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Partnership with US\$10 Million Commitment

Total and ADNOC join forces to launch
unconventional gas exploration in Abu Dhabi

Sapura Energy wins RM1.75bil
new jobs in Malaysia and Mexico

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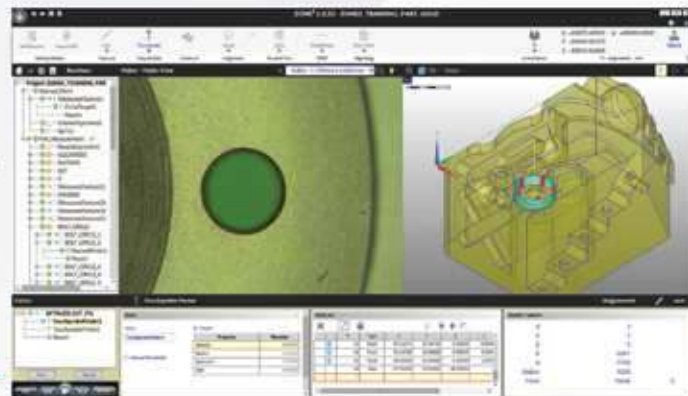


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Blk 1004 Toa Payoh Ind Pk #03-1489, S(319076)

Tel: +65 62524864 Fax: +65 62529884

Email: alvin@pan-m.com.sg



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PUBLISHER
Orange Media Group
22 Sin Ming Lane, #06-76
Midview City 57369
Singapore
Tel: +65-6405 0110

No 1 Jalan Bayu Puteri 2/1
Taman Bayu Puteri
#21-09, Bayu Marina
80150 Johor Bahru
Malaysia
Tel: +607-336 5039 / +6016 218 1218

81 Cach Mang Thang 8 Phuong
Ben Thanh Quan 1 Ho Chi Minh City
Vietnam
Tel: +842 839253969

555/111 Unity Tower
Soi Udom Suk 29
Sukhumvit 103 Road
Bangna, Bangkok 10260
Thailand
Tel: +66-2-749 4475

EDITORIAL
Nicole Chong
VJ

SPECIAL FEATURE COVERAGE REPORTER
Ajay

DESIGNER
Aida Eusoff

MARKETING & ADVERTISEMENT
Lily Lai
Anggie
Davis Tan
Hardave

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Petroleum Refining and Marketing (R&M) is the Second Link in Reliance's Drive for Growth and Global Leadership in the Core Energy and Material Value Chain



The Jamnagar manufacturing division is the world's largest refining hub. The entire refining complex was built in a record time at globally competitive capital costs – in fact, at costs much lower than comparable refineries around the world.

Its scale, design, flexibility, level of automation and degree of integration heralded the way refineries of the future would be built. The speedy growth of the complex lies at the heart of India's transformation. It has transformed India from being a net importer of petroleum products to a net exporter, thereby ensuring the nation's energy security.

With crude processing capacity of 1.24 million Barrels Per Stream Day (BPSD), the Jamnagar refinery is a trendsetter and has won several awards, including the prestigious 'International Refiner Of The Year' award.

It also enjoys the distinction of housing some of the world's largest units, such as the Fluidised Catalytic Cracker (FCC), Coker, Alkylation, Paraxylene and Polypropylene plants.

Fuels from Jamnagar refinery are exported to several countries across the world. This complex refinery is future ready and can produce gasoline and diesel of any grade. Reliance also has another refinery – the sixth largest in the world – in the Special Economic Zone at Jamnagar. This refinery has a capacity for processing 580,000 BPD of crude.

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Key Components of the R&M Business Model

Reliance's technical, operational and logistic strengths act as the fulcrum to leverage its refineries' asset utilisation and optimisation, the key components of the R&M business model. These strengths, coupled with our highly integrated plants and automated processes, augment our R&M business's operating efficiencies. Moreover, our refineries are strategically located on the west coast of India, offering the benefits of low transportation costs for feedstock and proximity to high-growth markets.

The goal of R&M business is to deliver industry leading returns and be a source of medium-term growth, while focusing on health, safety and environment.



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Total and ADNOC Join Forces to Launch Unconventional Gas Exploration in Abu Dhabi



Total and Abu Dhabi National Oil Company (ADNOC) have signed a concession agreement to launch an unconventional gas exploration program in the high potential Diyab play that spreads over 6 000 km² to the west of the prolific ADNOC Onshore concession, in Abu Dhabi.

The concession allows for two exploration and appraisal phases for a period of up to 7 years, followed by a 40 year development and production period. Total will operate the exploration phase of this new concession with a 40% interest, while ADNOC will hold the remaining 60% interest. In case of positive exploration, this multi-Tcf opportunity will be developed in stages in line with the growing gas demand in the UAE and potential export opportunities.

This agreement is a result of close cooperation between ADNOC and Total towards identifying ways of unlocking the unconventional gas potential in Abu Dhabi, Total bringing its expertise, personnel and technical know-how.

"We are pleased to be the first international company to pioneer unconventional gas exploration in Abu Dhabi alongside ADNOC. This agreement consolidates our longstanding and strategic relationship in a country and region that we know well. We are committed to supporting the UAE in meeting its ambitions to unlock this significant unconventional gas resource," said Patrick Pouyanné, Chairman and CEO of Total. "The Diyab play has the potential to be a high impact play ranking alongside the most prolific North American shale gas plays, and is an excellent addition to our exploration



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Gazprom's UGS Facilities in Russia Reach Record

Potential Deliverability of 812.5 Million Cubic Meters per Day

The Gazprom **Management Committee** examined the operational readiness of the Unified Gas Supply System (UGSS) facilities for peak loads in late 2018 – early 2019 and reviewed the long-term measures needed to be taken to ensure uninterrupted gas supplies to consumers in winter.

It was noted at the meeting that, amid increasing gas supplies to Russian and foreign consumers, the Company had successfully completed its large-scale efforts to prepare the UGSS facilities for operation in the heating season, with all 11 sets of planned preventive maintenance and repair operations performed in full.

Regarding production facilities, the Company took the necessary measures for 92 comprehensive gas treatment and pre-treatment units, 81 gas compressor units (GCUs) at booster compressor stations (BCSs), and 292 wells. In addition, it is planned to bring onstream the third gas production facility of the **Bovanenkovskoye** field, to complete the construction of BCSs at the **Urengoyevskoye** and **Zapolyarnoye** fields, and to hook up 95 new producing gas wells before the end of the year.

Extensive work was carried out within the gas transmission system. In the period under consideration, Gazprom repaired 678.5 kilometers of gas trunklines, 355 GCUs at compressor stations, and 197 gas distribution stations. Some 22,100 kilometers of gas pipelines underwent in-line inspections, while 845 and 38 submerged crossings were inspected and repaired, respectively. This year, it is also planned to bring into operation the linear part of the **Ukhta – Torzhok 2** gas pipeline and four compressor stations along the operating **Bovanenkovo – Ukhta 2** gas pipeline.

Underground gas storage (UGS) facilities play an important role in satisfying peak demand during winter periods. The Company continues its systematic efforts to improve their deliverability. By the start of the 2018–2019 withdrawal season, the potential maximum daily deliverability of Russian UGS facilities reached 812.5 million cubic meters of gas. This figure marked an absolute record for the national gas industry. Compared to last year, deliverability grew by 7.2 million cubic meters. This amount is commensurate with the daily gas consumption in winter by individual constituent entities of Russia, like the Kurgan Region. In eight years, starting from the 2010–2011 autumn/winter season, the potential maximum daily deliverability of UGS facilities added 31 per cent.

