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## Climate Change: Fertiliser Could Be **Used to Power Ocean-Going Ships**

Honeywell launches First Autonomous **Building Sustainability Solution to Fight Rising Global Energy Consumption** 

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#### **Cover Story - Renewable Energy**



## **Climate Change: Fertiliser Could Be Used to Power Ocean-Going Ships**

Ocean-going ships could be powered by ammonia within the decade as the shipping industry takes to curb carbon emissions.

The chemical - the key ingredient of fertilisers - can be burned in ships' engines in place of polluting diesel.

The industry hopes ammonia will help it tackle climate change, because it burns without CO2 emissions.

The creation of the ammonia itself creates substantial CO2, but a report says technology can solve this problem.

The challenge is huge, because shipping produces around 2% of global carbon emissions – about the same as the whole German economy.

Making ammonia is also a major source of carbon. A report by the Royal Society says ammonia production currently creates 1.8% of global CO2 emissions – the most of any chemical industry.

But the authors of the report say new technology can create zero carbon ammonia. One way is by trapping the CO2 emissions created when ammonia is produced, and burying the CO2 in underground rocks.

Another way of making so-called "green" ammonia is to use renewable energy which doesn't create any CO2.

But the big question is whether enough clean energy will be available to create ammonia at scale in the coming decades.

#### These New Battery Technologies Could Be **The Future of Energy Storage**

Over the past decade, prices for solar panels and wind farms have reached all-time lows. As the saying goes though, the wind isn't always blowing and the sun isn't always shining. The question of how to "firm" renewables — that is, ensuring there's always enough saved energy no matter the time of day or weather



— is one of the biggest challenges in the industry. We need a good way to store energy for later. The go-to option right now is lithium ion batteries. But, though lithium ion is dropping in price, experts say it will remain too expensive for most grid-scale applications. Right now, lithium ion batteries just can't store more than four hours worth of energy at a price point that would make sense. Plus, they pose a fire risk and their ability to hold a charge fades over time. Companies are experimenting with a variety of different solutions, including flow batteries, thermal batteries, and gravity-based systems. If any of these player can crack the code to long-duration energy storage, renewables like wind and solar will finally be able to compete with fossil fuels.

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action	

#### **Cover Story - Renewable Energy**



#### Wind and Solar Plants Will Soon Be Cheaper Than Coal in All Big Markets Around World, Analysis Finds Report raises fresh doubt about viability of Australia's thermal coal export industry



Building ne existing coa viability of a While som finance th markets in the latest. Solar phot including a

Solar photovoltaics and wind energy were already cheaper than electricity from about 60% of coal stations, including about 70% of China's coal fleet and half of Australia's plants, it said. In Japan, where Australia sells nearly half its exported thermal coal, wind power was found to cost less than new coal plants and was expected to be cheaper than existing coal by 2028. Solar power in Japan was forecast to be a better option than new coal by 2023 and existing coal by 2026. The story was similar in China and South Korea, which each take about 15% of Australia's exported thermal coal. In China, wind was already cheaper than any coal power, and solar electricity was forecast to on average cost less than existing coal later this year. Renewable energy in South Korea was expected to be cheaper than existing coal within two years.

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## India 'To Achieve Third of 2022 Rooftop Solar Target by The End of 2020'

According to new research, India is predicted to add an additional 3GW of solar capacity this year

India will have deployed as much as 16GW of rooftop solar capacity by the end of 2020, a figure that makes up around a third of its 40GW target for 2022. That's according to new research conducted by JMK Research, which shows in 2019, the nation added 2.1GW to its capacity – it predicts another 2.5GW to 3GW of new rooftop solar capacity will be added by the end of this year, assuming growth is not significantly impacted by COVID-19.

The research further noted that one of the prime reasons for growth is increasing consumer awareness of the benefits of adopting cleaner technologies and cost savings.

Building new wind and solar plants will soon be cheaper in every major market across the globe than running existing coal-fired power stations, according to a new report that raises fresh doubt about the medium-term viability of Australia's \$26bn thermal coal export industry.

While some countries are moving faster than others, the analysis by the Carbon Tracker Initiative, a climate finance thinktank, found renewable power was a cheaper option than building new coal plants in all large markets including Australia, and was expected to cost less than electricity from existing coal plants by 2030 at

#### **Cover Story - Renewable Energy**

### World's First Offshore Solar Array Rides Out Storm Ciara Off Netherlands

Zon-op-Zee pilot doubled in size as developer tests technology to supply 'half of Dutch demand'



A pioneering floating PV project installed in the Dutch North Sea late last year has ridden out its first months in open ocean, including the Ciara bomb cyclone, in a key test for a technology that has been calculated capable of one day supplying half of the Netherlands total energy demand. Developer Oceans of Energy report the Zon-op-Zee (Solar-at-Sea) project, the world's first offshore solar array, "remained stable and intact in all

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conditions" as it weathered winds of up to 62 knots and waves over five metres high. The system, which has been designed to withstand the extremes of a North Sea environment, was doubled in size in January, from from 8.5kW to 17kW, with plans for the array to be expanded "further" in 2020, while continuing power production. Zon-op-Zee was launched in 2017 by Oceans of Energy along with compatriot companies and research organisations TNO, MARIN and ONE-Dyas, with backing from Dutch enterprise agency Rijksdienst voor Ondernemend Nederland under the country's Ministry of Economic Affairs and Climate's socalled 'Topsector Energie' scheme. Though high-wave solar remains an emerging technology, in-land arrays are being seen as an increasingly attractive option for large-scale PV deployment on reservoirs and alongside hydropower facilities, especially where land is limited.

Oceans of Energy said it would "start publishing more operational results soon" for the potentially market-changing offshore energy concept. "Clean energy generation without using land *is needed, now and in the future,"* said Oceans of Energy CEO Allard van Hoeken, when the Zon-op-Zee pilot was switched on in December. "Our next aim is to expand to 1MW. The modular system is designed such that we can grow the installations towards 100MW and more. By having the first offshore solar system operational in one of the roughest seas in the world, we expect to create a large positive impact worldwide." Oceans of Energy calculate that offshore solar can supply "half of the Dutch total energy demand, while using less than 5% of

the Dutch North Sea", sea-space that the developer underlines can be found "within existing and planned offshore wind farms".

"Offshore solar offers great advantages when using the same sea area as offshore wind farms. When solar modules float in the space between the turbine foundations, five times more energy is generated at the same *area of sea*," said Van Hoeken.



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#### **GE Led Consortium to Build Two High-Efficiency, Lower Emission HA Combined Cycle Power Units at Dolna Odra Power Plant in Poland**

GE announced the order of two high-efficiency and regional environmental standards. With the lower emission power units to be constructed through commissioning of the new units in 2023, PGE's plant is expected to reduce CO2 emissions by consortium at the Polska Grupa Energetyczna Górnictwo i Energetyka Konwencjonalna's (PGE) Dolna about 2-3 million tonnes per year. Odra Power Plant in the Western Pomerania region of "We remain focused on serving our customers" Poland. The order will include two GE 9HA.01 gas during this challenging time, and we are very turbines, along with two STF-D650 steam turbines, two proud to build on more than 70 years of generators and two heat recovery steam generators delivering energy solutions to Poland and (HRSG)\* providing up to 1.4 gigawatt (GW) of power at support PGE as they move forward with energy Dolna Odra—the equivalent needed to power systems that best meet their needs and targets approximately 1 million Polish households. The order for energy security, costs and sustainability," said will further stabilize the regional grid, which heavily Michael Rechsteiner, Vice President Europe, GE utilizes variable onshore and offshore wind farms Gas Power. "This project will combine GE's currently. turnkey expertise with leading combined-cycle power plant technology to provide more flexible, sustainable and reliable electricity to the region

"PGE's investment in Dolna Odra Power Plant based on gas fuel is our contribution to preparing the Polish power system for further development of renewable energy, in particular wind energy," said Wojciech Dąbrowski, President of the Management Board of PGE Polska Grupa Energetyczna.

Dąbrowski, President of the Management Board of PGE Polska Grupa Energetyczna. PGE's investment in modern gas-fired power units will provide stability for the long-term operation of the current coal-fired power plant. With this project, PGE will transform Dolna Odra into a power plant producing electricity with lower emissions to meet

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for years to come."

A contract signing for the project was held on January 30, 2020 in the presence of Poland President Andrzej Duda, the US Ambassador to Poland Georgette Mosbacher, the Minister of State Assets Jacek Sasin, the Minister for Climate Michał Kurtyka, and local parliamentarians, representatives of local authorities, and power plant employees. President Andrzej Duda said in his speech: "*I am very pleased that we are launching here this much awaited and much needed investment project which is another great step in the modernization of the Polish power generation sector.*"



The GE- led consortium includes the Polish company Polimex Mostostal, which has been awarded the contract for the engineering, procurement, and construction (EPC) of the new units, together with full underground infrastructure. GE factories in Elblag and Wroclaw in Poland will also produce equipment for the project. The order also includes an additional 12-year service contract with GE.



### HPE and Industry Partner Simplify 5G Rollout with Open, Vendor-Neutral Software to Manage IT Infrastructure Deployments

The Open Distributed Infrastructure Management initiative eliminates multi-vendor hardware complexity, simplifying end-to-end automation and accelerating technology evolution

Hewlett Packard Enterprise (HPE) announced the Open Distributed Infrastructure Management initiative, a new open source program that will simplify the management of large-scale geographically distributed physical infrastructure deployments. In addition, HPE will introduce an enterprise offering, the HPE Open Distributed Infrastructure Management Resource Aggregator that is aligned with the initiative.

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Open Distributed Infrastructure Management helps resolve the complexity that telcos face in rolling out 5G networks across thousands of sites equipped with IT infrastructure from multiple vendors and different generations of technology. This new initiative underlines HPE's continued leadership in open 5G technologies and commitment to accelerating industry alignment through open source innovation.

Working with partners, HPE's 5G portfolio promises to unleash the potential of 5G at the network core, at the edge, and in the enterprise. This initiative is being launched in collaboration with Intel and with support from key industry leaders including AMI, Apstra, Red Hat, Tech Mahindra and World Wide Technology. HPE alongside Intel plans to initiate an open source project under the Linux Foundation to further develop the initiative in conjunction with ecosystem partners to enable end-to-end automated management of networks. HPE is committed to developing and fostering the ecosystem and supporting customers by contributing infrastructure manageability code to the open source community.

5G represents a huge shift in the way mobile networks are built. Previous generation networks were largely built on proprietary systems, but 5G standards have been designed to utilize open software platforms operating on commercial off-the-shelf servers. The trend towards open distributed technologies like virtualized radio access networks (vRAN), multi-access edge computing (MEC) and cloud-native network functions will require the deployment of industry standard compute, storage and networking infrastructure from multiple vendors across potentially thousands of geographically distributed locations. Today, most data center physical infrastructure management solutions do not scale geographically or support multi-vendor deployments, resulting in operational inefficiencies and inhibiting technology innovation. The Open Distributed Infrastructure Management initiative simplifies network management and drives significant operational and financial benefits. It supports large scale, geographically distributed networks and facilitates interaction between disparate multi-vendor infrastructure resources.

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The HPE Open Distributed Infrastructure Management Resource Aggregator models infrastructure elements in every site to simplify infrastructure automation across resources, vendors and geographical locations.

HPE will launch this commercially supported version of the open source infrastructure manageability function along with associated infrastructure-specific plug-in components in Q2 2020. The HPE solution will leverage industry-defined specifications, including DMTF Redfish® interfaces, to enable a vendor-neutral approach for managing configuration and operations of compute, storage and networking infrastructure resources across multiple vendors at scale.

"5G and Edge Computing industry initiatives will require largescale and geographically distributed multi-vendor infrastructure deployments that can only be cost effectively realized with *infrastructure-as-code automation*," said Claus Pedersen, VP, Telco Infrastructure Solutions at HPE. "*The Open Distributed* Infrastructure Management initiative tackles network scalability challenges and the costs associated with vendor lock-in by enabling multi-vendor infrastructure deployments, the centralized deployment of standards-based fault and configuration management, and the aggregation of resourcespecific status information."

"Infrastructure management and orchestration can benefit from common open source building blocks including APIs and data *models*," said Dan Rodriguez, Corporate VP and GM of Intel's Network Platforms Group. "The ODIM initiative builds upon the work we have done with HPE on top of Redfish and will

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ultimately help Communications Service *Providers and Enterprises discover and* unleash the full potential of the underlying technologies in their distributed deployments."

"This initiative proposes new DMTF Redfish® extensions that will provide a path forward for the creation of powerful new softwaredefined data center paradigms that enable end-to-end network automation, said IDC GVP, Ashish Nadkarni. "*This open standards*based initiative offers organizations a way to converge multi-vendor hardware resources under a unified infrastructure management solution, promising to accelerate both 5G rollout and innovation across the industry."

HPE telco core and edge infrastructure blueprints. Delivered as-a-service with HPE GreenLake, these infrastructure offerings provide telcos with a fast ramp for rolling out 5G service across multiple sites.

With key components of the Open Distributed Infrastructure Management initiative planned for open source release, HPE and key industry leaders are creating an ecosystem that will accelerate technology innovation beyond the telco industry. Telco infrastructure today is unique in terms of its distribution and scale. Deployment of industrial IoT and new levels of automation and distributed



The HPE Open Distributed Infrastructure Management Resource Aggregator offers key innovations that will benefit other telco solutions including the recently announced

data-analysis will over time make the Open Distributed Infrastructure Management initiative relevant for solving similar problems in many other industries and application domains.

As a founding member of the DMTF Redfish<sup>®</sup> open source initiative, HPE is well placed to provide leadership in this space. A recent AvidThink report concluded that there is a need for a standards-based approach to large scale distributed physical infrastructure management. This applies to telco networks, but is also very relevant across many other verticals, including large enterprises with geographically distributed datacenters.

### ADLINK Grows French Business with New Office Location

Focus on research of future-oriented technologies for customers

ADLINK Technology, a leader in edge computing, expands its presence in France and continues its European growth. The office will be focusing on developing innovative solutions in such areas as edge and fog computing and robotics platforms.

ADLINK is working closely with customers in the IoT, medical, aerospace and defense, telecommunications and other industries to develop relevant technologies as well as powering their IoT applications and networks. The new office location underlines ADLINK's commitment to growing the European market and accelerating the company's research into future technologies. The French research lab will focus on developing joint software and hardware solutions – and is the lead software research facility for ADLINK globally. ADLINK is committed to be the catalyst for an

industry empowered by artificial intelligence (AI). To achieve this, it will continue to invest in research & amp; amp; development as well as hiring the best talent in relevant segments.

ADLINK continues to support its customers with standards-based technologies to ensure their broad adoption and compatibility. This also accelerates time-to-market and lowers costs. The 15 people strong ADLINK office will focus on research & amp; development on enabling infrastructure for edge and fog computing, robotics as well as consumer and industrial IoT in general. The Paris office also provides localized project management, technical support and sales activities. ADLINK will also be able to support customers in a number of languages by members based in the French office. Apart from French and English, Spanish, Italian and Arabic are being supported, emphasizing ADLINK's global footprint and cultural diversity. "The need for a bigger office location in France underlines the success of our constant European expansion. The office will continue to be our foremost research center in Europe. ADLINK will be investing in developing innovative software *solutions,*" said Jim Liu, Chief Executive Officer, ADLINK. "ADLINK is one of the leading companies" globally on technologies such as AI on edge – technologies, which will become ubiquitous in the future and which will decide the economic success on businesses. With the bigger office in France, we will be even closer to our European customers and can ensure premium support for them."

