians, technologists and patients alike. As we transition to a post-COVID world, MR providers face a significant backlog of patient exams. AIR Recon DL can not only help providers scan more patients per day, but also allows more time to disinfect equipment between patients."

Partners in the development and clinical validation of AIR Recon DL included Hospital for Special Surgery, University of California San Francisco, RadNet, University of Wisconsin-Madison, MD Anderson Cancer Center, Medical College of Wisconsin, Centre Cardiologique du Nord in France, Erasmus Medical Center in the Netherlands, Centro Cardiologico Monzino in Italy, University of Yamanashi and Keio University in Japan, and Asan Medical Center and Haeundae Paik Hospital in Korea.

Supporting Tricycle Drivers' Financial Independence

Kawasaki has been implementing various initiatives to promote a culture of innovation within the Group and to strengthen its activities for attaining Sustainable Development Goals (SDGs). One such initiative is taking place in the Philippines — Investment in GMS which aims to support tricycle drivers in overcoming poverty and achieving independence and prosperity. Helping Tricycle Drivers Increase Income by Investing in Global with their sidecar is possible by taking out a loan with a monthly payment of Mobility Service, Inc. (GMS), Which Supports Drivers' 5,000 pesos, making the machine their own property. However, not having a Independence bank account or even enough money for a down payment, they lack credit, resulting in most of them continuing to do business with rented tricycles. This vicious cycle has widened the income divide in the country.

In addition to producing localized products, Kawasaki has committed itself to helping tricycle drivers become financially independent and to resolving various social issues in the Philippines. One such initiative was an investment in Global Mobility Service, Inc. (GMS). Led by CEO Tokushi Nakashima, GMS provides loan assessments and creates financial opportunities for tricycle drivers so they can get new machines, making use of FinTech (financial technology) and IoT (Internet of Things).

In the Philippines, 77% of the people do not have bank accounts, and 90% of tricycle drivers belong to the poorest segment of society. Most drivers operate their tricycle business by renting their bikes from owners for about 150 pesos (300 yen/US \$3) a day, or about 9,000 pesos a month. Buying a new Barako to go

To stop this cycle, GMS came up with a business model built on a fusion of FinTech and IoT. In this model, the driver takes out a loan and is provided with a tricycle equipped with GMS' proprietary IoT "Mobility-Cloud" Connecting System" (MCCS) device, which has remote control capability. Data regarding mileage, routes taken, operating time, etc. is stored in the cloud in a "Mobility Service Platform" (MSPF). Loan payment status is linked to the MSPF and if payments fall in arrears, the system remotely disables the ignition, and a staff member is assigned to find out the reason and provide support.

In June 2018, in conjunction with other listed companies, Kawasaki invested in GMS. Commenting on the reason for the investment, Makoto Noda, Associate Officer/General Manager of the Innovation Department at Kawasaki's Corporate Planning Division, says, "We see solid integrity in GMS's vision for resolving social issues." Adding that it was a meaningful way to expand Kawasaki's activities in fulfilling the Sustainable Development Goals (SDGs), he says, "The Barako II is symbolic of Kawasaki's contributions to society by means of our products — a conventional model. However, investing in GMS and partnering with the company is a more pro-active, 'aggressive SDG model,' focused on poverty eradication — Goal 1 of the SDGs.

Contributing to the Environment with a New Problem Solving **Process "High-Durability Precision** Ball Screw"

A key mission of NSK is to create products that contribute to the environment. Using a variety of approaches, NSK is moving closer to its goal of contributing to a safer, smoother society and helping protect the global environment. One such environmentally friendly product is the "High-Durability Precision Ball Screw." We asked the designers about the thought process that went into its development.

Ball Screws—Making it Possible to Translate Motion

Ball screws, which are made up of a screw shaft, a ball nut, balls, and a recirculator, serve to translate rotational motion to linear motion. Ball screws are used in machine tools and semiconductor manufacturing equipment. They can also be found in injection molding machines used to produce the smartphone chassis that we all use. Ball screws are in high demand in a wide range of industries including automobile components, such as electric-hydraulic brake systems. Ball screws can even translate linear motion into rotational motion, which is a feature utilized in vibration damper for buildings.

免農装置など、先端技術が求められる世界中の まな産業のモノ造りの現場を支えています Precision Machinery Machinery and Parts business, NSK takes advanta

The sophistication and precision of machines are ever advancing with the development of new technology. As a result, ball screws have come to be used in much more severe conditions than ever before. For example, in recent years our customers have released devices that move at extremely low speeds and devices that repeat very minute movements. Such advancements have made it necessary for NSK to create new products to adapt to these changes in the market. This is what led to the development of the "High-Durability Precision Ball Screw." Under conditions of low speed movement or repeated fine movements, the metal of the groove and the metal of the balls make contact and grate upon each other inside the ball screw-a phenomenon known as "wear." Such wear can be mitigated by introducing a lubricant to form an oil film over the metal surfaces in contact with one another. However, operating the ball screw at low speeds makes it hard to form this oil film, causing wear to occur. When wear occurs, a crack is formed between the parts of the ball screw and rattling occurs, leading to deterioration of the precision of machinery.