By the start of the withdrawal season, the working gas inventories in Russian UGS facilities amounted to 72.27 billion cubic meters, or 73.5 billion cubic meters taking into account the UGS facilities in Armenia and Belarus.

It was noted at the meeting of the Management Committee that successful operations during the period of peak loads would depend on, inter alia, the sufficiency of backup fuels (fuel oil, coal, etc.) at heat generation facilities and large industrial enterprises, as well as on disciplined gas consumption in Russian regions.

Gazprom's relevant units and subsidiaries were tasked to complete the preparation of the UGSS facilities for autumn/winter operation in a timely manner and to ensure the reliable and smooth functioning of capacities.



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Shell Announces the Second Tranche of the Share Buyback Programme

Royal Dutch Shell announces the commencement of trading in the second tranche of its share buyback programme previously announced on July 26, 2018. The company's intention is to buy back at least \$25 billion of its shares by the end of 2020, subject to further progress with debt reduction and oil price conditions.

The company completed the first tranche of its share buyback programme (the 'initial tranche'). In aggregate between July 26, 2018 and October 19, 2018, the company repurchased 60,844,806 A ordinary shares for an aggregate consideration of \$2 billion.

The maximum number of ordinary shares which may be purchased by the company under the second tranche of its share buyback programme (the 'second tranche') is 773,155,194, which is the maximum pursuant to the authority granted by shareholders at the company's 2018 Annual General Meeting, minus the number of ordinary shares purchased in the initial tranche.

In the second tranche, the company has entered into an irrevocable, non-discretionary arrangement with a broker to enable the purchase of A ordinary shares and/or B ordinary shares for a period up to and including

January 28, 2019. The aggregate maximum consideration for the purchase of A ordinary shares and/or B ordinary shares under the second tranche is \$2.5 billion. The shares bought back under the second tranche will be whichever of the A ordinary shares and/or B ordinary shares is economically the least expensive on a given trading day.

The broker will make its trading decisions in relation to the company's securities independently of the company. The second tranche will be carried out on the London Stock Exchange and/or on CBOE Europe Equities and will be effected within certain pre-set parameters. It will be conducted in accordance with the company's general authority to repurchase shares granted by its shareholders at the company's Annual General Meeting held on May 22, 2018, and in line with Chapter 12 of the Listing Rules, Article 5 of the Market Abuse Regulation 596/2014/EU dealing with buyback programmes and the Commission Delegated Regulation (EU) 2016/1052. The purpose of the second tranche is to reduce the issued share capital of the company to offset the number of shares issued under the Scrip Dividend Programme and to significantly reduce the equity issued in connection with the company's combination with BG Group. All shares repurchased as part of the second tranche will be cancelled.



Aramco Plans to Invest \$500 Billion as Oil Giant Expands Abroad



Saudi Aramco aims to become a global refiner and chemical maker, seeking to profit from parts of the oil industry where demand is growing the fastest while also underpinning the kingdom's economic diversification.

The world's biggest oil exporter is earmarking \$500 billion to invest over the next 10 years, including \$160 billion for natural gas developments and \$100 billion for chemicals projects, Aramco CEO Amin Nasser said in an interview in Dhahran, Saudi Arabia. The spending would come on top of the company's planned purchase of a majority stake in Sabic, the Middle East's largest chemical business, a deal that could be valued at about \$70 billion.

"We need a major acquisition for us to be in different markets quickly," Nasser said. Sabic has a presence in more than 50 countries, and "it makes sense" for Aramco to acquire a company of its size, he said.

Aramco, which is also planning what would be the world's largest share sale, plays a central role in efforts to transform the Saudi economy. Crown Prince Mohammed bin Salman is leading a strategy to build new industries and diversify the kingdom away from a decades-long reliance on sales of oil. A major part of the transformation is Aramco's plan to buy 70% of Saudi Basic Industries Corp., as Sabic is officially known, from the sovereign Public Investment Fund.

Sabic Funding

Aramco expects to conclude negotiations with the PIF soon, and "all financial instruments are on the table" for funding it, Nasser said.

Aramco's interest in Sabic rests partly on projections that demand for petrochemicals will account for a rising share of global crude output. Petrochemical use will increase faster than for any other segment of the oil industry, according to the International Energy Agency.

The planned Sabic deal necessitated a delay, however, in Aramco's initial public offering until 2020 or 2021, Prince Mohammed said in an interview in October. "We are committed for the IPO," Nasser said. "It is about timing."

All About That Saudi Plan for the World's Biggest IPO: QuickTake

Aramco, known formally as Saudi Arabian Oil Co., wants to convert 3 MMbopd -- about 30% of its daily output -- into chemicals. It also aims to more than double its refining capacity by the middle of the next decade. "You can absorb market volatility when you are balanced between upstream and downstream," Nasser said. "This is where our strategy is going."

A 32% plunge in oil prices since Oct. 3 may complicate the country's financial plans. So could the international outcry over the murder of Saudi dissident Jamal Khashoggi at the country's consulate in Istanbul. Nasser dismissed concerns about Aramco's attractiveness as an investment. Demand for oil is healthy, he said. "Next year it will be also the same in terms of additional demand."



ExxonMobil Supports New Singapore Energy Center Partnership with US\$10 Million Commitment

ExxonMobil said today that it will contribute US\$10 million over five years (S\$14 million) to become the first industry founding partner in a new Singapore Energy Center partnership led by the Nanyang Technological University and National University of Singapore and designed to advance next-generation technologies.

ExxonMobil signed a memorandum of understanding with the universities in November 2017 to become a founding member of the center, representing the company's first such research and development partnership outside the United States. As part of the five-year commitment, faculty and students at the two universities will collaborate with ExxonMobil researchers and scientists, as well as other industry contributors. Research and development projects will be based on university and member input.

Both universities are extending invitations to other leading companies to join the center, fostering interdisciplinary research collaborations between academia and industry.

"The Singapore Energy Center will serve as a focal point for close collaboration between universities and industry in exploring solutions for addressing the dual challenge of meeting society's growing energy needs while addressing the risks of climate change,"

Vijay Swarup, vice president of research and development at ExxonMobil Engineering and Research Company, said at a signing ceremony held during Singapore International Energy Week. "With projected energy demand growth across Asia-Pacific, it's critical that the public and private sectors work together to advance scalable, next-generation energy technologies while reducing the environmental impact of energy production."

ExxonMobil will support the center's wide range of early-stage research projects. Potential projects include applying advances in bioscience and additive manufacturing to discover and develop novel materials and process designs that could lead to new low-emission approaches toward fuel and chemical production; exploring technologies to capture and convert existing carbon dioxide emissions from industrial applications to useful products; using advanced life-cycle assessment and energy systems modeling to explore approaches that could reduce the energy and industrial sectors' environmental footprint; and investigating technologies that could reduce water and energy consumption during manufacturing, as well as plastic waste.

"ExxonMobil's participation in the Singapore Energy Center further enhances our technological capabilities in the country, and

complements our already strong manufacturing and commercial presence," said Gan Seow Kee, chairman and managing director of ExxonMobil Asia Pacific Pte Ltd. "Our participation in the company's first energy center outside of the United States builds on our long and thriving relationship with these two leading universities in Asia."