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*"France has a long tradition of innovation and some of the top research institutes in the world. ADLINK has decided to establish and expand its R&D on the Plateau de Saclay as this innovation pole is at the forefront of research and innovation," said Angelo Corsaro, PhD, Chief Technology Officer, ADLINK. "In our laboratories on the Plateau de Saclay, in collaboration with our R&D partners and Grandes Écoles we are already making breakthrough innovations in Fog and Edge computing and look forward to expanding our R&D activities as well as collaborations on Robotics and AI."* 

*"France is a very attractive market for ADLINK. We plan on growing our team and hiring the best talents for the booming Edge AI business in France and Europe,"* said Roy Wan, Managing Direcor EMEA, ADLINK. *"We will continue to invest in the market and continuing to build our offering."* 



#### HARTING Systems Showcasing Smart **SCO Solution at The "EuroShop"**

"EuroShop" is the world's largest trade fair for retailing investment products and systems, and will be taking place from February 16 through to 20, 2020 in Dusseldorf. HARTING Systems, a subsidiary of the HARTING Technology Group will be presenting innovative SCO solutions (self- checkout). The SCO area in grocery retailing is where customers scan their products themselves. At this year's trade fair HARTING Systems will be showcasing the HARTING cash desk product range featuring extensively upgraded visual elements. The external design has been consistently updated and impresses with linen-grained stainless steel and polygonal corner plates. The new counter cash desk in combination with an extended tobacco infopoint will also be featuring prominently. In addition to the cash desk from the SmokyThek CS it features wooden paneling integrating the TowerlineShop automatic vending machine. This is especially interesting for retail customers that wish to implement a service point or an information desk, combining personal customer interaction with automated support functionalities.



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Worldwide, the guidelines and legislation concerning tobacco products are being increasingly tightened. HARTING has acquired in-depth experience in numerous countries and over many years and provides automated solutions for virtually all dispensing regulations in the individual countries. This is particularly relevant in connection with "plain package" issues, where all the brand typical attributes are replaced by uniform design. "The sales process is difficult when all the packages look more or less the same, as Peter Weichert, managing director of HARTING Systems commented. The vending machines offer alphabetic listing in connection with the company's logo – which helps customers locating "their favoured brand."

The use of automatic vending machines is also ideal in countries with so-called display bans, meaning that it is not permitted to present tobacco products openly and publically. In such scenarios, automatic vending machines can help minimize such sales disadvantages.

lost entirely.



HARTING announced its cooperation with the Norwegian company StrongPoint in February 2019. Over the past months the two companies put their heads together and developed a number of modern self-checkout systems that will be highlighted at the Dusseldorf event.

"The new and innovative systems combine efficiency and security with value creating retailing to optimize the retail space and to ensure even better customer experiences",

says Jacob Tveraabak, CEO of StrongPoint.

The conventional cash desk area that accounts for some 1% of the retail floor space generates around 4 to 7% of sales by impulse purchases and tobacco products. In markets without SCO product offerings these sales are

Powered by the bundled competence of HARTING, as specialist for the storage and dispensing of theft-prone products, and StrongPoint, as expert for self-checkout solutions the SCO system with an integrated vending machine for tobacco products was developed. As Peter Weichert went on to emphasize: "Our new solution is probably the most efficient of its kind in the entire selfcheckout market."

## **AAEON AI@ Edge Solutions on Display at Embedded World 2020**



AAEON is attending Embedded World 2020 and will showcase a wide range of real-life AI@Edge demos and applications. AAEON, a leading developer of embedded AI and Edge Computing solutions, will be attending Embedded World 2020 in Nuremburg. The expo lasts from February 25th thru the 27th. AAEON will have a range of products on display as well as several live demos of real-world AI and Edge Computing applications developed with software partners. Visitors can see AAEON's display at Hall 1 Booth 350 of the convention center. Visitors who stop by the AAEON booth will have an opportunity to view a wide range of AAEON embedded platforms designed to power Al computing at the Edge. Along with static displays, AAEON will have several live demos set up to

6841M.

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showcase the broad range of Al@Edge solutions from the flexible, compact UP Board family to the high-performance BOXER-

The UP series boards will be on full display at the AAEON booth. Visitors will be able to see applications such as Factory Access Control turnstile utilizing facial recognition powered by the UP Board. The UP Squared System will be demoing Personal Protective Equipment check, a system which can visually identify if employees are wearing the proper safety gear. The UP Core with AI Core X, featuring Intel® Movidius® Myraid<sup>™</sup> X, will be performing visual quality control.

Visitors can also see several UP based Edge network solutions demos. Connecting Industrial PLCs to Cloud servers, the UPX Edge and AIOT-IGWS01 work to provide remote access to industrial edge networks. The UP Board based AIOT-IP6801 rugged LoRa gateway will also be on display.

AAEON will also demo several performance intensive solutions, including PCB Optical Inspection with the BOXER-6841M and Nvidia RTX-2060, as well as a Smart Surveillance application powered by the FWS-8600 with

HERO Gateway.



#### Second Generation Intel® Xeon® Scalable Processors featuring Intel<sup>®</sup> Deep Learning Boost. Other demos will include a range of AAEON products including the RISC powered ROXER-3210AI, BOXER-8120AI and BOXER-8170AI with Nvidia Jetson TX2, GENE-APL7 system with Kneron NPU, and the HERO Device Management Center (DMC) with BOXER-6405



#### Fraunhofer Connects Energy Production and Storage

The good news is that renewables account for energy sectors' conventional efforts to optimize energy usage will no longer be nearly 50 percent of electricity generated in enough. Instead, it will be necessary to Germany. The bad news is that they lack the link energy sectors such as electrical flexibility to adapt to the day's fluctuating power, natural gas, district heating and electricity demand. They only furnish electrical *transport,*" says Dr. Bernhard Klaassen, energy when the wind blows or the sun shines. who is supporting the project at In a perfect world, engineers would find a way Fraunhofer SCAI. "*For example, it is* to store the vast amounts of energy generated much more cost-effective and efficient by renewables and coordinate power to shift loads to balance out power production and storage. And that is exactly generation and consumption, use what ES-FLEX-INFRA, a joint project led by industrial waste heat and store thermal energy than to store energy in the form the Fraunhofer Institute for Algorithms and of electricity." Scientific Computing SCAI, aims to do.

Funded by the state of North Rhine-Westphalia, the ES-FLEX-INFRA project's express objective is to couple energy sectors in a bid to make their infrastructure more flexible. The software developed to this end aims to enable power utilities to analyze and shift loads, and integrate storage facilities into the urban infrastructure. The TH Köln University of Applied Sciences, Werusys GmbH & amp; Co. KG and Rheinische NETZGesellschaft mbH have joined Fraunhofer SCAI in this venture.

"What happens when demand for electricity is high but the sun is not shining? How do we use the surplus energy when the situation is reversed? If the share of renewable energies continues to grow, the individual



Once the various energy sectors are properly connected, this sector coupling can serve to regulate production and storage also of heat. An inevitable sidetype of cross-energy management would be a perfect combination of electricity and heat generation paired The researchers ran virtual trials in simulations to but they also investigated exemplary selected parts

effect of generating electrical power, heat can be so much more than just a waste product. At its best, this with the optimum storage, distribution and use of this energy. This would make renewables-based power supply far more reliable and put it on the path to mainstream acceptance as a viable, long-term solution. develop ES-FLEX-INFRA as a software-supported study, from the RNG grid under varying load conditions. Their assessment addressed the electrical power, gas and heating sectors.

- more flexible include:
- usually go unused

 Putting power-to-gas solutions into practice to generate methane with surplus electricity while tapping power-to-gas process heat for use in cogeneration systems

 Sourcing and feeding methane into gas grids and storage facilities, and using it in cogeneration systems • Funneling surplus electricity to electric vehicles or, via power-to-gas, to vehicles running on natural gas

Some of the options that could make the infrastructure

• Using heat pumps, accumulators or grids to take advantage of waste heat and other heat flows that





### Siemens Ranks No. 1 Vendor for Managing Distributed Energy

#### **Resources**

Market research firm Navigant Research has recently ranked Siemens Smart Infrastructure as a leading provider of distributed energy resources management systems (DERMS). The "Navigant Research Leaderboard: DERMS Vendors" report assessed the strategy and execution of 16 vendors for distributed energy resources and grid management.

The energy landscape is changing, transforming from a central system with only a few power plants to a more decentralized system with bidirectional

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power flows from multiple energy providers. Within this scenario, consumers often turn into prosumers of energy. At the same time, the growing share of electrical power generated from renewable energy sources, an increase in electric vehicles and their chargers, as well as the prevalence of battery storage systems present new opportunities and challenges for power grid operators and utilities. According to Navigant Research, a DERMS is a control system that enables utilities to dispatch and control distributed energy resources, minimize power disruptions and manage a grid proactively. Trends such as changes in policy and emerging new markets and business models for utilities are impacting the market for distributed energy resources. "Siemens offers a comprehensive solution for grid-to-edge customer management," said Roberto Rodriguez Labastida, Senior Research Analyst at Navigant Research. According to the report, the company scored 100 in the Product Portfolio and Ecosystem criteria in terms of Execution.

"There is a significant change in the power sector. Energy management systems need to allow the broad integration of renewable energy and assets such as battery storage or ecar charging stations, while maintaining grid stability. We are thrilled that Navigant Research acknowledges our standing in the market with our offering for managing distributed energy

#### *resources, as energy systems become more complex,*" said Sabine Erlinghagen, CEO Digital Grid at Siemens Smart Infrastructure.

Siemens' Integrated DERMS Solution is aimed at helping utilities visualize, manage and economically optimize distributed energy resources such as solar photovoltaic power and gridscale battery storage in the power grid. Siemens' offering encompasses integrated distributed energy resources planning, impact analysis, asset enrollment and data management, network optimization, dispatch, settlements and analytics.







#### Cat-HTR Technology Developed by A German Scientist Regains Resources from Plastic Waste in 20 Minutes



Igus announced it has invested more than \$5 million in a commercial plant that will recycle plastic waste within 20 minutes. Using Cat-HTR (Catalytic Hydrothermal Reactor) technology, the process will enable oil obtained from the recycling to make new polymer products.

Every year, eight million metric tons of plastic are deposited in the world's oceans. These lost resources are worth around \$80 billion. Most plastic, however, has been incinerated and only 14 percent recycled. Plastic recycling is an important issue for igus. In the case of classic recycling – shredding and reusing plastic – igus took a bold step forward last October by launching its new chaingeprogram. The company takes back energy chains when the service life of a machine is over, irrespective of their manufacturer. It then regranulates the plastic and processes it again. "*With the igus chainge programme, we have started to recycle the plastic of old products,*" said Frank Blase, CEO of igus GmbH.

#### Back to oil with water, high temperatures and pressure

However, mixed waste remains worldwide and in the case of non-technical plastics, in quantities 100 to 1000 times greater than technical plastics. "*Chemical recycling offers new solutions in this regard*," Blase said. "*In the middle of last year, I read an article about Catalytic Hydrothermal Reactor technology in the FAZ. The next day, I contacted the German inventor Professor Thomas Maschmeyer in Sydney.*"

Seven months later, after intensive research, igus now invests four million British pounds (\$5.1 million) in Mura Technology Limited and the construction of the first Cat-HTR plant. The patented chemical Catalytic Hydrothermal Reactor (abbreviated: Cat-HTR) technology was developed in 2007 and tested in a pilot plant in Australia for 10 years. With Cat-HTR technology, plastic waste that was previously impossible to recycle can be converted back into oil within 20 minutes. The process is more efficient than the extraction of fossil fuels from the ground. Only water, high temperatures and pressure are used to separate the cells and join them together. One plant alone can process 20,000 metric tons of plastic per year and reduce CO2 output by 28,180 metric tons. This corresponds to the annual consumption of 5,983 cars or the annual energy needs of 4,914 households.

#### Plastic recycling Cat-HTR-plant

The first commercial Cat-HTR-plant is currently being planned in Wilton, Great Britain, and construction is to start this year. Waste companies supply the waste plastic to meet their recycling goals. Oil is then obtained that can be sold as a replacement for virgin fossil oil. A total of four catalytic hydrothermal reactors are to be built in Wilton and will be able to process more than 80,000 metric tons of plastic waste every year.





The latest thought leaders to join the platform are from IBM and the University of St. Gallen. The new course, Enterprise Architecture in the Era of the Intelligent Enterprise, offers insights into how structuring and planning an enterprise architecture can support a company's move to an intelligent enterprise.

#### What is an intelligent enterprise?

The Intelligent Enterprise is a strategy for enabling the rapid transformation of data into insight – feeding process automation, innovation, and optimal experiences. The Intelligent Enterprise leverages emerging technologies such as artificial intelligence (AI), machine learning, the Internet of Things (IoT), and analytics to enable the workforce to focus on higher-value outcomes.

What is enterprise architecture and how does it support the Intelligent Enterprise? When organizations standardize and organize IT infrastructure to align with their business goals, the result is called enterprise architecture. The transformation from a 'traditional' to an intelligent enterprise requires a scalable process where enterprise architecture and enterprise architecture management considerably reduce complexity and make it more manageable to achieve an optimized business outcome.

#### What will I gain from joining this course?

You'll get an introduction to the concept of the Intelligent Enterprise and its architecture – the business platform, tools, and methodologies to manage its complexity and transformation. We'll discuss the value of data and the architecture of business platforms, how to simplify them and redesign processes around AI, and how to enable people, the most valuable resource in your enterprise. We'll also show you how to influence leaders using enterprise architecture management. The content is aimed at enterprise architects, business and technology leaders, and experts interested in the transformation toward an intelligent enterprise.

#### The instructors are from IBM and the University of St. Gallen. What's the reason for bringing these different backgrounds to the course?

The intention is to provide an understanding of the new megatrends – intelligent enterprise and the enterprise architecture from an academic and a practical point of view. We share the experience of a leading university in the enterprise architecture and enterprise architecture management space and combine it with IBM's deep industry experience in cognitive enterprise, like SAP's ideas on the Intelligent Enterprise. We also present the new business and IT paradigms and discuss topics like transformation, required simplification, and people engagement to achieve the best possible business value for your enterprise.

#### **New openSAP Course: Enterprise Architecture in the** Era of the Intelligent Enterprise

The thought leader channel on the openSAP platform enables thought leaders from businesses and universities to share their research and ideas with a global audience and help learners become familiar with the resources for navigating through digital transformation.



#### **STOBER Develops New Generation** of Planetary Gear Units

The new generation of servo planetary gear units from STÖBER Antriebstechnik offers drives that are the most compact on the market in their power range and with their diversity of combinations and options. What's more, any motor series can be directly attached in any available size. This variability allows STOBER to create the right drive solution for any application. In contrast to the prior generation, STOBER also equips the new planetary geared motors with an electronic nameplate, which makes commissioning controllers and drive controllers much faster.

STOBER has developed the third generation of servo geared motors, which are the most compact drive solutions on the market with their level of versatility. To achieve this, the lengths of the new gear units were significantly reduced.

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#### All STOBER motors, such as the EZ series or sensorless Lean motors, can be directly attached without an adapter, in any desired size.

Thanks to this compactness, the user benefits from a smaller installation space, lower weight, greater torque and a resulting power density that is increased by up to 65%. The mass moment of inertia is lower because the motor adapter is no longer needed, which allows the full dynamics of the drive to be used. This is a real advantage for the customer, particularly noticeable with small and medium sizes in shorter cycle times.

#### Flexibility from the Motor Attachment to the Bearing System

The most impressive feature of the new generation of planetary gear units is its enormous variability. This means that not only are the gear units able to be combined with different STOBER motors via direct attachment, they can also be attached to all third-party motors in any size using variable adapters. The drive specialist offers a one-of-a-kind interface technology for this purpose. STOBER motor adapters are available with different couplings as well as in the ServoStop variant with an integrated brake. The adapters can also be combined with standard or reduced-play gear units. In particular, the large design of the STOBER adapter with an extra-large motor plate makes it possible to connect the most compact STOBER gear units with motors of very large sizes—a truly unique selling point. Depending on the application, another advantage compared to the competition is that the right bearing can be selected, whether deep-groove ball, cylindrical roller or angular contact bearing. These low-friction bearings enable generally higher speeds. Thanks to this enormous variety, engineers have all the options in the design phase to put together exactly the right drive solution for any application. A smaller motor to optimize efficiency? A smaller drive controller might go well with that—which also lowers costs.



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#### **Development Goals and Myths of Battery Technology: Future Battery Systems – A Journey from Li-Ion to Myth-Busting Technologies**



The requirements are complex, and vary depending on the application. This is because 48-volt mild hybrids, plug-in hybrids, and purely electric drivetrains require different development focuses. In order to maintain an overview of this hotly debated topic, Andreas Hintennach gave media representatives an insight into the technical principles as well as Daimler development and research goals during a digital roundtable.

# is Mercedes-Benz tackling this topic?

Battery technology is a key element of electric mobility and not an off-the-shelf product, but an integral part of the vehicle architecture. Therefore we cover all stages from fundamental research to production maturity. Our activities include the continuous optimization of the current generation of lithium-ion battery systems, the further development of cells available on the world market and research of next-generation battery systems. But of course, there's more when it comes to batteries for electric vehicles. We are also working on the battery management system, which is a complex computer that you can always improve on. Thermal management is an important topic as well. It is responsible for the life and also the performance of the battery pack. You have to really understand the mechanism of technologies in order to be able to make the right decisions.