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Event Calendar

JUIY 2020 7 - 10 JULY 2020MTA VIETNAM 2020

SAIGON EXHIBITION & CONVENTION CENTER – SECC

15-17 JULY 2020 **CHINA ELECTRONIS FAIR WEST** SHOW

CHENGDU CENTURY CITY NEW INTERNATIONAL CONVENTION & EXPOSITION CENTER

16-19 JULY 2020

31ST MALAYSIA INTERNATIONAL

MACHINERY FAIR

MALAYSIA INTERNATIONAL TRADE AND EXHIBITION CENTER (MITEC), KL

21-23 JULY 2020 SEMICOM WEST SAIGON EXHIBITION & CONVENTION

CENTER – SECC

29 - 31 JULY 2020**THE 14TH SHENZHEN INTERNATIONAL INTERNET OF THINGS EXHIBITION** SHENZHEN CONVENTION & EXHIBITION CENTER

AUGUST 2020 **17-19 AUGUST 2020**

OTC ASIA 2020 KUALA LUMPUR CONVENTION CENTER, KUALA LUMPUR

2020

JAKARTA INTERNATIONAL EXPO (JIEXPO) KEMAYORAN, JAKARTA-INFONESIA

26-28 AUGUST 2020 THE 10TH EDITION OF INAMARINE

PROPAK VIETNAM CENTER

CONSTRUCTION INDONESIA JAKARTA INTERNATIONAL EXPO, INDONESIA

69

SEPTEMBER 2020 **8-10 SEPTEMBER 2020 KAZAKHSTAN INTERNATIONAL**

BUILDING & INTERIORS EXHIBITION ATAKENT EXHIBITION CENTER

9-11 SEPTEMBER 2020

SAIGON EXHIBITION & CONVENTION

16-18 SEPTEMBER 2020 ASEAN SUSTAINABLE ENERGY WEEK

BANGKOK INTERNATIONAL TRADE & EXHIBITION CENTER (BITEC)

16-18 SEPTEMBER 2020

Event Calendar

17-19 SEPTEMBER 2020 THE 7TH INTERNATIONAL PROCESSING **& PACKAGING EXHIBITION FOR** MYANMAR MYANMAR EXPO (ME) YANGON, MYANMAR

22-24 SEPTEMBER 2020 THE 5TH MALAYSIA OIL & GAS **SERVICES EXHIBITION AND CONFERENCE (MOGEC 2020)** KUALA LUMPUR CONVENTION CENTRE (KLCC)

22-25 SEPTEMBER 2020

INNO TRANS 2020

MESSE BERLIN GMBH EXPOCENTER CITY MESSEDAMM 22 D-14055 BERLIN

25-27 SEPTEMBER 2020 ELECTRICITY & ENERGY EXPO 2020

TATMADAW HALL, YANGON, MYANAMR

28 SEPT-1 OCT 2020 QATAR'S UNIQUE CONSTRUCTION ARENA DOHA EXHIBITION & CONVENTION CENTER (DECC)

OCTOBER 2020 6-8 OCTOBER 2020

INTERNATIONAL ENERGY WEEK 2020 BORNED CONVENTION CENTRE KUCHING, SARAWAK

8-10 OCTOBER 2020 PROPACK INDIA PRAGATI MAIDAN, NEW DELHI, INDIA

14-15 OCTOBER 2020 BIG DATA & AI WORLD SINGAPORE MARINA BAY SANDS

PACIFIC SINGAPORE EXPO

MYANMAR

70

21-23 OCTOBER 2020 KINTERNATIONAL CONSTRUCTION &

INFRASTRUCTURE TECHNOLOGY

EXHIBITION (MBAM ONEBUILD)

KUALA LUMPUR CONVENTION CENTRE, KUALA LUMPUR

19-24 OCTOBER 2020

FIATA WORLD CONGRESS 2020 BEXCO BUSAN, REPUBLIC OF KOREA

20-22 OCTOBER 2020 INDUSTRIAL TRANSFORMATION ASIA-

21-23 OCTOBER 2020

MTA MYANMAR

MYANMAR EXPO (ME), YANGON,

Event Calendar

NOVEMBER 2020 **3-6 NOVEMBER 2020 PTC ASIA 2020**

SNIEC - Shanghai New International Expo Centre

9-12 NOVEMBER 2020 ADIPEC

ABU DHABI NATIONAL EXHIBITION CENTER (ADNEC) ABU DHABI UNITED ARAB EMIRATES

10-13 NOVEMBER 2020 ITHE 26TH INTERNATIONAL MACHINE TOOLS, METALWORKING AND **AUTOMATION TECHNOLOGY EXHIBITION**

THE MALAYSIA INTERNATIONAL TRADE AND EXHIBITION CENTRE (MITEC)

CONSTUCTION SHOW DUBAI WORLD TRADE CENTRE

25-27 NOVEMBER 2020 INDO WATER, INDO WASTE, INDO **RENERGY, INDO POOLTECH AND INDONESIA INTERNATIONAL SMART CITY 2020 EXPO AND FORUM** INDONESIA CONVENTION EXHIBITION, BCD CITY, TANGERANG - INDONESIA

2-4 DECEMBER 2020 **THE BUILDINGS SHOW** METRO TORONTO CONVENTION CENTRE

23-26 NOVEMBER 2020 INTERNATIONAL BUILDING &

CHINA HOMELIFE & CHINA MACHINEX INDIA 2020 BOMBAY EXHIBITION CENTRE, NESCO COMPLEX, W.E. HIGHWAY, GOREGAON EAST, MUMBAI

DECEMBER 2020

7-9 DECEMBER 2020

SEATRADE MARITIME MIDDLE EAST 2020

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10-12 DECEMBER 2020





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