ExxonMobil's support for the Singapore Energy Center expands the company's collaborative efforts with other academic and research institutions that are focused on developing an array of new energy technologies, improving energy efficiency and reducing greenhouse gas emissions. The company currently works with about 80 universities in the United States, Europe and Asia to explore next-generation energy technologies, and is a founding member of the Stanford Strategic Energy Alliance, MIT Energy Initiative, Princeton E-filiates Partnership and University of Texas at Austin Energy Institute.

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Dialog Group is Exploring Opportunities to Further Develop Its Investment in PDT

DIALOG Group Bhd, an integrated technical services provider to the oil and gas (O&G) industry, is considering venturing into the petrochemical business. Its director of corporate services Chew Eng Kar said the group is exploring opportunities to further develop its investment in the Pengerang Deepwater Terminal (PDT), a storage facility developed and owned partly by Dialog.

"We have enough land, so there are opportunities where we can move on to the petrochemical industry. We are discussing with partners and are exploring these opportunities, but have yet to make any firm decision," he told reporters after the company's AGM in Kuala Lumpur yesterday.

"If we go in, we will only be taking a minority stake. It will be domestic, mostly on our investment in Pengerang — the Pengerang industrial land that we have." According to its website, Dialog's core assets and operations include storage terminals for petroleum, petrochemicals and liquified natural gas, offshore supply base, and marginal and mature O&G fields.

The group has a 46% stake in Phase 1 of the PDT and a 25% stake in Phase 2, while Phase 3 is currently being developed by a joint venture between Dialog and the state government of Johor at an initial cost of RM2.5 billion.

"We're also looking for new partners and new customers for Phase 3. There are many companies that we're talking to — mostly multinational players," Chew said.

Phase 1 of the PDT commenced operations in 2014, while Phase 2 is partially completed and operational, with full completion scheduled for early 2019. Land reclamation works for Phase 3 began in April this year and will take 22 months to complete. Meanwhile, the group has allocated between RM500 million and RM1 billion for capital expenditure (capex) in the financial year ending June 30, 2019 (FY19). Its capex for FY18 amounted to RM500 million.

Dialog group CFO Zainab Mohd Salleh said about RM500 million of FY19 capex will be allocated for the firm's downstream business, RM200 million will be utilised for the upstream business and about RM150 million will go to internal capital

investment. On the recent volatility in global crude oil prices, Chew said the group will not be negatively affected as its bottomline is equally balanced across its upstream, downstream and midstream (storage) businesses.

"Each segment contributes about one third to our bottom line. If oil prices rise, our upstream business benefits because it involves oil production. If oil prices drop, downstream will benefit because there will be more downstream activities kicking in to take advantage of the low prices. Midstream, or our storage business, will do well regardless of oil prices," he stated.



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Bidding for New Oil and Gas Fields to Commence Next Year in Myanmar

Fresh bidding rounds for offshore and onshore oil and gas blocks will be called during the first and second quarters of 2019, according to the director general of the Ministry of Electricity and Energy's Oil and Gas Planning Department. "Tenders for one block in an existing onshore field will be called before the end of the year and we've started preparing to submit the necessary documents to the President's Office. For offshore and other onshore fields, bidding will be called in the first and second quarters of next year," he said.

If all goes according to plan, it will be the first time a bidding round is held under the current government. The last tender for work at Myanmar's oil and gas fields was conducted in 2014 under U Thein Sein's former administration. State-owned Myanmar Oil and Gas Enterprise (MOGE) will invite international tenders for oil and gas exploration and drilling and production activities in unoccupied onshore and offshore blocks in partnership with foreign oil companies, the ministry announced last month.

Projects will be awarded under Production Sharing Contracts and Improved Petroleum Recovery Contract arrangements. In total, there are 53 onshore oil and gas blocks in Myanmar. Of these, production work is being carried out in 25 by the government in cooperation with foreign companies.

Meanwhile, the MOGE is producing from another 11 blocks. The remaining 18 blocks are unoccupied. The country has also designated a total of 51 offshore blocks, 38 in which foreign companies like Thailand's PTTEP, France's Total and South Korea's Daewoo hold stakes. The remaining 13 blocks are unoccupied and available.

In its announcement, the MOGE said tenders for the 18 onshore and 13 offshore blocks which are unoccupied will be called in the near future. Among these blocks are five onshore blocks and 11 offshore blocks which have recently been relinquished by previous drillers including Shell and India's Reliance Industries. Once termination agreements are signed for all the relinquished blocks, they will be included in future bidding rounds, said U Kyaw Thura, executive geologist from MOGE.

So far, about 20 companies registered their interest to bid, said director general. "We've seen strong interest to bid from these companies. However, some do not have enough experience. We will consider and decide carefully," he said.

Currently, there are 32 companies from 20 countries active in the Myanmar oil and gas sector, according to the MOGE. Myanmar produces close to 20,000 barrels of oil and 1.7 billion cubic feet of gas per day from its onshore and offshore fields. An announcement was issued for local companies to register at the ministry in the first week of July with the aim of encouraging Myanmar citizen companies to cooperate and invest with foreign oil and gas companies. The intent is for local companies to get experience and benefit from offshore and onshore oil and gas exploring and extracting businesses in Myanmar in the future. In 2018-2019, a slew of foreign companies are scheduled to carry out seismic surveys, exploration and extracting, feasibility studies and collecting geological data at 20 offshore and onshore blocks. These will involve the likes of PTTEP, Daewoo, Italy's ENI and Australia's Woodside.



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Sapura Energy wins RM1.75bil New Jobs in Malaysia and Mexico

Sapura Energy Bhd has secured new contracts worth RM1.75bil for jobs based in Malaysia and Mexico, lifting its order book to RM18bil. The new contracts also bring the integrated oil and gas services and solutions provider's total contract wins for the current financial year-to-date to RM7bil.

"In line with the company's pursuit of growth and strategy to capitalise on the industry upturn, the new contracts reflect Sapura Energy's continued success in deepening its penetration into existing core markets and expanding into new markets. The company has established a global infrastructure that would enable it to manage and execute work around the world," it said.

The group's unit in Mexico was awarded a contract for the provision of offshore engineering, procurement, construction, transportation and installation (EPCTI) for the Hokchi Field Development in the Gulf of Mexico. For this contract, the scope of work would include fabrication and installation of a central wellhead platform and a satellite platform that would be connected to Hokchi Paraiso, an onshore processing facility, it said.

The works were expected to be completed by the end of the first quarter of 2020. The second contract in Mexico, awarded to its unit by Eni Mexico S de RL de CV, was to undertake EPCTI in Offshore Block Area 1 in the Gulf of Mexico. "The scope will involve fibre optic cabling, and transportation and installation of the Mizton wellhead platform at water depths of 40m," the group said. The works are expected to be completed by the end of the second quarter of 2019.

In Malaysia, the group bagged a five-year contract for the provision of Pan Malaysia Underwater Services, awarded under the Petroleum Arrangement Contractors (PAC).

It said the contract would be undertaken by Sapura Energy's unit, Sapura Subsea Services Sdn Bhd (Sapura Subsea). The PAC consists of Sarawak Shell Bhd and Sabah Shell Petroleum Company Ltd, Murphy Sarawak Oil Co Ltd and Murphy Sabah Oil Co Ltd, Repsol Oil & Gas Malaysia Ltd and Kebangsaan Petroleum Operating Company Sdn Bhd.

"Sapura Subsea will undertake underwater services which include the utilisation of its vessels, air and saturation diving, and remotely operated vehicles. The scope will also cover inspection, maintenance and repair works to support the PAC's underwater facilities located offshore in the east coast Malaysia," it said.