## Airbus to Produce 3D-Printed Hospital Visors in Fight Against Covid-19

The majority of Airbus sites in Spain have joined forces to produce 3D printed visor frames, providing healthcare personnel with individual protection equipment in the fight against Covid-19.

More than twenty 3D printers are working day and night. Hundreds of visors have already been produced and dispatched to hospitals close to the Airbus facilities in Spain. Airbus leverages a patented design to manufacture the visor frames, using PLA plastics. In addition, Airbus in Germany also joined the project. The Airbus Protospace Germany and the Airbus Composite Technology Centre (CTC) in Stade, together with the 3D-printing network named "Mobility goes Additive," are now supporting this project in Spain, also coordinating the collection and transport of visors to the Madrid region.

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The battery system is perhaps the most critical component of battery electric vehicles. In addition to obtaining the highest possible energy density, aspects such as safety, weight and sustainability play crucial roles. Prof. Dr. Dr. Andreas Hintennach is head of battery cell research at Daimler. In addition to explaining the fundamentals of current lithium-ion cells, he outlines which future technologies actually have a chance.

The battery system is a key element of electric mobility. Every day at Daimler, experts from various disciplines deal with all aspects of this storage technology, from basic research to production maturity.

Professor Hintennach, you are working on the research and development of batteries – the current "hot" topic in terms of e-mobility. How

#### DENSO Invests in Certhon Group, Greenhouse Provider Based in The Netherlands

DENSO Corporation (DENSO), the second largest advanced automotive technology supplier in the world, has announce its investment in Certhon Group (Certhon), operating main in Europe and the United States, to expand horticulture business in the global market. DENSO and Certhon will collaborate to develop and provide greenhouse solutions. While food demand increases as the global population continues to grow, the number of the agricultural population is decreasing due to demographic aging, unstable wages, and strict work environment. Environmental issues caused by climate change and abnormal weather patterns have led to unstable agricultur production. To tackle these global food-related issues, it is necessary to establish a stable and sustainable agricultural production system by saving labor and reducing heavy work, and by creating a cultivation environment that is not affected by climate.

Certhon whom DENSO has invested in is a Dutch company that sells large-scale greenhouse solutions using world-clas advanced technology to more than 20 countries, aiming to maximize the profit of growers.



In the future, DENSO will contribute to sustainable agricultural production through industrialization, and will provide new value to the agri-food sector by establishing an integrated food value chain business.

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	Through this capital alliance, and
	combined with Certhon's horticulture
A	business knowledge, DENSO will develop
	next-generation greenhouse
	technologies, such as fully automated
	indoor farming, and sell greenhouse
	package solutions tailored to the diverse
ed	needs of countries across the world.
ly	DENSO Group's Long-term Policy 2030
	launched in 2017 has identified non-
	automotive business as one of its four
	focus areas and has defined agriculture
	as a key pillar under the non-automotive
	field. Until now, DENSO has contributed
	to the improvement of productivity in the
	agricultural field and the stabilization of
	cultivation environments through climate
al	control technologies. As part of that,
	AgriD, Inc., established in 2018 with Asai
	Nursery, Inc., has built one of the largest
	greenhouses in Japan to realize
	greenhouse operations 24/7 through
	cooperation between farmers and robots
/	to reduce the amount of work. Moreover,
SS	DENSO has started the demonstration of
1	the automatic harvesting robot "FARO"
	developed by DENSO.

### ABB to Open Distribution Center in Phoenix Creating 100 New Jobs



New center brings the company closer to western U.S. distributors, contractors, industrial customers, and retailers, enabling faster service and delivery times for entire range of electrical products, including packaged goods and high-end, custom fabrication. ABB today signed a lease on a 400,000 square foot building in Phoenix, Arizona, that will serve as the West Coast Distribution Center for the company's Electrification Installation Products business (formerly known as Thomas & amp; Betts).

More than 2,000 sales products from across Installation Products' entire portfolio will be stocked at this new Distribution Center. ABB Installation Products is the leading manufacturer of marquee products needed in the electrification ecosystem, including key brands such as T&B Liquidtight Fittings, Ty-Rap, Elastimold and Blackburn/Color Keyed products.

#### **Cummins and DuPont Partner to Supply Critical Material for N95 Respirator Masks**



The first mask prototypes using Cummins' donated media were assembled by University of Minnesota teams in March as part of an initiative to provide masks to M Health Fairview and other Minneapolis-based healthcare systems. As the COVID-19 outbreak escalated, the University of Minnesota realized their supply of N95 masks to protect healthcare workers would potentially run out in a matter of weeks. To address this challenge, a team of designers, engineers, chemists, surgeons, anesthesiologist and apparel and clothing experts from the University of Minnesota's Institute for Engineering in Medicine; Medical School; College of Design; College of Science and Engineering; and Center for Filtration Research Consortium (CFR) came together to address this projected shortage of critical personal protective equipment.

The first masks featuring the filter technology are being used as part of a project to supply masks to Minnesota's M Health Fairview network As the COVID-19 pandemic spreads across the globe, Cummins Inc. (NYSE: CMI) and DuPont (NYSE: DD) are helping address the nation's shortage of N95 respirator masks. Cummins' NanoNet® and NanoForce® Media technology, which uses DuPont's Hybrid Membrane Technology (HMT), can typically be found in air, fuel and lube filtration products used in heavy-duty diesel engines to prevent long-term engine wear, but also can be used in the N95 respirator masks worn by healthcare professionals to filter harmful airborne particles that can spread COVID-19. The need for N95 masks has skyrocketed in recent weeks in response to the COVID-19 pandemic. Many of the world's

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leading mask manufacturers are in need of the critical materials to assemble the mask and are struggling to meet demand.

"Cummins is re-evaluating our supply base and manufacturing capabilities to identify how we can support our healthcare professionals who rely on critical personal protective equipment to *do their jobs*," said Amy Davis, Vice President of Cummins Filtration. "Our NanoNet® Media can fill a key supply void and help address the mask shortage facing the United States and other countries around the world."

"The first thing we recognized from our experts" *in the Center for Filtration Research, who work* directly with Cummins, is that not all filtration materials are created equal and that the *Cummins material is an excellent alternative,"* said Jakub Tolar, Campus Health Officer and Medical School Dean at the University of Minnesota. "We are tremendously grateful for the generous donation from Cummins of their filtration materials toward our mask effort. Since the arrival of the filtration media, we have been able to make rapid progress, and we now believe we have several viable mask options, including both a disposable and re-usable option. These designs show real promise in keeping our healthcare workers safe should standard medical supplies of N95 masks no *longer be available," continued Tolar.* 



## **ABB Brings Fuel Cell Technology A Step Closer to Powering Large Ships**

ABB signs Memorandum of Understanding (MOU) with Hydrogène de France to jointly manufacture megawatt-scale fuel cell systems capable of powering ocean-going vessels



"With the ever-increasing demand for solutions that enable, responsible shipping, we are confident that fuel cells will play an important role in helping the marine industry meet CO2 reduction targets," said Juha Koskela, Managing Director, ABB Marine & Ports. "Signing the MOU with HDF brings us a step closer to making this technology available for powering ocean-going vessels."

With shipping responsible for about 2.5 percent of the world's total greenhouse gas emissions, there is an increased pressure for the maritime industry to transition to more sustainable power sources. The International Maritime Organization, a United Nations agency responsible for regulating shipping, has set a global target to cut annual emissions by at least 50 percent by 2050 from 2008 levels. Among alternative emission-free technologies, ABB is already well advanced in collaborative development of fuel cell systems for ships. Fuel cells are widely considered as one of the most promising solutions for reducing harmful pollutants. Already today, this zero-emission technology is capable of powering ships sailing short distances, as well as supporting auxiliary energy requirements of larger vessels. ABB's eco-efficiency portfolio, which enables sustainable smart cities, industries and transport systems to mitigate climate change and conserve nonrenewable resources, accounted for 57 percent of total revenues in 2019. The company is on track to reach 60 percent of revenues by the end of 2020.

The MOU between ABB and hydrogen technologies specialist Hydrogène de France (HDF) envisages close collaboration on the assembly and production of the fuel cell power plant for marine applications.

Building on an existing collaboration announced on June 27, 2018 with Ballard Power Systems, the leading global provider of proton exchange membrane (PEM) fuel cell solutions, ABB and HDF intend to optimize fuel cell manufacturing capabilities to produce a megawatt-scale power plant for marine vessels. The new system will be based on the megawatt-scale fuel cell power plant jointly developed by ABB and Ballard, and will be manufactured at HDF's new facility in Bordeaux, France. Fuel cells turn the chemical energy from hydrogen into electricity through an electrochemical reaction. With the use of renewables to produce the hydrogen, the entire energy chain can be clean.

"HDF is very excited to cooperate with ABB to assemble and produce megawatt-scale fuel cell systems for the marine market based on Ballard technology," said Damien Havard, CEO of HDF.



#### SAP Recognized as a Leader in Gartner's Magic Quadrant for Sales Performance Management for the Seventh Consecutive Year

SAP SE announced that it has been recognized as a Leader in Gartner's Magic Quadrant for Sales Performance Management (SPM) for the seventh consecutive year. SPM software from SAP is deployed as SaaS only and offers all the core SPM functionalities, including incentive compensation management (ICM) and territory and quota management. This SPM offering, along with salesforce automation and the SAP CPQ solution, are part of the SAP Sales Cloud portfolio. With SAP Sales Cloud:

- Lenovo reduced its quota-setting time to one week from one month - Docker increased accuracy of payment compensation plans by 95 percent, nearly eliminating disputes - Pivotal Software reduced compensation inaccuracy by 72 percent "In a competitive landscape it is critical for companies to set aggressive goals to ensure fast growth," said Paula Hansen, chief revenue officer and co-head of SAP Customer Experience. "But the truth is many companies don't hit their revenue goals, with average quota attainment often falling in the 50–60 percent range. SAP's SPM solution includes analytics with machine learning that increases operational efficiency and planning effectiveness, which helps turn sales professionals into a profitable sales machine."

#### **SEDC Wins The "Best Smart Water Solution Award" At SWS19**

SEDC received the 2019 SWS Best Overall Presentation award. SEDC is an IT solutions provider delivering a broad range of utility software and hardware solutions and technical services to distribution utilities nationwide. "With each technological innovation, there is an opportunity to streamline workflow and improve business efficiency. Our applications provide industry-leading performance and stability across a range of operations, while offering unparalleled real-time integration with the industry's leading engineering, operations, and financial services companies." The top four Partners nominated for having the Best Overall Boardroom Presentation were Central Service Association, Sensus, Master Meter and SEDC.

AGORA Summits consist of two annual Utility Business Development Summits: Smart Utility Summit (SUS) for Electric Public Power Utilities, Cooperative Utilities and Investor Owned Utilities, and Smart Water Summit (SWS) for Water Utilities. In 2020, Agora Summits will be producing the Smart Utility Summit (SUS) and the Smart Water Summit (SWS). As exclusive and invitation only Summits, the Summits produce a private Boardroom format that offers participating Technology Vendors access to the Executive leadership of North America's Electric Public Power, Rural Electric Cooperative, Investor Owned Electric Utilities and Water Utilities.



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#### KUDA and ADLINK Partner to Deliver End-to-End Edge IoT Solutions and Drive Industry 4.0 Transformation for Mid-Sized Manufacturers



ADLINK and KUDA combine a wealth of expertise in implementing IoT solutions and integrating with existing

"Our partnership approach to IoT is of great value to mid-sized industrial manufacturers in Germany. Together production environments to achieve Industry 4.0 objectives and increase operational efficiency for customers," added Ralf Puehler, CEO of KUDA LLC. "The ADLINK Digital Experiment enables customers to implement successful IoT solutions by thinking big, starting small and learning fast. The approach provides a faster, easier and cost-effective route to achieving measurable business value from IoT without a lengthy, costly and full-scale, services-heavy methodology," said Richard Allan, SVP Sales, ADLINK Software and Solutions. "With our IoT solutions, manufacturers can quickly connect and use the data they need to optimise their operations. For example, by using advanced analytics, machine learning and AI at the edge, customers can benefit from predictive maintenance and reduce costly unplanned production shutdowns." ADLINK's Digital Experiments include hardware, software and support elements and are all vendor agnostic, built on open standards and architected with modular components that allow for easy integration with any existing IT and OT system. Customers can also benefit from tapping into the combined expertise of ADLINK's extensive ecosystem of technology partners including AWS, Microsoft, Google, Thingworx, FogHorn, IBM Watson, Intel, SAS and many others.



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Partnership aims to optimise operational efficiency for industrial customers with Edge IoT

ADLINK Technology, a global leader in edge computing, and KUDA LLC, the Munich-based systems integrator, have today announced a partnership to enable German manufacturers to gain maximum business value from deploying IoT technology for their industry 4.0 strategy.

The companies have joined forces to deliver ADLINK's Digital Experiment IoT solutions, which enable companies to rapidly connect, stream and analyse their operational data and make informed decisions whatever equipment, systems and cloud platform they already use.





#### Ørsted Completes Sage Draw Wind Project

Ørsted has completed its Sage Draw Wind project, a 338MW wind farm that straddles Garza and Lynn Counties in Texas. The 120-wind turbine project will have the capacity to meet the annual electricity needs of 120,000 American homes.

Sage Draw Wind brings Ørsted's onshore operational installed capacity to 1.3GW. Currently, the company has an additional 0.8GW of onshore wind, solar, and storage projects under construction and due to enter operations in late 2020 and early 2021.

"*I'm very proud of the Ørsted team and our partners on this project who've done an excellent job with another safe, ontime, on-budget project delivery*," commented Declan

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Flanagan, Executive Vice President of Ørsted and CEO of its Onshore business.

The safe completion of Sage Draw amidst the escalating COVID-19 crisis is a testament to the resilience and adaptiveness of the Ørsted team and key project partners at Blattner Energy and GE Renewable Energy as well as financial partners, GE Energy Financial Services and BHE Renewables. This underscores the significant role renewable energy can play in continuing to build our Add body text economy as we manage through and beyond the current crisis." Sage Draw Wind marks a key step in Ørsted's path to reach 5GW installed onshore capacity by 2025.



## Danfoss Editron Opens In-House Testing Facility in Lappeenranta, Finland

Danfoss Editron has opened a new in-house testing laboratory in Lappeenranta, the Finnish city where it is headquartered, following a multi-million EURO investment. The facility will conduct electromagnetic compatibility (EMC) and environmental tests, which guarantee the quality of the company's EDITRON systems to its customers. Introducing in-house facilities will allow Danfoss Editron to test its systems and machines at an earlier stage of the manufacturing process than ever before. It will also enable the company to identify potential issues earlier, when problems are easier to fix than at later stages of product development.

The laboratory has dedicated EMC and environmental testing chambers, which can perform radiative immunity, radiative emissions and electrostatic discharge tests, automotive immunity checks magnetic field immunity and conductive emissions assessments to international and European standards. The facility also contains electronic loads and a high-power direct current power source, plus dust test, salt mist, climatic test and walk-in chambers. Testing undertaken in the laboratory will take between a few hours and several months.

# Commenting on the opening of the laboratory, Danfoss Editron's Hardware EngineerJussi Hämäläinen said:

"Previously, all of our EMC and environmental tests were performed at external facilities outside of the Danfoss Group, which created several challenges. It was easy for the queue of products that required approving to bottleneck, due to limitations with the testing facilities, while testing needed to be planned and booked several months in advance. While many of our projects are currently in prototype phase, serial production is expected to start within three years so the need to invest in our own EMC and environmental testing facilities was clear."



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### **Alstom's Hydrogen Train Coradia iLint Completes Successful Tests in The Netherlands**



Last October, Alstom and the Province of Groningen, local operator Arriva, the Dutch railway infrastructure manager ProRail and the energy company Engie signed a pilot project agreement to test the Coradia iLint, the world's first passenger train powered by hydrogen fuel cells, in the Netherlands. DEKRA, an independent testing inspection and certification company, has been appointed test leader. This series of tests is being performed at night at up to 140 km/h without passengers. For the purpose of the tests, a mobile filling station has been erected by Engie for refuelling the Coradia iLint with completely green – sustainably produced – hydrogen.

"The tests in the Netherlands demonstrate how our hydrogen train is mature in terms of availability and reliability, providing the same performance as traditional regional trains, but with the benefit of low noise and zero emissions. It is also easy to integrate in an existing fleet and is compliant with all safety regulations. The Coradia iLint hydrogen train is a reliable emission-free train ready to help transport us to a carbon-neutral Europe," said Bernard Belvaux, Managing Director, Alstom Benelux.

The Coradia iLint is the world's first regional passenger train to enter service equipped with fuel cells to convert hydrogen and oxygen into electricity, thus eliminating pollutant emissions related to propulsion. The completely train is quiet, and its only emission is water. Purpose-built for use on non-electrified lines, it provides clean, sustainable traction with no sacrifice in performance. It has a range of approximately 1000 kilometres – the same as equivalent-size diesel multiple units. The train is developed and produced by the Alstom teams in Salzgitter, Germany and Tarbes, France.



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#### The world's first hydrogen fuel cell passenger train takes its first steps abroad after commercial success in Germany

Alstom has performed ten days of tests of the Coradia iLint hydrogen fuel cell train on the 65 kilometres of line between Groningen and Leeuwarden in the north of the Netherlands. The tests follow 18 successful months of passenger service on the Buxtehude–Bremervörde– Bremerhaven–Cuxhaven line in Germany, where total of 41 Coradia iLint have already been ordered. The latest tests make the Netherlands the second country in Europe where the train has proven itself a unique emissions-free solution for non-electrified lines.

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#### Pulp Molding Equipment Manufacturer Implements Rockwell Automation Solutions



#### Taiwan Pulp Molding, World-Leading R&D **Power and Market Share**

The giant wave of environmental protection is sweeping the globe, the attitude of the public towards plastic pollution in the ocean could be described as complete opposition. Everything from cutlery, industrial packaging to other industrial applications require the replacement of plastics and styrofoam with pulp molding. The demand and market potential for pulp molding is experiencing an exponential growth. Taiwan Pulp Molding (TPM) has nearly 20 years of

experience in manufacturing pulp molding machines and export business. From meager beginnings to their current status as a hidden champion of the pulp molding industry, they have dedicated efforts towards global environmental protection diligently all these years in an understated manner.

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#### Partnership with the U.S. automation giant - Rockwell Automation

1. With the strategic alliance formed with Rockwell Automation, TPM is able to adopt the latest technologies of Rockwell Automation which include: Guardmaster® 440C-CR30 Software Configurable Safety Relay: Monitors and safeguards the inter-locking switch on the guard gate and emergency stop button on the machine, and immediately sends a message to the Human Machine Interface (HMI).

2. Kinetix® 5500 servo drives: Supports the integrated motion control on EtherNet/IP™ through the Studio 5000 software support. Executions on this motion control system, design simplifications, operations and maintenance can be achieved through a single control platform and a single network environment. Kinetix® 5500 simplifies the wiring operations and reduces the pressures of inventory with its three-in-one power cable (feedback, brake motor, and power distribution). 3. The control system is managed by the CompactLogix<sup>™</sup>5370 programmable automation controllers (PAC) and allows communications under the EtherNet/ IP™ communications protocol. This provides a platform for the connection between the production factory and the company's intranet. CompactLogix<sup>™</sup> 5370 L3 supports EtherNet/IP integrated motion control, device level ring (DLR) topology, and has a built-in power storage, eliminating the need for lithium batteries. It supports the reuse of existing 1769 I/O and includes a removable 1GB secure digital (SD) memory card improving data integrity.

4. PanelView Plus 7 Graphic Terminals: The built-in Ethernet port allows the machine connection to the corporate environment. The ATEX Zone 2/22 and UL Class1, Div2 certifications can be used in hazardous environments. The display and external mount commands can save 50% to 90% of the complex screen development time. The SD card slot can be used for storage, recording data, managing production command, and for fast and simple copy or redo commands. 5. Studio 5000 Automation Engineering and Design Environment<sup>™</sup> software platform integrated motion control: Reduces the overall production cost and significantly reduces the startup time, mold installation and maintenance time.

6. Safety risk evaluation, safety system certification, and other safety services: The professional RA team identifies the risks in the processes of the operation, maintenance, installation, and cleaning of the machine, then discusses and advises TPM on the mitigation measures for potential hazard risks on each machine, so that the project risks are lowered to an acceptable level.

#### **Providing Precision to Power Aerospace Engines**



Over recent years, a wide range of advanced machine tools have been developed to help satisfy global aerospace manufacturing industry's requirement to produce parts faster than ever before.

Although these innovative machines manufacture complex components within much faster cycle times, often increased production levels create bottlenecks in inspection departments. To help avoid these hold-ups, increasingly progressive aerospace manufacturers are including state-ofthe-art inspection technology in their investment plans. Having selected the most appropriate machine tools to enable the efficient production of blisks and IBRs (aeroengine components consisting of a rotor disk and blades), the management of ITP Engines Ltd. recognized the need to invest in advanced quality control equipment. The proposed inspection system needed to be capable of accommodating the demanding dimensional tolerances of the company's blisks and IBRs, and also have the required high-speed, high-accuracy scanning capabilities that could keep pace with increased production.

To meet ITP Engine's measuring requirements, Mitutoyo proposed an advanced Crysta-Apex C CNC coordinate measuring machine fitted with a Renishaw Revo measuring head and a highprecision Rotary Precision Instruments (RPI) rotary table to provide a fourth axis. In addition, the company suggested the use of Mitutoyo MCOSMOS and MAFIS Express software. Mitutoyo's answer to ITP Engines' inspection needs is based on an advanced Crysta-Apex C coordinate measuring machine that was designed and constructed using all Mitutoyo's vast experience in CNC CMM technology. The machine is built using lightweight materials and has an innovative moving-bridge type machine structure, providing excellent motion stability and high accuracy. In addition, the Crysta-Apex C has a temperature correction function that enables the accurate measurement of parts under shop-floor conditions.

Rather than using a conventional probing system, the Mitutoyo CMM was fitted with a Renishaw REVO, five-axis measuring head that is able to perform continuous surface scanning to deliver full 3D geometry in a single scan. The state-of-the-art REVO head is able to overcome the limitations of three-axis scanning methods. REVO uses synchronized head and machine motion when scanning, rapidly following changes in part geometry without introducing dynamic errors. The CMM is able to move at a constant velocity while measurements are being taken, without impacting accuracy. Further enhancing the speed and accuracy of Mitutoyo's integrated solution, when being measured ITP Engine blisks and IBRs are held securely and maneuvered on a high precision RPI rotary table that was specifically designed as a fourth axis for use on high-accuracy coordinate measuring machines.

"As the increased amount of points we are now scanning" had the potential to make post processing more time consuming, a software tool was developed by the ITP UK's controls team in Whetstone to reduce data analysis time," says Castro. "Now fully operational our new method is up to six times faster than our previously used conventional system. In addition, our Mitutoyo CMM system has further enhanced our already impressive accuracy capability and provided us with much improved measurement data."



#### **Shorten Takt Time by 2 Seconds: Selection of Linear Conveyors That Defy Conventional** Wisdom for Lines. "Cut two more seconds" seemed nowhere to go ... Voice of "give up" from the workshop floor.



#### Shortening the takt time was the biggest issue in Firm A that assembled the electronics parts and devices for smart phones and tablet terminals. Where number of products put on markets was somehow reducing, every single manufacturer tried to be the first to market their products for the next season. Naturally, such fierce competition affected the device manufacturer of Firm A.

create more loss ...

The project team newly formed with Mr. M as the leader first took a look at the tray feed speed of the conveyor. Being unable to adjust the speed, the impact of hitting the stopper was excessive, causing losses such as a workpiece to get displaced and a pallet to get damaged. To rectify such problems, however, we fell into a vicious cycle in which we had to stop the line, which further degraded the production efficiency. The production system was not without an issue, either. Repeated layout changes and addition of lines left no more space for an additional line. Setup changes took too many man-hours to fit a small lot production. "*Shortening takt time was far more difficult than I had expected*." (Mr. M)

A slider moving in both directions suggests possible opportunities of linear drive. When the Mr. M's project team was gathering information, they came across the YAMAHA's "Linear Conveyor Module LCM100" on YouTube. Conventional transport was in one direction only. The motion video, however, showed a slider moving in both directions on the conveyor. The most significant feature of the "LCM100" was high speed, high accuracy motion. A single module packed a linear motor, a slider, and a controller. Servo controlling each slider stops the slider smoothly at the exact position without hitting a stopper. This could shorten the feed time.

A test operation shortened the takt time by 1.5 seconds! Now, the 2-second barrier seemed a little shorter. The easy-to-install feature was attractive as a mid to long term capital investment. The layout changes were smooth. All you had to do was increasing or decreasing the number of modules to deal with the line length. Eliminating otherwise necessary jigs and fixtures gave us more freedom and flexibility to build a line. I thought it might help us better deal with high-mix, low-volume production which Firm A was not good at so far. Firm A decided to go through a test that, if passed, led to introduction. The test went smooth as YAMAHA provided us with technical cooperation. Setting the target of shortening the takt time by 2 seconds from 6 seconds to 4 seconds, the test actually shortened the time by 1.5 seconds. The Mr. M's project team decided to introduce the system for the line that planned to manufacture the products for the next season. As further improvement is going on with the support from YAMAHA, clearing the 2-second barrier seems just a matter of time.

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"To fulfill the delivery demanded by the customer manufacturer, we had to shorten the takt time by two seconds or more. The voice from the shop floor said 'What should we do more? Have we not come to the limit?", recalled Mr. M, who was in charge of this task.

# The transport process was the target. Though verifying to increase the tray feed speed, it turned out to

#### **Success Stories Energy monitoring 4.0 - Digitalization Simplifies The Collection and Monitoring of Energy Data**

In order to uncover and realize the savings potential available in the utilization of steam, water and air pressure in line with the brewery's environmental goals, Hofbräuhaus installed an energy monitoring system, which relies on digitalization, with the support of Endress+Hauser.



#### Customer challenge

The state-owned brewery wants to sink the specific heat consumption by 4 percent and production-generated CO<sub>2</sub> emissions as much as 30 percent by the end of 2019. Hofbräuhaus is the first German brewery to analyze its own climate emissions. All of the individual measures will be bundled into an environmental management system. An automation concept for the integration of the data had to be developed. This concept is designed to ensure the seamless collection of energy utilization data and provide mobile access to the data.

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#### Our solution

The heart of the solution is the Memograph M, a data manager that serves as an interface between the field instruments and the process control level and supports all common field buses. The Memograph M forwards the actual sensor measurement values to the control system via PROFINET. Thanks to its mathematical functions, Memograph M can directly calculate the amount of heat, which it then sends to the software platform via Ethernet TC/IP. The integrated web server gives operators remote access at the field instrument level and provides a convenient way to configure parameters or store data. Memograph M is the simplest, most cost-effective solution for data integration and energy metering.

Mobile access to the energy data monitoring system is fulfilled by the FieldXpert. This robust industry-scale tablet PC features a preinstalled device driver library for all important protocols and automatically detects instruments with a click and connects to all Endress+Hauser instruments via WLAN or Bluetooth. That means it can be used to track energy utilization from anywhere on the grounds of the plant, display trends or launch error analyses.





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#### **Siemens builds** Germany's largest "power outlet" for ships for Port of Kiel

The Port of Kiel commissioned Siemens to build Germany's largest shore power system to date. With a power of 16 megavolt amperes (MVA), the Siharbor solution will supply two ships simultaneously with certified ecopower, for the first time. This will reduce annual CO2 emissions by more than 8,000 tons. The system is expected to go into test operation within the 2020 cruise ship season. Maritime shipping plays a special role in Kiel. The port is the point of departure for cruises and has ferry connections to the Baltic states and Scandinavia. 32 different cruise ships stopped in 174 times at the port facilities in 2018.

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"By building this new shore power system we will actively support the climate objectives of the Schleswig-Holstein state capital," said Dr. Dirk Claus, managing director with the Port of Kiel. "The shore connection system lets us draw electricity from renewable energy sources, both for cruise ships docked at the Ostseekai and for the ferry at the Schwedenkai. We thereby take on a leading role and consistently implement our Blue Port concept for a sustainable and future-oriented development of the Port of Kiel. In future 60 percent of the energy demand required by the ships entering Kiel will be covered by climate-friendly shore power as diesel generators will be shut down while they are berthed."

#### Fertilizer Sourced from Sewage Sludge

Germany's new Waste and Sewage Sludge Ordinance requires large sewage treatment plants to recover phosphates from sewage sludge or ashes as of 2032. Conventional recovery technologies are costly and chemical-laden. A new technology now offers a more affordable, pollutionfree alternative. Fraunhofer researchers helped scale up the process. As gardening enthusiasts will attest, flowers, turnips, tomatoes and the like scarcely thrive without fertilizers. Farmers rely primarily on preparations containing phosphate to fertilize their fields – with good reason, for phosphorus is a building block of all life and an essential nutrient plants cannot do without. With 75 percent of the world's deposits sited in Morocco and the Western Sahara, there is a potentially critical choke-point in the phosphorus supply chain. In 2008 and 2009, bottlenecks in the pipeline and speculation on mineral markets put the squeeze on the world's supply lines. The price of phosphorus shot up by 800 percent. This prompted the European Commission to add this mineral to its hit list of top-20 critical raw materials. The German government also took action. Starting in 2023, operators of large sewage treatment plants will have to submit a plan for recovering phosphorus. Although farmers can spread the ash of incinerated sewage sludge directly on their fields, plants are not able to make much use of the phosphorus in it. Besides, this ash contains pollutants such as heavy metals that are best kept far from farmed fields. There have been attempts to recover the phosphorus in sewage sludge ash using wet chemical processes, but they require vast quantities of chemicals.

- Potential reduction of more than 8,000 tons of CO2 annually - Emissions and noise while berthed can be significantly reduced - Sustainable solution contributes to climate protection

- 16-megavolt ampere shore power system to supply two ships simultaneously with certified eco-power



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solvents, aqueous solutions, and alkalis," said Yasumoto, Senior Adviser, Body Product Development Section, Molten. "It also offers our customers a more sustainable solution as this grade *is made with castor oil from plants.*" Bio-based sebacic acid, which is used to produce Ultramid Balance, originates from the castor oil plant. The use of Ultramid Balance in the rear bumper stay is another example of BASF's contribution to support the increasing customer demand for raw materials based on renewable resources. Ultramid Balance is well received in the market not only because it is based on renewable materials but also due to its superior performance compared to the standard polyamides such as PA6 and PA66.

Part Length: 88cm

## **Molten Introduces Underbody** Part for Mazda Made with **BASF's Innovative Material**

## **Solution Ultramid® Balance**

Molten, a global Japanese supplier of sporting goods and automotive components, has used BASF Ultramid® Balance to produce a new rear bumper stay, an automotive part designed to protect the underbody of vehicles. This innovative polyamide (PA) solution has been used in Mazda's newly launched car models Mazda 3 & amp; CX-30.

"Rear bumper stays are exposed to chemicals from the "Every automotive part has its requirements," road – such as road salt during winter – and high heat from depending on the intended value the silencer, causing parts made with conventional proposition of the vehicles. This is where our materials, such as polypropylene and polyamides, to close collaboration with automotive OEMs deteriorate and deform over time. However, with BASF's enables customized material solutions to high-performance and specialized material solution *meet customers' specific needs,*" said Andy Ultramid Balance the rear bumper stays are highly resistant Postlethwaite, Senior Vice President, to heat, oil, most Performance Materials Asia Pacific, BASF.

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This innovative material solution, which consists of 30% glass fiber resin, possesses higher long-term service temperature and

- chemical resistance with stabilizers and polymer technology. As compared to other polyamides, this advanced material has lower moisture uptake, which ensures rear bumper stays remain dimensionally stable
- in humid environments.



Toshiba Electronic Devices & amp; Storage Corporation ("Toshiba") has added 80V Nchannel power MOSFETs to its "U-MOS X-H series" fabricated with the latest generation process. The new MOSFETs are suitable for switching power supplies in industrial equipment used in data centers and communication base stations. The expanded line-up includes "TPH2R408QM," housed in SOP Advance, a surface-mount type packaging, and "TPN19008QM," housed in a TSON Advance package. Shipments starts today. Drain-source On-resistance in the new 80V U-MOS X-H products, manufactured with the latest generation process, is approximately 40% lower than that of 80V products in the current generation process U-MOS VIII-H series products. The trade-off between the drain-source Onresistance and the gate charge characteristics has also been improved by optimizing device structure. As a result, the new products feature industry's lowest[3] power dissipation.