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Smart technologies are the key to greater productivity, better quality and more flexibility. These are the classic goals for new and further developments in production technology. Digitalisation and intelligent factory networking also facilitate new functions such as process monitoring or predictive maintenance, which go one step further with self-learning machines based on smart data and data analysis. These create the basis for new business models like the platform economy, allowing customers and providers to reach the next level of efficiency.

Dedicated exhibition area for IoT in production This section is reserved for individual exhibitors in the field of control technology, software and automation technology. Established control manufacturers such as Beckhoff, Bosch, Fanuc, Heidenhain and Siemens, but also engineering consortiums such as Adamas and Axoom, presented their IT platforms at EMO Hannover in 2017. "We know that this exhibition area also offers a highly attractive environment for IT providers such as IBM, HP, GE, SAP, Microsoft Oracle, Telekom and others if they want to boost their business with manufacturers of production technology," says Miller. EMO Hannover provides an ideal platform for this because all decision-makers from the entire production technology value chain are there – and interested in everything from product development to production, quality management and logistics. "Production planners today not only invest in machines, they also want to see integrated

solutions, and no other trade fair offers this in such a concentrated form as EMO Hannover," sums up Miller.

Special show: Industry 4.0 area - smart solutions for your business Innovative companies and renowned research institutes present intelligent solutions aimed at boosting their customers' business success in the Industry 4.0 area. These include intelligent components for process monitoring or operator support, solutions that ensure smooth data flow with maximum data security, and much more. The special show will also feature representatives from the field of research who will be presenting the current state of scientific development. In addition, the specialist forum will offer participants the opportunity to discuss existing products as well as future visions with a broad specialist audience. The VDW is developing the special show together with the Konradin Media Group.

National stands National stands will also be featured in this area. The VDW is currently in talks with China, France, Japan, Switzerland and Taiwan. They all have their own national Industry 4.0 or IoT initiatives and are cordially invited to present them at EMO Hannover 2019.

Industry 4.0 Trend Forum In addition, the VDW has joined forces with the Software association of the VDMA (German Engineering Federation), the umbrella organisation for mechanical and plant engineering, the second-largest customer sector for machine tools. Together they are organising a high-calibre forum on the latest Industry 4.0 and machine learning trends, including presentations and panel discussions which will run throughout the EMO. The future of work will constitute a further focus.

UMATI (universal machine tool interface) a common language for Industry 4.0 The interface standard for machine tools based on OPC UA, with all its functionalities, will finally be presented at EMO Hannover 2019. This provides neutral and open connection of machines to higher-level IT systems. It is a prerequisite for the success of Industry 4.0. Only then can data from different machine manufacturers with different control systems be transferred to ERP and MES systems or into the cloud. There they are further processed or evaluated and thus form the basis of new services and functions.

This connectivity is the key to all the added value and business models that the economy hopes Industry 4.0 will yield. Small and medium-sized companies in particular are counting on being able to connect their machines effectively in order to participate in the new IoT developments. This will help them concentrate on their core competences in their daily business. To visit or participate in the upcoming EMO Hannover 2019, please contact E-Yan from Messe Worldwide Sdn. Bhd.

Email: eyanchee@messeww.com

Website: www.messeww.com and

<http://www.emo-hannover.de/home>



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Sabco Expands Its Pp Portfolio With New Impact Copolymer That Offers Aesthetically Appealing Surfaces With Potentially Significant Cost Savings For Home Appliances & Consumer Goods

SABIC, a global leader in the chemical industry, announces the launch of a new impact copolymer (ICP) grade – SABIC® PP PPA20 – targeted at demanding home appliances as well as high-end cosmetics, furniture and other household consumer goods. Apart from its high gloss feature that enables production of aesthetically appealing surfaces, the new compound is developed to offer well-balanced mechanical properties and easy processability, making it a promising alternative to incumbent ABS materials in these markets.

By 2050, the global population will grow to over 9 billion, with metropolitan areas expanding over-proportionally. Smart cities will be the home of an increasing middle class with a global spending power expected to reach \$20 trillion already by 2020, and a wealth of connective electrical and electronic appliances will form a new generation of smart consumer devices. We are firmly committed to meeting the needs of the home appliances industry for healthier and more sustainable as well as cost-efficient material solutions enabling manufacturers to benefit from this enormous market potential. New SABIC® PP PPA20 polymer is aimed to provide a combination of high gloss, high scratch resistance and low stress whitening over regular impact copolymers together with balanced impact strength and stiffness.

In comparison with other, potentially more costly and oversized solutions – high-gloss SABIC® PP PPA20 is engineered to deliver comparable optical properties and scratch resistance along with superior processability. In many application cases, it can offer brand owners, molders and OEMs a significant cost and energy savings potential based on its lower density, higher flow and faster crystallization than currently used materials resulting in potentially shorter cycle times. Further energy savings may be leveraged as the material eliminates the need for pre-drying and can be injection molded at lower mold and barrel temperatures versus ABS.

Low density and high flow also open conceivable new material and weight saving design opportunities for more resource-efficient and waste-reducing products, such as from sleek housings with lower wall-thicknesses. However, the more important advantage for consumers may be the phthalate-free polymer technology of SABIC PP® PPA20, which answers the need for improved consumer health safety in – for instance - food contact appliances. Targeted applications of SABIC's new high-gloss impact copolymer span from household appliances and food storage containers to toys and furniture. Typical examples include coffee makers, steam irons, vacuum cleaners, personal hygiene appliances and aesthetic fascia for white goods, such as washing machines and refrigerators.

SABIC® PP PPA20 addresses the needs of designers and molders in these markets for aesthetic as well as cost-efficient and more sustainable materials with higher performance characteristics for functional innovation and enhanced consumer experience. This advanced high-gloss impact copolymer polypropylene is outstanding proof of our dedicated market and customer focus as we reach into new application possibilities for profitable partnerships and mutual growth. Already available in the Europe, Middle East and Africa regions, SABIC® PP PPA20 is to be phased in commercially in the Americas in 2019.



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Sembcorp Expands Solar Power Presence in Singapore with New 6.2 Megawatts Peak Rooftop Solar Project

Sembcorp announce that it has signed an agreement to install, own and operate rooftop solar panels on top of two Singapore facilities owned by one of the world's largest providers of products and services to the energy industry. This rooftop solar farm will be one of Singapore's largest, with a total capacity of 6.2 megawatts peak. It is expected to produce around 7,435 megawatt hours of power annually, or enough to power more than 1,500 four-room HDB flats for a year. This renewable energy project will also help avoid over 3 million kilograms of carbon dioxide emissions a year, equivalent to the emissions avoided by taking close to 680 cars off the road.

The solar farm will help power the on-site operations of the customer at the two locations, with surplus power channelled to the grid. One of the two locations, located in the Tuas area, will also be the largest solar installation on a single rooftop in Singapore to date, with more than 12,700 solar panels amounting to over 4.7 megawatts peak.

Commented Sembcorp Group President & CEO Neil McGregor, "We are very pleased to sign this 25-year deal and welcome another new client for our solar power solutions that help companies save money and cut their carbon footprint.

With this newest project, Sembcorp now has over 115 megawatts peak of solar power assets in operation and under development. As we grow our solar portfolio here, Sembcorp is actively supporting Singapore in its goal of achieving 350 megawatts peak of solar power capacity by 2020."