## **Toshiba's 80V N-Channel Power MOSFETs Fabricated**





Vessels

Toshiba Corporation announced that its SCiB<sup>™</sup> lithiumion battery modules and related components for building a battery system are the first to win approval for use in marine vessels from Nippon Kaiji Kyokai (hereinafter "ClassNK"), the international ship classification society that promotes protection of life and property at sea, and protection of the marine environment.

Ships with the battery system can use renewable energy sources to charge the SCiB<sup>™</sup> while at sea, allowing the system to power on-board equipment while the ship is at anchor and to provide power when entering or leaving port. At a time when pollution regulations are increasingly focused on the emissions ships generate\*1, the SCiB<sup>™</sup> will contribute to the protection of the marine and global environments.

The certification covers twelve storage battery system components, including SCiB<sup>™</sup> lithium-ion rechargeable battery modules, current sensors, and the battery management unit ("BMU") which monitors the voltage, temperature, and current of the battery module. Certified battery system components are exempt from

## **Toshiba's Lithium-ion Battery System Using SCiBTM is Japan's First Recognized as Compliant with Nippon** Kaiji Kyokai's guidline for Marine

- tests ordinarily required for storage battery system components, and allow a battery system to be built in a relatively short period of time.
- ClassNK is a global organization with over 120 survey offices worldwide, and offers a wide range of maritime services that ensure the security of human life and property and promote conservation of the marine environment. The certification is based on Class NK's "Guidelines for Large-capacity Storage Batteries," which requires use of a BMU in the system as a safety feature. Toshiba's BMU has passed safety tests at the National LABoratory for advanced energy storage technologies (NLAB) of the National Institute of Technology and Evaluation, an independent administrative institution under the jurisdiction of the Ministry of Economy, Trade and Industry, which confirmed it to be compliant with JIS C8715-2, the safety standard for lithium-ion battery cells and battery systems for industrial applications.
- While increasing numbers of ships are phasing out heavy oil fuel in favor of liquefied natural gas (LNG) for its fewer CO2, NOx, and SOx emissions, storage

battery technologies are attracting attention as a power supply for on-board equipment or as an auxiliary power source that will also help to reduce CO2 emissions.

Lead acid batteries have long dominated the use of on-board storage batteries on ships, but they are often criticized for their large size and heavy weight relative to available energy density. In contrast, lithium-ion batteries provide greater capacity and energy density despite their smaller size, but may pose a potentially greater safety threat. Preventing battery destruction or ignition due to thermal runway is of crucial importance in a ship's confined space, with

limited escape routes.

The lithium titanium oxide negative electrode of Toshiba's SCiB<sup>™</sup> is extremely low risk in respect of explosion or combustion even in case of an internal short-circuit caused by external shock. Fully functional at -30°C, and with a long life of over 20,000 charge cycles, the SCiB<sup>™</sup> is suited to use in a wide range of

automotive, industrial, and energy storage systems that require high levels of safety and reliability.



## Efficient Working – Virtually Dustless Drilling: New Dust Extraction Systems from Bosch



Intuitive operation, particularly robust design – this is what the GRL 600 CHV Professional, the first connected rotation laser from Bosch, is all about. It offers professionals in structural and civil engineering, road construction, warehouse building or landscaping high operating convenience with horizontal and vertical leveling in a working range of 600 meters (diameter): The rotation laser is connected simply via Bluetooth with the smartphone and then conveniently controlled, checked and personalized via the Levelling Remote App. With the GRL 600 CHV Professional, professionals have a constant view of the status via a user interface. Furthermore, due to its robustness the rotation laser is particularly suitable for different indoor and outdoor construction site applications: With IP 68 protection, it is dust-proof and watertight – this also includes the battery thanks to an enclosed battery compartment. The lateral grips protect the rotation laser against impacts and makes it tilt-resistant up to a height of two meters when the tool is used with a tripod. Furthermore, its application range is extended by the newly integrated dual slope function. It is used, for example, for alignment of drainage systems to a central drain and guarantees precise results through the option for entering both inclinations directly at the tool or per app.



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Added value thanks to high protection for users and their health – Bosch offers tradespeople an extensive system for efficient and healthy working. The prod-uct range for virtually dustless drilling is now being extended for the first time by a cordless dust extraction with its own power supply: the GDE 18V-26 D Pro-fessional. It fits onto the five most common Bosch hammers in the 2-kilogram class and provides reliable protection for tradespeople against dust when they are drilling on scaffolding and lifting platforms or in places that are difficult to access. The dust extraction is also highly suitable for professionals who often move from one construction site to another: These professionals do not need an additional dust extractor anymore. Four dust eyes are also supplied for dif-ferent applications: Two for smaller drilling diameters from 4 to 16 millimeters and two for larger drilling diameters up to 26 millimeters, each time for tools with a fixed chuck or a quick change chuck. If required, an extension can also be attached so that drills up to 265 millimeters in length can be used. The GDE 18V-26 D Professional therefore covers the widest range of applications in terms of drilling diameter, drilling depth and drilling length compared to current competitor models.

## For The First Time with Connectivity: New Rotation Laser from Bosch

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## BASF and Hengst Develop Reusable Spin-On Oil Filter Made of Engineering Plastic Ultramid® Structure LFX BASE and Hengst have



BASF and Hengst have of the module of 23 percent compared to its metal developed the world's first counterpart. reusable plastic spin-on oil The sustainable solution for the highly-stressed part filter module for cars. Blue.on was realized by Ultramid® Structure A3WG12 LFX. is the sustainable alternative BASF's Ultramid® Structure grades are long glass to conventional spin-on fiber-reinforced polyamides with a special property modules made from metal, profile: Besides outstanding mechanical since it does not need to be characteristics at high temperatures, the material replaced during filter change. shows a low tendency to creep as well as reduced It is made from Ultramid® shrinkage and warpage. These properties make the Structure LFX, a long glass innovative spin-on concept possible. Because of the fiber-reinforced highlong glass fibers and the resulting changed fiber performance plastic from orientation a dimensionally stable part is formed. BASF whose specific During the injection-molding process the glass fibers form a three-dimensional network in the part leading to a very good surface quality.

properties provide new opportunities for metal substitution. Blue.on offers a solution to a key problem of the automotive industry when it comes to oil filter change: each year, about two billion oil filters are replaced and disposed. During oil change, the entire filter unit is exchanged, and the residual oil is disposed as hazardous waste. Moreover, a big amount of additional litter is generated.

Ultramid® Structure LFX makes the difference

The new module Blue.on is deployed by leading automotive manufacturers and consists of three components: a filter

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housing, a connection element to the engine and a filter element. During oil change, only the filter is replaced, whilst the module completely made of plastic can be used for the entire service life of the engine. At the end of the car's life cycle, all components can almost completely be recycled. As a side benefit, the material leads to a weight reduction of the module of 23 percent compared to its metal counterpart.

#### Partnership paves the way to success

*"Hengst presented to us the idea of developing a resource-saving alternative to metal housings showing the same performance"*, says Christian Janeba, Senior Key Account Manager in BASF's Performance Materials division. *"We supported the development process constructively with material development and a* 

#### *comprehensive engineering package, focusing on sustainability at all times.*"

Next to plastics engineering advice and component testing, BASF's simulation tool Ultrasim® was employed: "The development took a lot of time, but the result is highly convincing", says Michael Böhm from Hengst. "All partners were not only eager to find an innovative technical component, but also a sustainable solution for the automotive industry and car drivers. Innumerable tests and trials to which BASF contributed its comprehensive know-how in plastics finally led to a positive outcome." In 2018, Blue.on was awarded the Innovation Prize of the state of North Rhine-Westphalia, Germany, even before it went into serial production.







Mitsubishi Electric Corporation (TOKYO: 6503) announced today that it has been designated by the Japan Aerospace Exploration Agency (JAXA) as the contractor of the Global Observing SATellite for Greenhouse gases and Water cycle (GOSAT-GW), the third in the GOSAT series, and has already initiated development activities. GOSAT-GW will have two missions: greenhouse gases observation for Japan's Ministry of the Environment and the National Institute for Environmental Studies (NIES), and water-cycle observation for JAXA. By developing the GOSAT-GW satellite, Mitsubishi Electric will contribute to measures for preventing disasters attributed to global warming and climate change, and to advance scientific and technological methods that enable more accurate prediction of climate change.

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## Mitsubishi Electric Begins Developing the GOSAT-GW Satellite for Greenhouse Gases and Water Cycle Observation

#### **Key Features**

## 1) New sensor for global, accurate observation of greenhouse gas concentration

GOSAT-GW will be equipped with a sensor, named Total Anthropogenic and Natural emissions mapping SpectrOmeter-3 (TANSO-3), for observing concentrations of greenhouse gases, such as carbon dioxide and methane, over a wide area and with high precision for improved estimation accuracy of greenhouse gas emissions. The global observation mode of TANSO-3 will cover large areas of Earth's surface without discontinuity, thus enabling more observation points than with previous models. TANSO-3 also will have a detailed observation mode with a spatial resolution three times higher than that of its predecessor, GOSAT-2 ("Ibuki-2"), enabling greenhouse gases to be observed with higher accuracy.

## 2) Enhanced geophysical quantity observation for improved water cycle and meteorological monitoring

GOSAT-GW will also be equipped with the newly developed Advanced Microwave Scanning Radiometer 3 (AMSR3), which will estimate geophysical quantity of earth's water on land, seasurface and in the atmosphere. AMSR3 will use an increased number of frequency bands compared to its predecessors for more accurate estimation of hydro-geophysical conditions, such as precipitation, water vapor, sea ice and sea-surface temperatures. Data obtained from observations will improve the accuracy of forecasting typhoons, torrential rains and other climatic conditions by meteorological organizations around the world. In addition, by providing detailed data for assessing the effects that climate change has on the water cycle, GOSAT-GW will contribute to efforts to measure the impact climate change has on everyday life and prepare necessary countermeasures.

## **ABB Launches New Smart Temperature Monitoring Relay**

ABB is launching a new Smart Temperature Monitoring Relay, which aims to meet different customer needs with just one versatile device. Innovations include an LCD screen that provides status updates and readings with a single glance and Near Field Communication (NFC) that enables users to adjust settings with one touch of a smartphone, making installation around 80 percent faster and more intuitive than ever before.

Pietro Esposto, global product group manager for ABB's motor starting and safety business, said: "ABB is writing the future of safe, smart and sustainable electrification with innovations that make life simpler for customers. For the development of the Smart Temperature Monitoring Relay, our experts focused on making the configuration and parameter selection as simple as possible. This gamechanging device promises to be a massive timesaver for customers."

The Smart Temperature Monitoring Relay covers an enormous range of applications, eliminating the need for companies to stock, manage and configure a lot of different devices. Its wide measuring range and compatibility with

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different sensors, such as the PTC and PT 100, makes the device flexible to fit applications as desired. The device offers predefined settings for popular applications, storage space for userdefined settings, and a neat solution to copy-andpaste settings when commissioning numerous devices.



The Smart Temperature Monitoring Relay has a liquid crystal display that shows key measurements and maintenance information. An intuitive push-rotatebutton user interface makes it just as simple to set thresholds and parameters.

ABB has simplified and streamlined the configuration process significantly thanks to the device's compatibility with the free ABB EPiC smartphone app, which uses Near Field Communication (NFC) technology to make a fast, wireless exchange of data and information possible. The EPiC app is for configuring and checking the status of ABB's low-voltage products. Using the app, users can edit parameter settings more quickly, store this information in the app, and copy the settings straight onto other devices – even if they are not

ABB's temperature monitoring relays are used extensively in industries around the world to ensure essential equipment operates safely and reliably at all times. Many fields of application, including marine, can be covered with the new and innovative relays as well.



powered. Users can upload parameters to the cloud and share them with colleagues worldwide within seconds.

Alisa Martin, global product specialist for temperature monitoring relays, added:

"The Smart Temperature Monitoring Relay is a step into a smart, digital future. Users have all the information they need with just one look. They can configure devices with just one touch of their smartphone. And inventory levels can be shrunk significantly by stocking just this one versatile device."



#### **ABB Electronic Relays** and Controls



## High-Tech Battles Viruses - Engineering Team Develops Disinfection Robot in Just One Week to Battle the Virus

In just one week, Siemens and Aucma have developed an idea into a prototype for an intelligent disinfection robot, which will soon join the battle against Coronavirus and other viruses in hospitals. The electric robot can disinfect up to 36,000 square meters in one hour and features a robust chassis that can overcome obstacles and navigate slopes.

#### Purely electric solution

Most disinfection robots combine a petrol-driven mistorizer gun with an electric chassis. However, on-site refueling of robots is neither clean nor convenient. The team therefore decided to develop purely electric disinfection robots to better cater to the needs of hospitals. The greatest challenges for the developers included ensuring maximum sterilization impact with less disinfectant consumption and providing 360 degree coverage even in confined areas.

#### **Efficient** virus prevention

Powered by a lithium battery, a robot with double mistorizer guns can disinfect 20,000 to 36,000 square meters in one hour. A 360 degree camera platform on the top transmits videos and information in real time, coupled with an intelligent vision algorithm that allows the operator to remotely locate affected areas and prevent the spread of infectious diseases at low cost. To make the robots operate easily on various road surfaces, the team adopted a caterpillar chassis instead of wheels to improve their ability to surmount obstacles and handle slopes.



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## New Plant Intelligence Options for More Transparency and Planning in The Production Process

Siemens launches two new Plant Intelligence options for the WinCC Unified system: The "Performance Insight" and "Calendar" options extend the WinCC Unified visualization system with functionality for more transparency and structured planning in the production processes. The additional options can be individually combined according to application requirements and are fully integrated in the system, so that all functions are available to the user on various devices such as tablet or PC. By using the information thus obtained and planning ahead, costs can be reduced, and rejects avoided. In addition, production facilities can be better utilized, which increases effectiveness and efficiency.

The new Performance Insight option provides the user with a formula editor for the calculation of key performance indicators (KPI's) according to ISO standard 22400 as well as a comprehensive choice of WinCC Controls for their display and for analysis purposes. The performance, quality and availability of the production plant can be visualized using a wide range of different formats such as bar charts, Gantt diagrams and multiline displays, allowing overall equipment effectiveness (OEE) to be calculated. Plant operators can record the entire production process status, from factory level down to individual machines, allowing systematic detection of optimization potential.

The "Calendar" option for the visualization of structured planning of production processes is now also available in WinCC. This function is used to define the running times of machines and plants and to create standard templates for regular production days and shifts. Furthermore, the calendar function can be used to plan the process execution relative to a timeline and in this way, for example, the start-up time of a machine before the begin of a work shift can be considered. Due to the consideration of operating times, the new "Calendar" option enables a more flexible planning of production processes and events.

## Honeywell Launches First Autonomous Building Sustainability Solution to Fight Rising **Global Energy Consumption** Honeywell announced the launch of Honeywell Forge Energy Optimization, a cloud-based, closed-



loop, machine learning solution that continuously studies a building's energy consumption patterns and automatically adjusts to optimal energy saving settings without compromising occupant comfort levels. Honeywell Forge Energy Optimization, the first autonomous building solution focused on decreasing energy consumption, may deliver double-digit energy savings, decrease a building's carbon footprint, and can be implemented without significant upfront capital expenses or changes to a building's current operational processes.

During a pilot at Hamdan Bin Mohammed Smart University (HBMSU) in Dubai, United Arab Emirates, Honeywell Forge Energy Optimization demonstrated an initial 10% energy savings. HBMSU is the first accredited smart university in the UAE and is known for its technology and innovation programs.

Honeywell Forge Energy Optimization was applied to HBMSU's existing building management system, which uses competitor technology to demonstrate the platform's open architecture and hardware-agnostic capabilities. The additional energy savings is especially significant because HBMSU is regarded as a highly smart, energy efficient building with fully connected lighting, cooling, building management, power and efficiency control that is optimized based on real-time occupancy. The pilot also uncovered local control issues with the chiller plant and fresh air handling unit that were not adjusting to set points.

"As a smart university, we look to deploy the latest technology across our campus and ensure our buildings are efficient. We were pleasantly surprised by the results we saw from Honeywell Forge and its ability to drive further energy savings beyond our achievable optimization with the techniques we have," said Dr. Mansoor Al Awar, Chancellor of Hamdan Bin Mohammed Smart University. "*Our further partnership with Honeywell will help to support the advancement of* artificial intelligence (AI) modeling for building automation and provide our students with first-hand applications of how AI and machine learning (ML) will drive operational efficiencies in buildings. Our goal is to collaborate with leading organizations like Honeywell that support our vision of educating the innovators of tomorrow."

"Buildings aren't static steel and concrete – they're dynamic ecosystems and their energy needs fluctuate based on ever-changing variables like weather and occupancy," said David Trice, vice president and general manager, Honeywell Connected Buildings. "With Honeywell Forge Energy Optimization, we're evolving building operations far beyond what would be possible even with a robust team of engineers and the rules they code in their building management system. By employing the latest self-learning algorithms coupled with autonomous control, we can help building portfolio owners fine-tune their energy expenditures to drive efficiencies and create more sustainable practices for our customers."

#### System Agnostic Optimization and Advancing the Latest Building IoT Technologies

## **New CIP Safety Encoders Help Improve Producitivity**



The new encoders can deliver : or position to improve overall productivity. installation costs and save time.

New Allen-Bradley 843ES CIP Safety over EtherNet/IP Absolute Encoders can meet the needs of safety applications that require speed, direction or positionmonitoring functions and, at the same time, help users be more productive.

The encoders are the first on the market on CIP Safety over EtherNet/IP capable of up to – and including – SIL 3/PLe safety applications. The encoders can achieve this performance when used as part of an integrated safety system that includes an Allen-Bradley GuardLogix 5580 controller or Compact GuardLogix 5380 controller Users and machine builders can find the right 843ES CIP Safety Encoder for their needs with three configurable resolution options, solid and hollow shafts, and a range of flange options. With both safety and flexibility, the encoders can satisfy needs in a range of industries, including entertainment, material handling, mining and automotive manufacturing.

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**Higher productivity:** Users can continue production while safely monitoring for speed, direction

**Better visibility:** By integrating safety with standard control systems, operators gain access to all machine events, including safety events, to shorten response times.

**Reduced design times:** Integrating safety functions over EtherNet/IP can reduce hardware and

More efficient system designs: Auxiliary feedback through an EtherNet/IP network on CIP Safety delivers the desired safety integrity and performance with fewer necessary components.

## **Siemens Mobility Delivers 3D-Printed Attachments for Door Handles to Improve Hygiene Measures in Trains**

Russian Railways (RZD) is currently testing 36 attachments for door handles provided by Siemens Mobility. The attachments enable doors to be opened with an elbow or lower arm rather than a hand and thus reduce the risk of spreading germs or a virus like Covid-19. Siemens Mobility has installed the prototypes in several Desiro trains being operated in the Moscow area by Russian Railways. The parts are produced with the help of additive manufacturing and can be delivered on demand. Implementation in further train fleets is being planned. Siemens Mobility recently purchased two Stratasys 3D printers to help with the maintenance of the Russian train fleet, which also includes several Velaro high-speed trains. Siemens Mobility has been contracted to provide service and maintenance of the Velaro trains for a period of 30 years. The printers are being used in Moscow and St. Petersburg and are a cornerstone of the "Easy Sparovation Part" network established by Siemens Mobility. The objective of the network is to further optimize rail transport with the help of additive manufacturing and a digital inventory of original train components and simplify the exchange and manufacturing of spare parts for trains. This will reduce time and production costs and the need for spare parts.



## Yokogawa Releases SU10 Single Cellome Unit for Use in Biological Research

Yokogawa Electric Corporation announces that it has developed the SU10 Single Cellome™ Unit, a device that uses a nanopipette to inject substances such as genes and drugs and aspirate intracellular materials at target locations in individual cells. Targeting the biological research market, the SU10 is being released on this date in Japan, with release in other markets such as the US to follow at a later date.

Through the development of such solutions, Yokogawa's life innovation business is fostering the development of an industry centering on the use of smart cells, i.e. finely-designed, expressioncontrolled biological cells.

**Development Background** 

Rapid advances in biotechnology are leading to the development of a bioeconomy that is expected to have a wide-ranging impact on fields ranging from agriculture to manufacturing and healthcare. One segment of this bioeconomy will be the smart cell industry, which will involve the manufacture of high-performance products such as biological medicines and replacements for petroleum-derived products using finely-designed, expression-controlled cellular organisms (smart cells). Smart cells are expected to bring about major changes in the energy and environmental industries as well as such fields as agriculture, manufacturing, and healthcare, and to solve a number of problems facing humanity.

In April 2018, Yokogawa established a Life Innovation Business Headquarters with the goal of promoting well-being for all. In addition to engaging in our existing life science and manufacturing solutions businesses targeting the pharmaceutical and food industries, the headquarters will work with our customers to develop new products and services that make use of Yokogawa's core measurement, control, and information technologies, and provide one-stop solutions that revolutionize productivity throughout the pharmaceutical and food industry value chain, from basic research to manufacturing, logistics, and services.

There is keen interest within the cancer and immunology research fields in the use of single-cell analysis to clarify the causes of diseases and study pathological conditions, and this is expected to lead to advances in drug discovery research and the development of precision medicine and regenerative medicine. With the aim of fostering the development of a smart cell industry, Yokogawa has developed the SU10 for use by researchers in single-cell analysis.

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#### Minimally invasive nanopipette

The SU10 enables the injection of substances such as genes and drugs and the aspiration of intracellular materials at targeted locations in individual cells. In contrast to the micrometersized pipettes that are used to perform such tasks, the tip of the nanopipette used in the SU10 has an outer diameter of approximately one hundred nanometers (nm), making it one of the smallest pipettes available for use in the biology research field. The tip of this nanopipette is much smaller than the cells that are analyzed with the SU10, making it minimally invasive and thereby allowing single-cell analyses of living cells.





## **BOXER-6641: Delivering More Power for Industrial** Computing



AAEON, an award-winning leader in industrial computing, announces the BOXER-6641, their latest fanless box PC, featuring 8th Generation Intel® Core<sup>™</sup> and Xeon® processors. The BOXER-6641 is the most powerful fanless solution currently available on the market. The BOXER-6641 is designed to provide users with unmatched flexibility and performance. Available with two chipsets, the H310 (BOXER-6641-A1) and C246 (BOXER-6641-A2), the system offers a range of processors from the 8th Generation Intel<sup>®</sup> Core<sup>™</sup> and Xeon<sup>®</sup> processor family (formerly Coffee Lake), from Celeron® G4900T and Pentium® G5400T up to Xeon® E-2124G (up to 71W). Combined with up to 32GB of ECC or non-ECC DDR4 2666MHz RAM and support for two hard drives, the

market.

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BOXER-6641 is currently the most powerful fanless industrial system available on the

The BOXER-6641 is built to easily integrate into any industrial application. I/O features include six COM ports and up to eight USB 3.2 Gen 1 ports (A2 model). The BOXER-6641 also comes with four Intel® Gigabit Ethernet ports, including one Intel® i219 chipset, with built-in support for Intel® vPRO and Active Management Technology (Intel® AMT) available on BOXER-6641-A2. The BOXER-6641 is expandable with two mPCIe slots, capable of supporting AI applications with solutions such as AAEON's AI Core X with Intel® Movidius® Myriad<sup>™</sup> X VPU.

The BOXER-6641 is designed with several key features to ensure reliable service in harsh industrial environments. In addition to fanless construction, the BOXER-6641 offers wide voltage input of 10V to 35V, wide operating temperature range from -20°C to 55°C (-20°C to 45°C with 71W processor), and an all-metal chassis. The BOXER-6641 is easy to maintain, with only six screws needed to remove the top heatsink to access the CPU, and removing the bottom panel provides easy access to the memory and storage devices.

## **A Perfect System to Monitor** Current

Mico Pro is Murrelektronik's innovative 24 VDC current monitoring system. The modular design makes it possible to create systems that fit the application perfectly which adds value by creating a cost-benefit ratio that saves space in the control cabinet. Murrelektronik's patented tripping behavior ensures maximum machine availability. An additional advantage is the integrated potential distribution concept. It significantly reduces the control cabinet wiring. Power supply systems are the heart of machines and systems because they provide the energy required for operation. Overcurrent or short circuits can impact the power supply and cause machine downtime, production downtime and high costs. In order to maximize the reliability of the power supply systems, these problems have to be avoided. The Murrelektronik system consisting of high-quality power supplies and the Mico Pro power monitoring system, creates an optimum system with high machine availability. In contrast to the miniature circuit breakers previously used, Mico triggers reliably even combined with long cables and the small cable cross-sections common in the 24 VDC range. This ensures long-term stable and error-free protection of load circuits in the 24 VDC range.





# **Components**

In response to a global shift away from R410A and R22, Danfoss has added a complete portfolio of components to help OEMs develop air conditioning systems with R32. With its relatively low global warming potential (GWP) at GWP-675, high volumetric capacity and efficiency, lower purchase price and system charge, R32 has become one of the most popular alternatives—along with R452B and R454B—to R410A for commercial air conditioning systems and heat pumps. In response to high demand—and following the release of the multi-refrigerant portfolio for R410A/R452B/R454B earlier this year—Danfoss has announced a full range of components that enable OEMs to design R32 systems up to 700kW/260TR.

#### The portfolio includes:

- DSF fixed-speed scroll compressors with IDVs, optimized for R32 full range available by the end of 2020
- Micro channel heat exchangers (MCHE) adapted for R32

- The Colibri® Electronic expansion valve (ETS C), TGE and TR6 expansion valves for the US residential units - System protectors and line components such as NRV check valves, GBC ball valves, STF 4 way valves, EVR v2 solenoid valves, ACB switches and DST P110 sensors, DML and DCL for residential and DCRE filter driers for larger air conditioning units, SG sight glasses, all qualified for R32. Compatibility has been checked with every raw material and connections over 25mm are all validated according to PED category II except for the EVR v2 and with US approval.

## Han® DDD: Strong Signal Transmission with Minimum Space Requirements

With multi-pole signal interfaces for robots and automatic machines, the protective earth connection often plays a special role. It requires major parts of installation time. Thus, HARTING has increased the contact density of the inserts of the Han D® series for power and signal transmission. While the power and signal contacts of these series are equipped with crimp terminals – therefore ideally suited for prefabrication in large quantities while maintaining high quality – the PE contact has so far been implemented exclusively as screw terminal for application in the field. The new Han DDD® insert for the first time uses PE cavities requiring Han D® crimp contacts Switching the PE connection from conventional screw termination to crimp contacts (Han D®) increases the quality of the ground conductor and reduces the assembly time for the entire connector. Costs for the ferrules as well as for the tools needed to attach the ferrules that are usually related to the screw termination alternative are omitted.

## **Danfoss Announces a Comprehensive Range of R32-Qualified**

- Micro plate heat exchangers (MPHE-Z design), optimized for R32 – full range available by the end of 2020



## Wireless Signals from Ceiling Lighting for Connected Manufacturing

WLAN and Bluetooth have limited bandwidth, making conventional wireless communication problematic in the production environment. Nevertheless, numerous components such as sensors and robots need to be wirelessly connected. To overcome this challenge, a team of researchers at Fraunhofer IOSB-INA in Lemgo is working on solutions with help from the Ostwestfalen-Lippe (OWL) University of Applied Sciences and Arts. Soon, it is hoped that machines in factory buildings will communicate with one another using light pulses. This technology is not new, but now it needs to be adapted for use in industry.

Driverless transportation systems, conveyor belts, challenges of communication in the manufacturing engines, robots, sensors, drones, monitoring environment. They are taking a different approach and systems, mobile devices, and a wide array of have chosen the visible light spectrum for wireless data machines and equipment – they all communicate transmission. Experts call this technology visible light with each other and exchange data in the production communication (VLC, see box). "The light spectrum is environment. They are often installed and operated about 4000 times wider than the entire available in different locations, making a wireless connection wireless spectrum. It ranges from wavelengths of 380 to indispensable – and it has to work smoothly if 800 nanometers," says Daniel Schneider, a researcher at production downtimes are to be avoided. We have Fraunhofer IOSB-INA. Together with his colleagues and been enjoying the advantages of wireless OWL University of Applied Sciences, he is working on connections such as WLAN (WiFi) and Bluetooth in bringing VLC to industry. Research work on the "Visible" our professional and personal lives for a long time Light in Production" project funded by the German now, but in manufacturing, conventional wireless Federal Ministry for Economic Affairs and Energy (BMWi) communication is nearing its limits: WLAN and – an industrial collaborative research project led by the Bluetooth have a limited bandwidth. In view of the German Research Society for Automation and growing number of users, receivers and devices, the Microelectronics (DFAM) – already began one year ago. wireless spectrum is overloaded. VLC is already used in offices, homes and laboratories and, since recently, it is also being used to implement indoor navigation systems in shopping centers. Factory buildings, however, where there are far more sources of interference, present significant challenges for communications technology which haven't yet been studied in sufficient depth.

While 5G technology will alleviate this problem, the researchers at Fraunhofer IOSB-INA in Lemgo, the Industrial Automation Branch of the Fraunhofer Institute for Optronics, System Technologies and Image Exploitation IOSB, believe there is a more effective and license-free way to overcome the





### How SAP is Humanizing the Product Support Customer Experience

In a business world obsessed with automation, a humanized approach could easily be overlooked, especially when it comes to customer support. There are so many benefits when it comes to automation in Add body text support, but it is more important than ever to look at humanizing the customer experience.

During my 20-year tenure at SAP, I have worked alongside customers and have always found it meaningful to listen to them and help them succeed. I believe creating a positive customer experience boils down to effortless interaction with SAP Product Support. Let's be honest: When something goes wrong, especially for your business, there is naturally a huge frustration that comes along with it. This must be met with genuine care and resourcefulness.

As humans, we have complex thought patterns, decision-making, and a wide range of emotions. Technology and automation cannot address all of these. By understanding the kinds of repercussions that come with technical issues, I can wholeheartedly relate to customers' desire to connect with someone — not a machine — who can fix their issues with the least amount of effort as possible. In this day and age, where customer expectations are higher than ever, efficiency and real-time channels for support are imperative. Throughout my years in support, I have heard from customers that they would like to be able to speak to a manager or someone who can help get the job done. Not only is this a great way to be accountable to customers, it is also a great way to influence their overall experience and gain more insight into customers, allowing SAP to become a trusted advisor to them.

This is exactly why SAP has developed the new Schedule a Manager service for high-priority incidents. The service is available to all SAP customers at no additional cost and for nearly all SAP solutions. SAP noticed a gap in the customer experience journey and is filling this need for customers — all while maximizing their satisfaction.

#### How Schedule a Manager Works

SAP developed Schedule a Manager to put customers in front of the people who can treat their issues with the utmost importance, thereby helping exponentially reduce the risk of further escalation. Alongside the Expert Chat and Schedule an Expert services, Schedule a Manager provides customers an easy way to book a 15-minute phone call with a support manager. This manager works alongside the relevant product support engineer day in and day out to discuss the details of a customer's high-priority incident. SAP envisioned a service that would allow management to get closer to customers and empower leaders to directly impact and influence customers' support experience. Through Schedule a Manager, SAP is bringing that to life by enabling customers to quite literally schedule a conversation with a manager – but not just any manager, the right manager — including me.





The goal of the first joint project for Stäubli and STOBER—in cooperation with linear technology manufacturer Rollon—was the expansion of Stäubli robots with a maximum of six axes by a seventh and optional eighth axis from STOBER. The concept involves a robot which moves dynamically on a linear guide, with a seventh and eighth axis to enable both translational as well as rotational movements. This makes the robot both highly flexible and freely configurable. As a result, it has a significantly larger range of operation and can take on a wide array of tasks at various stations on a line. An SD6 single-axis controller from the Pforzheim-based drive specialist is used for the motion control for each the seventh and eighth axis. Connection to a higher-level controller takes place over EtherCAT or CANopen.