This new project is in line with Sembcorp's strong commitment to sustainability. As a respected, established power generator and retailer with over 15 years' track record in the Singapore power sector, Sembcorp also unveiled a range of affordable power plans for residential customers yesterday. These plans have green attributes blended in, which means customers will not only save money by choosing Sembcorp as their power supplier, but will also do their part for the environment. By simply signing up with Sembcorp as its power supplier, a Singapore household can avoid over 500 kilograms of carbon dioxide emissions over a two-year period.

Globally, Sembcorp now has 2,600 megawatts of wind and solar power projects across Singapore, China and India. Earlier this year the company unveiled its new Climate Change Strategy and outlined ambitious targets to double its

renewables portfolio and reduce its carbon emission intensity by around 25% by 2022. In Singapore alone, Sembcorp is one of the largest solar power players in the market, with over 115 megawatts peak of solar power assets over more than 1,200 sites. The company's rooftop solar projects here are located on top of public housing blocks, commercial and industrial premises, as well as government sites.

The signing of this agreement is not expected to have a material impact on the earnings per share and net asset value per share of Sembcorp Industries for the financial year ending December 31, 2018.



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Keppel Data Centres and the Alpha Data Centre Fund to Develop and Operate Maiden Greenfield Data Centre in Johor, Malaysia

The Alpha Data Centre Fund (Alpha DC Fund) and Keppel Data Centres Holding (Keppel Data Centres) have inked agreements to develop and operate their first greenfield data centre in Malaysia. Through a wholly-owned subsidiary, the Alpha DC Fund entered into agreements with a leading technology company (the customer) to develop a high-availability build-to-suit data centre in Johor, Malaysia. The initial development of the data centre and subsequent facilities management will be undertaken by Keppel Data Centres.

The data centre will be situated within an industrial park in Johor, Malaysia, which has been earmarked to be a data and research hub for the state. It will sit on approximately 261,000 sq ft of land and feature minimum Tier III equivalent specifications for concurrent maintainability, spread over 100,495 sq ft of gross floor area. Upon its expected completion in 2020, the data centre will be fully committed by the customer.

The investment is structured to include put and call options, which are exercisable under certain conditions. The put option granted to the Alpha DC Fund gives the Fund the option to require Keppel Data Centres to purchase the holding company indirectly holding the data centre and its underlying land title sublease within an agreed period.

When exercised, the put option will allow Keppel Data Centres to secure a steady cash flow stream from the data centre, while providing greater flexibility for the Alpha DC Fund to unlock value for investors within the fund life window. The customer also has a call option to buy back the data centre, which can be exercised within an agreed period.

Mr Wong Wai Meng, CEO of Keppel Data Centres, said, "Enterprises have been moving to rationalise their ageing data centre infrastructure, including moving many workload requirements to the cloud. In response, major cloud service providers and technology companies are expanding rapidly outside of top tier data centre

markets to cater to this demand. Our customers in these segments recognise the value that Keppel Data Centres brings to the table when planning future IT workloads and data centre deployments. We are proud to be partners enabling our customers' regional expansion requirements."

Mr Alvin Mah, CEO of Alpha Investment Partners, the manager of the Alpha DC Fund, said, "Demand for data centres has been increasing with the expansion of the digital economy and the Alpha DC Fund is pleased to be able to capitalise on such growth in the Asia-Pacific region for its investments. The addition of this greenfield investment provides diversification to the fund's existing portfolio."



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Ashtead Technology Acquires Welaptega

Global subsea equipment solutions specialist, [Ashtead Technology](#) has further bolstered its rapidly-expanding inspection, maintenance and repair services and capabilities with the acquisition of Canadian-based underwater inspection company, Welaptega.

The transaction comes just 10 months after the company completed a joint venture with Forum Energy Technologies, creating the industry's leading independent provider of subsea survey and ROV equipment services with a fleet of 19,000 assets worth in excess of £100 million.

Today's announcement marks Ashtead's third deal since it was acquired by Buckthorn Partners and APICORP in 2016, and demonstrates its commitment to further expand its service offering both organically and through acquisition.

Founded in 1990, [Welaptega](#) is a market leader in mooring system inspection and integrity engineering. Over the past 28 years it has developed a suite of pioneering technologies and services to mitigate failure, prevent damage, and manage the ongoing integrity of offshore operations through a risk-based approach to asset integrity.

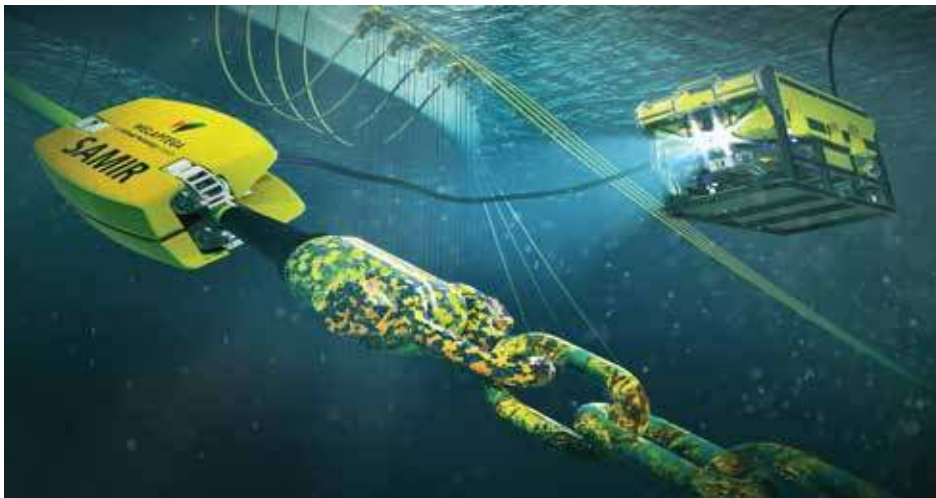
By bringing together two world-class portfolios, the deal significantly strengthens the group's subsea inspection capabilities, creating a

wider, more competitive offering, whilst reinforcing Ashtead's position as a leader in the provision of advanced offshore equipment solutions.

Allan Pirie, CEO of Ashtead Technology, said: "This is a significant step in the development of our IMR strategy, increasing our asset integrity service offering by adding innovative products, technology and capabilities which are aligned with our current business."

"Our customers now have access to a leading innovator in offshore asset inspection, engineering and integrity solutions. Our combined technical capabilities and advanced inspection technologies means we can offer a comprehensive integrity management service to support the performance and life extension of critical infrastructure."

Welaptega CEO, Tony Hall will continue to lead the business based in Halifax, Nova Scotia.



Enterprise Singapore and the Netherlands Enterprise Agency Ink Partnership to Spur Innovation and Facilitate Market Access

Enterprise Singapore and the Netherlands Enterprise Agency (RVO.nl) signed a [Memorandum of Understanding \(MOU\)](#) today in Rotterdam to bolster collaboration in areas of innovation and market access, witnessed by President Halimah Yacob and King Willem-Alexander. President Halimah Yacob is on her first state visit to the Netherlands from 20 to 24 November 2018.

The MOU focuses on growing partnership and innovation opportunities between companies in both countries in the sectors such as healthcare, biomedical sciences, agri- and food- tech, logistics, trade and connectivity as well as smart mobility and robotics.