Stäubli is once again cooperating with STOBER for a second project. In this project, both companies want to demonstrate how efficiently a six-axis robot from the TX2-60 series can be equipped with one or two external axes from STOBER. One application of this can be found at a famous German bicycle manufacturer, for example. With the help of the STOBER PHEZ geared motor, the seventh axis moves a rotary table on which a bicycle frame to be processed is located. The robot guides the tool to the frame, and as soon as the two touch, the motor of the rotary table starts. The tool traces the uneven rotational movement of the frame without losing contact. The axes are regulated by the new CS9 controller from Stäubli as well as the STOBER SD6 single-axis controller. Connection takes place over EtherCAT. The model will be presented at a trade fair in La Roche-sur-Foron, France, in the beginning of December.

## Stäubli Expands Operating Range of Robots with STOBER Axes

For precise, high-speed tasks, companies from industries such as the automotive, food, medicine, pharmaceutical, plastic or electronics sector rely on robots—e.g. for loading and unloading, palletizing, handling, sorting or stacking a wide array of components. Stäubli Robotics is one of the leading providers in the world. Additional axes from STOBER allow the multi-axis robots to be configured with complete freedom, thus giving them maximum flexibility. This is a partnership with a future—and significant added value for customers.







## **New Smart Building Suite Enables People Centric Workplace Experience**

- Real-time analytics to create dynamic workplaces

- Designed to improve employee productivity and operational efficiency - Data-driven insights on space utilization to optimize real estate assets - To be shown at Light & amp; Building trade fair in Germany, Frankfurt

Siemens Smart Infrastructure has launched a smart building suite designed to create more efficient and flexible workplaces where people are at the core. The suite of IoT (Internet of Things) enabled devices, applications and

advantage for companies. **Drive System in The Netherlands** Employees are empowered with greater choice and control in the workplace, The repurposing solution guarantees new life and energy including picking their own optimal efficiency of the equipment. temperature setting, pleasant lighting WEG participated in the conditions and find available rooms for modernization of a port's their spontaneous meetings. The suite overhead crane drive system in consists of complementary Siemens the Netherlands. The project technologies and allows building involved dismantling an old management systems to respond crane, adjusting its track width and beam length and turning its intelligently to user input and cat around. A new hoisting solution was installed replacing DC environmental data. Now, workspaces motors with VFD driven alternating current (AC) motors. In can adapt to employees' needs with realaddition, an energy recovery system was developed to convert time analytics continuously learning from gravity and braking into electricity to reduce energy costs. The user input and picking up behavioral supply was made in partnership with the company Nedcranes, patterns. At the same time, powerful data who specialize in inspections and repairs to complete overhauls analytics give insights into how the including maintenance of port cranes. spaces are being used to make better According to the WEG team, this type of project is always decisions around space optimization and customized and all steps must be properly coordinated. After real estate portfolio management. identifying loads, speeds and weather conditions such as wind and *"The future of work demands a more"* rain, WEG selected the most suitable motors from its portfolio. In productive, agile and flexible working total, 4 x 30 kW motors for crane movement, 2 x 22 kW trolley environment while using resources motors, a 7.5 kW motor for the lifting device and a 170 kW motor *responsibly and sustainably,"* said Beat for the winch were provided. All motors, except for the winch Vanza, CEO Solution & amp; Service motor, are equipped with gearboxes and mechanical brakes, this Portfolio, Siemens Smart Infrastructure. "A last one being a standard safety requirement in the world of digitalized, data-driven approach to the cranes. office environment ensures that workspaces are optimized for both WE ARE HERE TO SULD YOUR BRAND employee and building performance."

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services turn offices into a competitive

# **WEG Retrofits Port's Overhead Crane**







## **ADLINK Joins Intel and Arrow Electronics to Launch Vizi-AI<sup>™</sup> Development Starter Kit** for Industrial Machine Vision AI at The Edge

Vizi-AI<sup>TM</sup> combines plug-and-play hardware and software enabling a faster, easier and scalable starting point for machine vision AI deployments at the edge



ADLINK Technology, a global leader in edge computing, has launched Vizi-AI<sup>™</sup> with Intel providing a development starter kit (devkit) for industrial machine vision artificial intelligence (AI). The Vizi-AI starter devkit includes an Intel Atom® based SMARC computer module with Intel® Distribution of OpenVINO<sup>™</sup> toolkit and ADLINK Edge<sup>™</sup> software. The dekvit is now available exclusively through Arrow Electronics in the North America and EMEA regions. ADLINK previewed Vizi-AI at Embedded World in February where it was awarded 'Best in Show' for AI and machine learning by Embedded Computing Design. Developers can easily connect Vizi-AI to different image capture devices and then deploy and improve machine learning models to harness insight from vision data to optimize operational decision-making. Vizi-AI includes a range of pre-built OpenVINO compatible machine learning models that can be used straight out of the box.

## #Vi7iAI

#### **The Vizi-AI devkit includes:**

- Intel Atom based SMARC computer module with Intel® Movidius™ Myriad™ X VPU and 40 pin connector.

- Intel Distribution of OpenVINO toolkit, which optimizes deep learning workloads across Intel® architecture-including accelerators-and streamlines deployments from the edge to the cloud. - ADLINK Edge<sup>™</sup> software provides enhanced functionality of OpenVINO through the ADLINK Data River<sup>™</sup> which enables data to flow freely and securely. - ADLINK Edge™ Profile builder which provides a simple, intuitive user experience to manage devices and applications.

- ADLINK Edge™ Model Manager which enables users to add their own models to a pre-loaded selection for easy deployment.



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#### **Great Opportunity**



## Innovate Malaysia 2020 A Steppingstone to Your **Future Career**

Innovate Malaysia Design Competition is the largest design competition in Malaysia, open to all third year or final year degree engineering, computer science, IT, and science/mathematics students. The goal of the competition is to promote innovative culture in engineering design work, tackle real-world problems with practical engineering solutions, and churn out brightest talents for product development, further research, and commercialization. Technology companies, including Dassault Systémes SOLIDWORKS, Google, Intel, Keysight, MathWorks, Microsoft, SAS, and SilTerra, work together to co-organize the competition.

#### PRIZES

#### **Technology Tracks Prizes**

- Cash prizes (total of RM10,000 / track) plus items are awarded to 5 finalists from each technology tracks.

#### **Design Challenge Awards**

- Cash prizes of RM3,000 for each Design Challenge.

#### **DreamCatcher Best Demo Video Award**

- Cash prize of RM3,000.

#### **IEEE Social Innovation Award**

- Cash prize of RM1,500.

#### **IEM Best Paper Award**

- Cash prize of RM1,500.

#### **IET Green Technology Award**

- Cash prize of RM1,500.

#### **Innovate Malaysia Excellence Award**

- Innovate Malaysia Excellence Award trophy.

Visit: <u>https://innovate.dreamcatcher.asia/page\_01.html</u> for more information

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## **2020 Aluminum Extrusion Design** Competition





#### Cash Prizes & Student Scholorship Awards **Professional Class – \$11,500 in Cash awards**

- Structural /Architectural \$2,000
- Transportation \$2,000
- Engineered Products \$2,000
- Alternative Energy \$2,000

#### Student Class – \$15,500 will be presented as cash awards

- First Place \$5,000
- Second Place \$4,000
- Third Place \$3,000
- Bonnell Sustainable Design Award \$3,500

Visit: <u>https://www.aec.org/mpage/2020-aluminum-extrusion-design-</u> <u>competition</u> for more information

The Aluminum Extrusion Design Competition is intended to enlighten students and engineering, design, and architecture professionals about aluminum extrusions' superior advantages and many applications. Enter your unique designs in the 2020 Aluminum Design Competition! Show off your talent, ingenuity and creativity by designing components, systems and/or products that feature aluminum extrusions.



## UX Design Award 2020

The UX Design Awards are a global competition for outstanding user and customer experience – core topics that shape all areas of life.

The UX Design Awards reflect the huge impact of user experience design on shaping a positive living environment for all. Originating in 2008 as a show for good usability, we established the Awards in 2015. Ever since, the UX Design Awards have been honoring great user experiences in a class of their own.

The annual competition is open for products, services, environments, prototypes and concepts as well as for future-oriented visions. The awards present all nominated projects in an exhibition at the global tech show IFA in Berlin, Germany.



#### **Competition Focus**

User Experience defines the overall experience of a person with a product or service – from their expectations to the physical, cognitive and emotional experience, to the lasting impression. Positive user experiences increase people's satisfaction, expand their possibilities and strengthen their trust in organizations, companies, systems, services and products.

#### **Competition Categories** <u>UX Design Award | Product</u>

Market-ready or new products, services and environments

Product studies, service concepts, conceptual environments (development perspective: 2 – 5 years)

UX Design Award | Vision

Foresight concepts, advanced design studies, research projects (development perspective: more than 10 years) <u>UX Design Award | New Talent</u>

Bachelor and master projects in the fields of experience design, interaction design,

service design

Visit: <u>https://www.ux-design-awards.com/en/anmeldung/information/</u>for more information

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## **Toyota Logistic Design Competition 2020**

#### UX Design Award | Concept

industrial and product design as well as



of baggage handling at airports. Whether it's a partial or a full solution from check-in to baggage drop, transport to the terminal, to the aircraft, and/or arrival at its destination. "While two years ago we focused on the last-mile delivery of packages, this year's challenge is about baggage handling at airports, which we *feel is in need of a major makeover*," says Magnus Oliveira Andersson, Head of Design at Toyota Material Handling Europe. "*Staying in touch* with and listening to young designers is crucial to our success as a design studio. Change is, as they say, the only constant." The deadline closes on 22 October 2019, after which a panel of professionals working around design and innovation within Toyota will evaluate all complete submissions and determine the finalists. All finalists will get feedback from the jury towards the end of November and a chance to rework their proposals for the final jury session. Experts and industry leaders will make the final decision and select the winners of the competition.

Visit: <u>https://toyota-forklifts.eu/why-toyota/about-us/news-and-</u> editorials/toyota-logistic-design-competition-2020-is-looking-forbaggage-handling-solutions/ for more information

With billions of pieces of baggage being handled at airports around the world each year, baggage handling is a major operation which Toyota Material Handling Europe is increasing its focus on. That's why Toyota is calling all design students and recent graduates (2019) around the world to come up with a solution to improve the logistics

## **GE Researchers Working to Improve Cyber Resiliency of Critical Military and Industrial Systems**

GE Research, the central technology development arm for the General Electric Company (GE), today announced it is leading an up to \$4.9 million project through



the Defense Advanced Research Agency's (DARPA) Cyber Assured Systems Engineering (CASE) program, to develop VERDICT to assess and strengthen cyber protections for military and other industrial systems.

DARPA's CASE program is focused on supporting new technologies that strengthen cyber protections for the embedded computer systems that manage or control critical infrastructure, vehicles, smart devices and military systems. The threats to these types of systems have grown, as attempts to attack these systems have become more sophisticated in nature.

Kit Siu, a Senior Engineer in the Research Lab's Controls and Optimization team, and Abha Moitra, a Principal Scientist in the Artificial Intelligence Group, are leading GE's CASE project, which involves development of a comprehensive toolkit that can assess a given computer system's vulnerabilities and prescribe the best defense measures to shore them up. Siu recently demonstrated GE's technology for Naval Information Warfare Systems (NAVWAR) personnel in San Diego, California. "A key objective of VERDICT is to deliver a thorough cyber threat assessment that not only flags a system's vulnerabilities but also recommends the *best defense measures to address them,*" Siu said. "This could work across many types of systems, from military platforms like a ship or aircraft to critical infrastructure like a power plant or wind farm." Siu said, "Power systems, like military systems, often are controlled and operated separately from the Cloud to insulate or reduce their susceptibility to cyber threats. But that doesn't mean someone can't get to your system. With the technology toolkit we're developing, we will be able see the potential vulnerabilities more clearly and enable additional measures to strengthen protections."

Siu and Moitra are collaborating with GE Aviation Systems and University of Iowa on this project. The Aviation Systems business is providing domain expertise for cyber analysis on commercial and military aircraft, and the University of Iowa is providing fundamental research in the area of cyber security and formal methods. By the end of the program, the team will deliver the VERDICT as an open source toolkit that may be used to safeguard critical infrastructure.







Heraeus Medical, makers of the marketleading PALACOS bone cement, has enhanced its online HeraeusCare orthopedic care coordination solution to a new digital health platform that connects healthcare authorities and providers with patients during the COVID-19 pandemic

"The coronavirus crisis is putting enormous strain on healthcare organizations, with worried patients filling emergency rooms and doctor's offices," said Andrew Williamson, President of Heraeus Medical. "In this unprecedented global pandemic, it is critical to minimize exposure and prioritize patients so that the ones that need medical attention the most get it. We realized HeraeusCare could provide a platform to help ease the strain and better manage patients."

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## Heraeus Medical Expands Its Digital Solution to Enable Healthcare Authorities to Remotely Monitor and Prioritize Potential COVID-19 Patients The platform improves patient management and patie

Launched in January, 2019, the HeraeusCare webbased digital solution was initially designed for use by orthopedic surgeons and patients to ensure successful joint replacement outcomes by centralizing and automating hospital-patient interactions. With the coronavirus pandemic overwhelming hospitals and healthcare providers, Heraeus Medical conducted discussions with numerous healthcare leaders and organizations. The positive feedback indicated its cloud-based digital platform could be modified and used to optimize communication with patients, prioritize care and help healthcare authorities cope with the high number of infections that are overwhelming their limited resources.

## Remote online patient monitoring for increasing number of COVID-19 cases

The digital health platform offers a COVID-19 module that enables healthcare organizations to collect and remotely monitor patients' symptoms and disease progressions through a secure, cloud-based platform. High-risk patients needing urgent medical care can be identified and prioritized easily. The platform improves patient management and patient through-put, while significantly reducing time-consuming phone calls and in-person visits to doctors' offices and emergency rooms.To ensure patient data protection, the digital system is compliant with both European Union GDPR regulations and US HIPPA laws.

#### The HeraeusCare COVID-19 remote care solution can be easily implemented by healthcare authorities and organizations:

- After setting up their HeraeusCare online platform, they issue unique activation codes to patients who could be potentially infected.

- These individuals register themselves on the HeraeusCare app (available for both Apple and Android devices). Every day, the app prompts them to enter their symptoms, allowing the healthcare provider to monitor the patient's self-reported condition.

- A symptom checker, based on self-assessed questionnaires, helps the care provider to remotely monitor daily fever, coughing, soreness of throat, breathing difficulties and other relevant factors.

- Healthcare authorities and providers can review the patient's information to conduct user assessment based on gender, age and medical history.

- The healthcare authority/organization remotely monitors the symptoms of registered individuals. They can create alerts when specific symptom thresholds are exceeded, and those patients can be called to the hospital for further care.

## **Smart Engineering Saves Space and Time**

From reducing machine manufacturing time to developing solutions for tight spaces – smart engineering can help As a global leader in providing packaging solutions in the food and pharmaceutical segment, Bosch Packaging, Goa, India supplies horizontal form fill and seal machines primarily to the bakery and confectionery industries. The company plans to gratify the omnipresent and evergrowing demands from the Indian packaging market through Bosch Packaging's Goa facility with its fully equipped R&D facility, engineering and after-sale support, and sophisticated assembly shop floor to build machines with advanced technology.

The designing of customized projects poses the distinct challenge of containing a common engineering component which can be reutilised in other similar projects. This is a challenge that engineers at in Goa, India are all too familiar with.

Often, for their customized line solutions, Bosch Packaging is required to design a Product Distribution System (PDS) to feed product into downstream wrapper lines. The time required to engineer these systems is a significant factor impacting project delivery schedules. The biggest challenge is to have a common engineered solution that can be re-used for various similar projects.

The challenges imposed due to the variability of customized project demands include:

- Variation in line speed

- Variation in total number of downstream flow wraps

- Variation in each of flow wrap speed and dynamics of flow wrap

- Protection of IP while automation applied to PDS solution



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## **Cube 67 Diagnostics Gateway: Diagnostics** Made Easy

Murrelektronik's Cube fieldbus system offers extensive diagnostic options. A new diagnostics gateway makes access to this data even easier. This solution is easy to implement, provides clear information in case of failure and speeds up troubleshooting, resulting in maximum availability of machines and systems.