Said Mr Png Cheong Boon, Chief Executive Officer, Enterprise Singapore, “Both Enterprise Singapore and the Netherlands Enterprise Agency recognise the importance of innovation and partnership as important growth drivers for our enterprises. Through this MOU, we hope to create more opportunities for Singapore and Dutch enterprises to collaborate in the area of innovation and market access, thereby expanding each other’s capabilities and markets in Europe and Asia.”



Singapore and the Netherlands are well-positioned as strategic gateways for companies looking to venture into Asia and Europe regions respectively because of its pro-business environment, skilled workforce, established trade and logistics hub and strong connectivity to the rest of the world. These attributes continue to draw Singapore companies to the Netherlands as a hub for their European activities and vice-versa.

One such example from Singapore is Samwoh Group, an integrated infrastructure company. Inspired by the ingenuity of the Dutch in solving engineering problems, the Singapore-based company established its Samwoh Innovation Centre BV in 2017 to develop cutting-edge technology and know-how, and provide highly specialised pavement engineering evaluation and consultancy services. Since then, Samwoh has managed to secure several significant airport and expressway projects in the Netherlands as well as Belgium, France and Poland.

The MOU strengthens the Singapore-Netherlands bilateral ties and serves to catalyse meaningful initiatives for enterprises to do business together, so that more of them can expand their operations into the Asia and Europe regions. Both Enterprise Singapore and RVO.nl will jointly facilitate opportunities for companies to learn and connect through various activities including inbound and outbound missions, and business matching.



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Balluff Integrates Two Companies Into the Group

Balluff is extending its digitalization know-how with the acquisition of not one, but two companies: the Stuttgart software company iss innovative software services GmbH (iss) and the machine vision pioneer Matrix Vision GmbH (MV) from Oppenweiler near Stuttgart are now part of the sensor and automation specialist. The relevant contracts were signed in July and August after nearly six months of negotiations. 160 employees will join the family-owned company, the sites in Stuttgart-Vaihingen and Oppenweiler will be kept on.

Acquisitions strengthen strategic alignment

The two new companies enhance Balluff's core competences in two key fields: software development and machine vision. Their integration thus represents a key building-block in the Group's strategic alignment. As Managing Director Florian Hermle commented: "Linking our network technology with the software expertise of the two companies will particularly improve our capability for supplying integrated automation solutions from one provider. The know-how of iss and Matrix Vision and their employees will help us capitalize on the huge growth opportunities in digitalization faster, while extending our portfolio in the hardware and software areas."



Strengthening software expertise

iss is specialized in tools, test systems, processes and standardization in software development. Like Balluff itself, the main customer group for the company, founded in 1996 and with 60 employees, is the automotive and supply industry. Within the Balluff Group iss will assume the role of inhouse software specialist, as the company from Stuttgart-Vaihingen is highly experienced in the field of embedded systems for the automotive industry. "We already have 25 software developers in our team, but we are focusing on consistently extending our digitalization expertise and we urgently need more qualified personnel to do so. To be more specific, we aim to develop open software platforms that will be needed increasingly in the future in order to offer our customers integrated automation solutions," says Hermle.

Serba Dinamik adds RM448million worth of contracts, including first O&M job in Uzbekistan

Serba Dinamik Holdings Bhd has secured its first contract in Uzbekistan, expanding the engineering and maintenance services provider's oil and gas business overseas.

The company announced it has won contracts in three countries - Uzbekistan, UAE and Qatar - worth a combined US\$110mil (RM448mil).

Separately, the group also announced the award of six separate oil and gas contracts in Malaysia. These contracts, the company said in a statement, have no specific values as the jobs are on a "call-out" basis whereby the work orders will be awarded at the discretion of the clients based on its activities schedules and rates throughout the duration of the contracts.

"We are appreciative of the continued confidence and support received from our business partner as evidenced by the award of these contracts to the company," group managing director and CEO Datuk Ir. Mohd Abdul Karim Abdullah said. "We are appreciative of the continued confidence and support received from our business partner as evidenced by the award of these contracts to the company," group managing director and CEO Datuk Ir. Mohd Abdul Karim Abdullah said.

"We are notably proud to have secured an Operation & Maintenance project in Uzbekistan for the first time, which symbolises us further strengthening our footprint in the Central Asia," he added.

The new contracts lifted Serba Dinamik orderbook to RM7.5bil.



Source: The Star Online

Honeywell Names William Yu President of Honeywell China

Honeywell today announced that William Yu has been appointed as President of Honeywell China. He will also continue to serve as Vice President and General Manager of Asia Pacific for Honeywell's Performance Materials and Technologies (PMT) business. Yu joined Honeywell in January 2017. Under his leadership, the PMT China business grew by more than 50 percent over the past two years. Yu implemented a strong "east-for-east" business strategy and tripled PMT revenue coming from that initiative in China.

"Honeywell is a worldwide leader in developing state-of-the-art technologies for the Industrial Internet of Things, and our long history of innovation in China has been a critical part of the company's success," said Shane Tedjarati, president of Honeywell global High Growth Regions. "William has a proven leadership track record across multiple businesses and industries and is the right person to drive our business' continued growth across China."

Rajeev Gautam, president and chief executive officer of PMT said, "William has been and will continue to be a tremendous asset to the PMT business. He has built strong customer relationships, delivered on critical customer commitments, and driven exceptional business performance. His talent will now drive strong results for all Honeywell businesses in China."

Prior to joining Honeywell, Yu was the senior vice president and president of APAC for Allegion, a spin-off from Ingersoll Rand and a global pioneer in safety and security. Before that, he served in senior executive roles at Ingersoll Rand. Honeywell China is a significant contributor to the company's overall growth, and each of Honeywell's four strategic business groups has a substantial presence in the country.



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Honeywell China is a significant contributor to the company's overall growth, and each of Honeywell's four strategic business groups has a substantial presence in the country. Honeywell now employs about 13,000 people in more than 30 cities across China. About 20 percent of Honeywell's employees in China are scientists and engineers.

Hideo Shirakawa Appointed as New Area Managing Director of East Asia for Grundfos

Japan, 2 January 2019: Leading pump manufacturer Grundfos has announced the appointment of Hideo Shirakawa to the role of Area Managing Director (AMD) of Grundfos East Asia with effect from January 1st, 2019. In his new role, Shirakawa will be responsible for leading the company's business across Japan, South Korea and Taiwan, and spearheading opportunities for Grundfos' development and expansion in East Asia.

Shirakawa brings with him more than 30 years of experience in sales, marketing and business development, having held senior roles in a number of top organisations in Japan. He joined Grundfos in 2012 as a Sales Director and has been serving as the General Manager of Grundfos Pumps KK Japan since July 2013. Shirakawa will continue to serve in his role as General Manager of Grundfos Pumps KK Japan alongside his new role as AMD of East Asia.

Shirakawa commented, "I am very pleased to be taking on the role of Area Managing Director of East Asia and look forward to driving exponential growth for the company in this region. We have a solid track record of providing innovative and excellent water and wastewater solutions to our clients, and we intend to leverage this to capture the many more opportunities across Japan, South Korea and Taiwan."

Kim Jensen, Regional Managing Director of Grundfos Asia Pacific region, added: "Shirakawa's deep knowledge of Grundfos coupled with his extensive experience working in the East Asia market is second to none, and he will play a pivotal role in strengthening our work in the region. We look forward to having Shirakawa onboard in his new role, where he will continue to focus on growing our sales and customer base for these markets, along with developing our talent and succession pipelines in the area." Prior to joining Grundfos, Shirakawa held a number of executive sales positions, including Vice President for Sales and later Strategic Marketing at Hilti, Japan, as well as Business Development Manager and Commercial Manager at Black and Decker, Japan. Shirakawa holds a Bachelor of Arts from Tokai University, Kanagawa, Japan, and a Master of Business Administration from Boston University, Massachusetts, USA.

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Stäubli Group Expands Its Connectors Portfolio with the Acquisition of RS Roman Seliger Armaturenfabrik GmbH

A global leader in mechatronic solutions – announced the acquisition of RS Roman Seliger Armaturenfabrik GmbH, based in Norderstedt, Germany. For over 100 years, Roman Seliger has been a specialist in the development of standard and safety dry-disconnect couplings, delivering solutions for the handling of all fluid media to its customers. The acquisition of Roman Seliger by Stäubli is in line with the company's successful growth strategy. It also allows to join innovative forces in new complementary fields such as big diameter couplings, breakaway technologies and cryogenics. For more than 125 years, Stäubli has been coupling its passion for innovation with excellence as a family-owned company. In addition to its competence in robotics and textile, Stäubli Group provides advanced connection solutions, mono and multi-couplings for all types of fluids and gases as well as electrical power. The Fluid Connectors Division is a recognized expert in safe and reliable couplings in all industry segments with proven perfect tightness in sensitive applications such as liquid cooling for electronics or sampling in the pharmaceutical sector. Today, Stäubli is already one of the leading manufacturers for advanced connection solutions for every application. Acquiring RS Roman Seliger Armaturenfabrik GmbH is a great opportunity to further increase Stäubli's product range by adding specialized solutions to its comprehensive portfolio. All employees of the acquired business will join the Fluid Connector Division, while the factory in Norderstedt will become part of the global production network of Stäubli.



Rolf Strebel, CEO of Stäubli, says: "We warmly welcome RS and all its employees into the Stäubli Group. We look forward to further growing our business together. Stäubli and Roman Seliger not only complement each other very well in terms of products, we also share a long family tradition and common values. Today, we are combining what fits together." "With Roman Seliger, we are strengthening our global position in the field of fluid connectors, extending our range to new applications such as cryogenics and market segments such as oil/gas as well as expanding our R&D capacity," adds André Lucchetti, Group Division Manager Fluid Connectors. "The decision to go along with Stäubli was an easy one. RS Roman Seliger Armaturenfabrik GmbH will profit greatly from this important step, securing a continued development for our employees and our range of high-quality products", states Dr. Jens Reppenhagen, who has been leading RS Roman Seliger Armaturenfabrik GmbH in the past and will continue to do so for the Stäubli unit in Norderstedt. Rolf Strebel, CEO of Stäubli, concludes: "This integration provides significant benefits for our customers and is perfectly in line with our Group strategy to combine organic growth with targeted acquisitions in terms of innovative products and technologies."



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JinkoSolar Together With Schneider Donated a 55kW Off-Grid Solar Project in Egypt

JinkoSolar, one of the world's largest solar module manufacturers, announced a partnership with Schneider Electric, to donate a 55kW off-grid solar project in Abu Redis, South Sinai, Egypt.

The remote village called ABU GHURAQD is located about 30 km away from Abu Redis, which comprises of 35 families, Mosque, a school, a small medical center and three farms. The total connected power load includes 15kW residential load and two 25kW irrigation pumps. Prior to completion of the project, the only electricity source of the village has been three 30 kW diesel generators supplying the village with electricity for merely 8 hours per day, which could have not sufficiently met the power load demand. Besides, the noise and air pollution caused by diesel generators were another issue for local residents.

The project has been successfully completed and solved several challenges including governmental approvals and permissions, material security and transportation, as well as operation and maintenance responsibility. The completed off-grid solar power system covers power load for the village for 20 hours per day, significantly improving the life quality of the local residents. Reduced operation time of diesel generators is also helpful for environment protection.

"We're pleased to form a strong partnership with Schneider Electric to deliver this meaningful project. At JinkoSolar, we believe that access to energy is a fundamental human right, and this project is directly in line with that belief," said Dany Qian, VP of JinkoSolar. "In addition to the contribution to the effective and efficient operation of renewable energy facilities worldwide by providing products and solutions that are highly reliable and offer a good return on investment, JinkoSolar will strive to serve as a responsible corporate citizen with CSR initiatives centered on environmental awareness and clean energy accessibility to all."





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**Dr. Andreas Hauser, Director of Digital Services,
TÜV SÜD Asia Pacific**



"The impact on manufacturing and society and workforce, the fourth industrial revolution is a good thing to anticipate so the society can prepare for better, it is not automation on the floor but on all level. The fourth industrial revolution is considered very positive, but let's also learn that there is also downside. Part of work force can be upskill and a lot of things can be strategically plan, we see that

more autonomous technology and how to improve strategically and the business modal to be consider, repetitive task will be replace. Of course they will be a lot of collaborations with robots, using them as assistance. Upskill in a gradual way, so in the intake sides, there should be new roles in innovation and creative roles for people.

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**Mr Suryanarayana Tumuluri Head of Digital
Factory Manufacturing Design Siemens Singapore**



"Two primary thing to any successful implementation is the organization ready to accept change? Number 2 will be organization or geographical location have the ecosystem to support. It is not a specific technology; it is a philosophy where systems are interconnected and talking to each other. The philosophy can be attained to multiple different way. We are receiving tractions from all quarters, F&B, semiconductor, solar panel manufacturing, in Asia, the biggest benefits will be the F&B

industry ,they have the most to gain in terms of efficiency and logistics. As an example, in India, retailer is cash based, from the last two years they make a jump and skip the plastic stage to cashless. So, the revolution in some case is basically 2 and make a disruptive jump if you are very sure about your business modal, business may not have the clear insight or efficient way to implementing this, and we are here to help"



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Flexible Interlocking Solution with HIMA Technology Safeguards Shunting Junction in French-Speaking Switzerland

BÄR Bahnsicherung deploys an innovative CENELEC SIL4 interlocking system based on Commercial off-the-Shelf (COTS) safety controllers from HIMA on a rail line in the Canton of Jura.

On the Le Noirmont – La Chaux-de-Fonds rail line in the French-speaking region of Switzerland, BÄR Bahnsicherung has for the first time deployed the new Eurolocking electronic interlocking based on HIMA safety controllers. The benefits of the high integration capability, performance and compact design of the CENELEC SIL4 compliant interlocking are proven in practice at the Bellevue station of the Swiss transportation company Les Chemins de fer du Jura.

Bellevue is a junction station with two sidings that have a large volume of shunting traffic and are therefore implemented with secured shunting routes. Integrating the interlocking into the existing control system and interfacing to the nearby interlockings already in place, which were implemented with the TMN 840/841 block interface widely used in Switzerland, were significant challenges during project execution.



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smoothly integrate the system bus and the interfaces with the standardized HIMA systems in cooperation with Frauscher Systemtechnik. That formed the basis for uniform connection of all field components. Another advantage of easy integration is that BÄR was able to develop a compact interlocking with significant space savings.

Availability is especially important with interlockings. As a plug-and-play system with hot-swap functionality, the HIMax controller enables fast component replacement and system modifications during ongoing operation. The subsystems utilize the smaller HIMatrix controllers, which also fulfill extremely high safety requirements but are designed for a smaller number of I/O ports. These compact, high-performance devices are particularly suitable for use in distributed time-critical applications.