The Cube system from Murrelektronik is a high-performance, decentralized fieldbus system that is used in many machines and systems. It has a modular structure and customized installation concepts can be realized with a large variety of input modules, output modules, mixed modules, and a wide range of function modules (e.g. IO-Link, RS 485, etc.). A one cable system transfers both communication data and supply voltages, whereby up to 32 modules can be connected to the four branches of each bus node. The major plus points of the Cube system are the one cable system, fully molded modules, multifunctional channels and comprehensive diagnostic options. Evaluation and use of diagnostic data were only possible with timeconsuming programming. Very often, the same steps had to be completed for each new system, because different controls require different diagnostic concepts. So it has not been possible until today to reach maximum utilization of the diagnostic functions of various controls. The resulting problem: Errors could not be identified quickly enough, leading to long downtimes in the worst case. This costs time, money, and nerves.





#### **D-Wave Provides Free Quantum Cloud Access for Global Response to COVID-19**



Customers and partners including Volkswagen, DENSO, KYOCERA, Jülich Supercomputing Centre, Menten AI and others join to offer hybrid quantum expertise to those responding to pandemic

D-Wave Systems Inc., the leader in quantum computing systems, software, and services, today announced the immediate availability of free access to its quantum systems via the Leap quantum cloud service for anyone working on responses to the COVID-19 crisis. Joining the effort are partners and customers including CINECA, DENSO, Forschungszentrum Jülich, Kyocera Corporation, KYOCERA Communication Systems, MDR/Cliffhanger, Menten Al, NEC Solution Innovators Ltd., OTI Lumionics, QAR Lab at LMU Munich, Sigma-i, Tohoku University, and Volkswagen, who will provide access to engineering teams with expertise on how to use the quantum computer and formulate problems, as well as help in developing solutions. This initiative comes in response to a request from the Canadian government for solutions to the pandemic across

industries. Unfettered, free access to D-Wave's quantum computers via Leap is available immediately to anyone

working on COVID-19 response in the 35 countries across North America, Europe, and Asia where access is available to the Leap quantum cloud service. Effectively responding to COVID-19 requires a collaborative and global effort across diverse organizations, including both private and public institutions. By providing free access to Leap's quantum processing resources and quantum expertise, D-Wave and its partners hope to contribute to finding solutions to the COVID-19 crisis. Through this new initiative, anyone developing responses to the pandemic can immediately get unlimited, commercial contract-level access to the recently launched Leap 2.

Leap 2 includes the hybrid solver service designed to bring both classical and quantum resources to quickly and precisely solve highly complex problems with up to 10,000 fully connected variables.

"We're living through an unprecedented crisis affecting nearly every industry and population. Deftly responding to this pandemic requires creativity and new approaches to solving problems. We believe that by combining our customers' and partners' expertise with hybrid quantum computing, we can together bring a potentially powerful resource to the individuals, organizations, and governments around the world building solutions nimbly and collaboratively," said Alan Baratz, CEO of D-Wave. "D-Wave and its partners and customers have significant quantum computing expertise. Together, we hope we can aid the solutions to problems using hybrid quantum-classical solutions. We want to expand the computational capabilities available to experts across disciplines, verticals, and geographies and bring the community's deep quantum knowledge to bear on the complex and dynamic COVID-19 situation."

Hybrid quantum classical computing could be well-suited for solving a range of complex problems of this nature. Potential areas of focus for COVID-19 include a diverse range of hybrid quantum applications, such as analyzing new methods of diagnosis, modeling the spread of the virus, optimizing hospital logistics, supply distribution, pharmaceutical combinations, and beyond.

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upload and simulation to checking the design up to the printing process and associated services. Starting today doctors, hospitals and organizations in need of medical devices as well as designers and service providers with medically certified printing capacities can register for free access to the Siemens AM Network. "Having worked on Additive Manufacturing for years, we offer AM solutions along the entire value chain and can print 3D parts quickly according to acute demands. To help fight COVID-19, we have opened our AM Network for hospitals and other health institutions needing spare medical parts to efficiently manage their design and printing requests", said Klaus Helmrich, Member of the Managing Board of Siemens AG and CEO Siemens Digital Industries.

## **Siemens** Connects Healthcare Provides and **Medical Designers to Produce Components Through Additive Manufacturing**

In response to the ongoing global health crisis caused by the outbreak of the COVID-19 virus, Siemens is making its Additive Manufacturing (AM) Network along with its 3D printers, available to the global medical community to speed design and production of medical components. The AM Network connects users, designers and 3D-print service providers to enable faster and less complicated production of spare parts for machines like ventilators. The Siemens AM network is available globally and covers the entire value chain – from

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Afterwards, these components can be printed via medically certified 3D printers of partner companies that are also part of the AM Network. In addition to numerous 3D printers from partner companies, Siemens' 3D printing machines are also connected to the network and if suitable, will also be used to locally print components and spare parts for medical devices. Printing capacities from additional service providers can easily be added to the AM Network.

## **Danfoss Parts and Service** Launches New "ServiceHub" Site for Aftermarket Customers

sales to distributor network



global owners of off-road machines that contain Danfoss components, and to assist those customers in identifying the right service and repair products (parts, kits, services), and direct them to existing online stores within our distribution network. The new ServiceHub site officially launched on April 6, and creates new, value-added services to our portfolio, which will also improve the customer experience with Power Solutions, and our global partners, differentiating us from the competition.



## Designed to serve global end-users and direct

Danfoss Power Solutions is excited and happy to announce the launch of a new site that is specifically targeted at all



## **Mitsubishi Electric Develops Production Line Improvement Technology**



#### 1) Integrated design of layout and materials flow raises planning efficiency

The new technology integrates the designing of production-floor layouts and materials flow for the quick identification and resolution of potential issues, which is a challenge in conventional nonintegrated design environments. The new technology also visualizes information such as distance-intensity (DI) analytical data which is generated dynamically as improvements are designed. Layouts, material flows, speed of materials moving between processes, etc. can be displayed with easy-to-understand graphics to enhance the quality of planning.

#### 2) AI simulations enable precise estimates of expected productivity gains

The technology automatically generates data for reliable production-volume calculations based on data from actual production processes, such as changes in process times and work efficiencies. Using these data, production volume can be simulated with more than 90 percent accuracy. Also, multiple improvement plans can be compared in terms of expected productivity.

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Mitsubishi Electric Corporation announced it has developed a new technology for the efficient design of production floor layouts and material flows as well as the accurate estimation of productivity using Mitsubishi Electric's Maisart®\* artificial intelligence (AI) technology. The combined technology enables comparison of highly accurate production line improvement plans and reduce the time it takes to roughly half the time normally required.

## **Goodyear's New Tire Concept Can Regenerate Tread on the** GO





Goodyear has a new tire concept, called reCharge, that includes biodegradable tread that can be "recharged," by shooting out new sections as needed. A liquid compound held in the center of the tire creates the new tread, leading to a much easier tire replacement process. Fibers inspired by ultra-tough, yet flexible spider silk reinforce the tread.

When all-electric vehicles eventually complete their global takeover, they'll collectively require much less maintenance than their oiled up, transmission-based counterparts. To help drivers avoid the misery of waiting around for a tire change, Goodyear has introduced an intriguing new concept: tires that can regenerate new tread on the spot.

## Siemens Industrial Edge Makes Drive Systems More Intelligent

At the Hannover Messe 2020, Siemens presents a concept study that demonstrates the integration of a Sinamics drive system to the Siemens Industrial Edge platform. In future, it will be possible to perform high-frequency data exchange in drive technology using an Edge device. The integration of Sinamics frequency converters to an Edge device enables users of machines and applications to perform complex analyses of data that is already collected in the drive. Machine learning algorithms identify patterns and detect anomalies and their causes, providing early indications of necessary maintenance. This minimizes downtimes and reduces the consumption of resources. For example, in intralogistics applications the belt tension can be monitored for a storage and retrieval machine. The belts, which are driven by a motor and frequency converter, require a specific tension so that the application runs smoothly. If the visualization of the data analyses shows irregularities in the drive system, then belt maintenance can be triggered promptly, for example. By connecting Sinamics frequency converters to the Industrial Edge platform, Siemens is making drive technology more intelligent and paving the way for new business models. With intelligent drive technology, machine builders can provide application-specific app solutions and digital services, for example, or

contractually guarantee the availability of a machine.

#### Siemens Industrial Edge

With Siemens Industrial Edge, Siemens offers a digitalization solution that expands automation to include data processing at machine level, by safely moving the intelligence of edge computing and advanced analytics into the manufacturing area. Siemens Industrial Edge offers users the opportunity to execute a range of descriptive, diagnostic, predictive and prescriptive analytics applications. Cloud connectivity - in conjunction with Edge apps created by Siemens, third-party suppliers or users themselves - is used in an integrated hardware and software ecosystem for automation components.



![](_page_64_Picture_7.jpeg)

![](_page_64_Figure_9.jpeg)

![](_page_64_Picture_10.jpeg)

## Toyota Develop with Over 95 Pe Highest in The

forota Motor Corporation (Toyota) has developed a new type of paint atomized (airless paint atomizer) that uses static electricity instead of air, proplace the conventional air paint atomizers used in the vehicle body painting process. The newly developed airless painter, the first of its kind in the world\*, achieves over 95 percent coating efficiency (the amount of paint sprayed versus the amount that actually adheres onto the vehicle body), the highest in the world\*, from conventional efficiency of approximately 60 to 70 percent.

By deploying the airless paint atomizer in Toyota Group's painting process, it is expected that the Group can reduce its CO2 emissions by about 7 percent. In addition, the collection device situated at the bottom of the paint booth (the area where paint is sprayed) can be made more compact. Therefore, it is able to make painting production lines more compact for the future.

Toyota is advancing initiatives to achieve its Plant Zero CO2 Emissions Challenge, one of the targets included in the Toyota Environmental Challenge 2050 announced in 2015. As part of this effort, it developed the airless paint atomizer and deployed it at both Takaoka and Tsutsumi Plants. Gradual deployment at other plants is planned as well as consideration of deployment among other Toyota Group companies and licensing the technology to other companies.

#### Features of airless paint atomizer

Conventional air paint atomizer sprayed paint primarily using aerodynamic force, then paint the vehicle body with the atomized particles using an air paint atomizer. For this reason, paint particles are

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## **ficiency**,

scattered by the air ricocheting off the vehicle body, resulting in a coating efficiency of approximately 60 to 70 percent. By comparison, the new airless paint atomizer uses electricity to sprayed the paint (electrostatic atomization), and the statically charged particles coat in such a way that they gravitate toward the vehicle body (electrostatic painting). Electrostatic atomization and electrostatic painting technologies greatly reduce the number of atomized particles that scatter, thereby achieving a higher coating efficiency.

![](_page_65_Picture_10.jpeg)

**Conventional Air Paint Atomizer** Since atomized paint is sprayed onto the vehicle body using air, the ricochet effect causes many particles to scatter

![](_page_65_Picture_12.jpeg)

![](_page_65_Picture_13.jpeg)

New Airless Paint Atomizer Since the paint is atomized using electricity and electrostatic force is used for painting, few particles are scattered

![](_page_65_Picture_15.jpeg)

## Bilk 1004 Toa Payoh Ind Pk #03-1489, S(319076) Fax: +65 62529884 com.3g Email : alvin@pan-m PAN-M PTE LTD Tel: +65 62524864

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## **Event Calendar**

## **MAY 2020**

## **13 - 16 MAY 2020**

#### **MTA ASIA**

Bangkok International Trade & Exhibition Center (BITEC)

## 20 - 22 MAY 202

#### **INTERNATIONAL INTERNET OF THINGS EXHIBITION**

Suzhou International Expo Center, B1, *C1, China* 

## **JUNE 2020**

## **11 - 14 JUNE 2020**

**MEGABUILD INDONESIA 2020** 

Jakarta Convention Center

## **17 - 20 JUNE 2020**

**THE 28TH INTERNATIONAL PROCESSING AND PACKAGING EXHIBITION FOR ASIA** 

Hall 98 - 106, BITEC, Bangkok, Thailand

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## 22 - 24 JUNE 2020

#### **THE 26TH INTERNATIONAL PROCESSING & PACKAGING EXHIBITION**

National Exhibition & Convention Center (Shanghai)

## 23 - 25 JUNE 2020

**ASEAN'S PREMIER MECHANICAL & ELECTRICAL ENGINEERING POWER & ENERGY SHOW** 

Malaysia International Trade and Exhibition Center (MITEC), Kuala Lumpur

## **30 JUNE - 2 JULY 2020**

#### **MWC SHANGHAI 2020**

Shanghai New International Expo Centre (SNIEC)

## **JULY 2020**

## 7 - 10 JULY 2020

**MTA 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 Convention Center (MITEC), Kuala Lumpur

## 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

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## **Event Calendar**

## **AUGUST 2020**

## **17-19 AUGUST 2020**

**OTC ASIA 2020** Kuala Lumpur Convention Center (KLCC), Kuala Lumpur

## 26 - 28 AUGUST 2020

**INDO WATER, INDO WASTE, INDO RENERGY, INDO POOLTECH AND INDONESIA INTERNATIONAL SMART CITY 2020 EXPO AND FORUM** 

Grand City Convex - Surabaya, Indonesia

## 26 - 28 AUGUST 2020

**THE 10TH EDITION OF INAMARINE 2020** 

Jakarta International Expo (JIExpo) Kemayoran, Jakarta, Indonesia

## **SEPTEMBER 2020**

## 8 - 10 SEPTEMBER 2020

**KAZAKHSTAN INTERNATIONAL BUILDING & INTERIORS EXHIBITION** Atakent Exhibition Center

## 9 - 11 SEPTEMBER 2020

#### **PROPAK VIETNAM**

Saigon Exhibition & Convention Center

#### **16 - 18 SEPTEMBER 2020**

#### **ASEAN SUSTAINABLE ENERGY WEEK**

Bangkok International Trade & Exhibition Center (BITEC)

## **16 - 18 SEPTEMBER 2020**

**CONSTRUCTION INDONESIA** Jakarta International Expo, Indonesia

#### **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), Kuala Lumpur

## 22 - 25 SEPTEMBER 2020

#### **INNO TRANS 2020**

Messe Berlin GmbH Expo Center City Messe DAMM 22 D-14055 Berlin

## **25 - 27 SEPTEMBER 2020**

#### **ELECTRICITY & ENERGY EXPO 2020**

Tatmadaw Hall, Yangon, Myanmar

## **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**

Borneo Convention Centre Kuching, Sarawak

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## **Event Calendar**

## 8 - 10 OCTOBER 2020

**PROPACK INDIA** *Pragati Maidan, New Delhi, India* 

#### 14 - 15 OCTOBER 2020

**BIG DATA & AI WORLD SINGAPORE** *Marina Bay Sands* 

## **19 - 24 OCTOBER 2020**

#### FIATA WORLD CONGRESS 2020

BEXCO Busan, Republic of Korea

## 20 - 22 OCTOBER 2020

INDUSTRIAL TRANSFORMATION ASIA-PACIFIC

Singapore Expo

## 21 - 23 OCTOBER 2020

INTERNATIONAL CONSTRUCTION & INFRASTRUCTURE TECHNOLOGY EXHIBITION (MBAM ONEBUILD)

*Kuala Lumpur Convention Centre (KLCC), Kuala Lumpur* 

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## 21 - 23 OCTOBER 2020

**MTA MYANMAR** 

Myanmar Expo (ME), Yangon, Myanmar

## **NOVEMBER 2020**

## 9 - 12 NOVEMBER 2020

#### ADIPEC

*Abu Dhabi National Exhibition Center (ADNEC), Abu Dhabi United Arab Emirates* 

## 10 - 13 NOVEMBER 2020

THE 26TH INTERNATIONAL MACHINE TOOLS, METALWORKING AND AUTOMATION TECHNOLOGY EXHIBITION

Malaysia International Trade and Exhibition Centre (MITEC), Kuala Lumpur

## 23 - 26 NOVEMBER 2020

## INTERNATIONAL BUILDING & CONSTRUCTION SHOW

Dubai World Trade Centre

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## **DECEMBER 2020**

## 2 - 4 DECEMBER 2020

#### THE BUILDINGS SHOW

Metro Toronto Convention Centre

## 7 - 9 DECEMBER 2020

#### SEATRADE MARITIME MIDDLE EAST 2020

New Dubai Exhibition Centre

## **10 - 12 DECEMBER 2020**

#### CHINA HOMELIFE & CHINA MACHINEX INDIA 2020

*Bombay Exhibition Centre, Nesco Complex W.E. Highway, Goregaon* 

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### 20 - 22 OCT 2020

MALAYSIA INTERNATIONAL TRADE AND EXHIBITION CENTRE (MITEC) KUALA LUMPUR.









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