The Result

System installation at the Bellevue station was completed in June 2018, with trial operation starting on September 14. Thanks to cooperation with HIMA, BÄR was able to draw on a network that provided a solid basis for new product development. Interlockings based on the same platform have already been implemented by Movares for the Dutch National Railways and for the public transport operator NÖVOG in Austria. Using standard control technology from HIMA enabled development of an interlocking that fulfills applicable industry standards (CENELEC), offers low life cycle costs and optimal integration capability as a stand-alone solution, and is suitable for line applications. The standardized communications and programming of the HIMatrix simplify handling and integration of the controllers into an existing system. Modularity and scalability enable optimal adaptation to the needs of the application and make the interlocking solution future-proof.

“Easy integration of components from different manufacturers was especially important for us in the development of the Eurolocking electronic interlocking. Using a HIMA safety controller as an open safety system fulfilled all of our expectations in that regard,” says Beat Fehr, Managing Partner and Head of Sales at BÄR Bahnsicherung. “Thanks to the COTS solution from HIMA, we were able to develop a highly flexible, scalable and cost-effective product.”

Easy Integration of All Elements

A basic component of the Eurolocking solution is the use of SIL4 certified HIMax safety PLCs as main computers. Using a standardized COTS safety system enables easy integration of diverse components. For example, BÄR was able to

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Rockwell Automation and BIBIT Provide a Global Tracking Solution to Caffè Borbone

For Caffè Borbone, an Italian leader in coffee production, global tracking starts from the coffee bean and ends at the coffee pod

Background

Bibit is an Italian information technology company that for the last 12 years has focused on tracking solutions. This specific capability is why L'Aromatika Srl – Caffè Borbone, a leader in the coffee sector and with a strong bent towards innovation and new technologies, chose Bibit.

Starting out as a partial tracking project, after subsequent developments the application is now a perfect example of digital transformation. To implement this project, Bibit called upon the services of Rockwell Automation, which provided the basis for creating an Industry 4.0 environment. And, thanks to the results obtained in terms of global, real-time tracking, L'Aromatika has since obtained the IFS Food, the highest food safety certification.

Challenge

L'Aromatika relied on a system composed of PC terminals, limited to recording the generation of pallets. This system provided a printed label at the end of the production cycle that did not include any information about upstream activities.

Continuous growth in the company and the need to comply with strict standards applicable to the food industry caused the company to automate the process.

It had to deploy tools to monitor all events occurring along the line, establishing the foundations for real-time tracking. Once this was achieved, L'Aromatika decided to further expand the project to reach a machine-level tracking system, interfacing all of the printing systems up to packaging.

This expansion of the project allowed the company to obtain results that would otherwise not have been possible, thanks to systems that interface with the coffee producers where the coffee actually comes from. At first, the project was supposed to cover ten lines, but it eventually grew to cover thirty lines and to encompass five coffee producers, with the resulting global tracking networks covering the coffee bean all the way to the single coffee pod.

Solution

"We started from a situation with 20 stand-alone PCs on each single line. Today we have arrived at a system that allows us to connect any additional lines simply by increasing the number of remote I/O, managed through a programmable automation controller (PAC) that is part of the CED structure," affirmed Gabriele Marco Ferrari, CEO of Bibit.

The Integrated Architecture® system supplied to the customer over the course of the project's two year development comprises two Allen-Bradley®

CompactLogix™ 5370 series controllers (one L30ER and one L36ER), thirty remote Allen-Bradley POINT I/O™ modules, plus another six for the coffee producers. All these components communicate with one another and servers through an EtherNet/IP™ network. The CompactLogix L30ER PAC manages a dozen remote I/O while the CompactLogix L36ER PAC manages eighteen. The system operates with a three-millisecond polling cycle thanks to speeds delivered by the Rockwell Automation PACs. The PACs communicate directly with the servers, on which the Microsoft SQL database resides, where all the data is recorded, along with all requests coming from the lines.

The network infrastructure with an EtherNet/IP protocol allows the PACs to also automatically manage warehouse consumption, production and coffee making levels, with the amounts of raw and processed coffee being unloaded. In addition to providing tracking data, the PACs that communicate with an intermediate server transmit the same data to the accounting software for recording of semi-processed loads, finished product in the warehouse, and unloading of components.

"A process that would have been expensive in terms of costs and time due to its dimensions if managed manually, as well as impossible to implement from a tracking point of view, is now automated," continues Ferrari.

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The Result

The primary result for L'Aromatika was the attainment of 'IFS Food' food safety certification, which is proof of thorough, widespread tracking, and in this sector represents a mandatory condition for operating according to a series of commitments, such as, for example, large scale distribution.

Thanks to the adopted solutions, L'Aromatika can track the entire process from start to finish, from receiving the coffee, when it is registered and associated with a specific lot, to loading at the coffee maker company and the first blending operations.

The coffee makers are equipped with autonomous PACs, directly interfaced with an Allen-Bradley CompactLogix 5380 PAC that collects all the data from the single coffee makers and tracks the steps of the coffee treatment process.

Once the coffee is ready, a container is defined and unloading of the produced material and loading of the semi-processed material or toasted coffee is registered. This is the first effect of tracking that impacts warehouse loading and unloading.

"As far as the lines are concerned, we interfaced through a digital I/O protocol; therefore even in the presence of older machines, it is still possible to monitor the status of the system and provide feedback in case of breakdowns. We can also track the production speed and frequency. Also in terms of speed, we can see how many pieces are made per minute and how many per hour –

offering a series of data that can then be used by the company to assess efficiency of the lines and operators. Furthermore, the system manages devices along the line, such as the lasers that perform the direct marking and track the correlation on a pod, providing information about the quantity of pods produced, positioning them inside of the various boxes on the pallets, up to the recipient of the single pallet," explains Ferrari.

Recently, tracking of packaging materials used for these activities was also added. The type of aluminum, filter paper used, and any other components associated with the production of the single pod, which is marked unequivocally, are also recorded. It is therefore possible at any moment to track information about the final recipient of the single pod, as well as determine the film lot, filter paper lot or material used in its production.

These are priceless improvements for L'Aromatika, who, in addition to the possibility to monitor line progress in real time, can also intervene at any time if necessary and recall a lot from the market. It is a very innovative project aligned with the paradigms introduced by the Industry 4.0 model and fits perfectly with the Connected Enterprise approach from Rockwell Automation.

"We decided to use the Rockwell Automation® PACs because of their performance, which responds perfectly to the project requirements. High speed to support continuous data interrogations and requests was necessary to attain such a fine-tuned tracking system.

The simplicity of programming and the fact that the EtherNet/IP is native were additional determining factors. The special feature of this application lies in the fact that we were able to write the protocols directly into the PAC, using the socket interface that deliver direct communication between controllers, servers and central databases – with no need for intermediate devices. The Rockwell Automation PACs gave us the freedom to write what we wanted, without any restrictions, thanks also to the flexibility of the Structured Text programming language. No other brand has the same capabilities and performance.

Furthermore, the support and skills of the Rockwell Automation team were fundamental for us, and once associated with our structure we were able to successfully conclude such a complex project in a brief time span. If I had to summarize in a simple phrase what I have explained thus far, I would say an excellent solution with excellent support," concludes Ferrari.





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THE EASY AND COMPACT SOLUTION FOR ENERGY MEASUREMENT IN LAN NETWORKS

Carlo Gavazzi Automation, the international electronics group with activities in the design, manufacture and marketing of electronic equipment, launches the 3-phase energy analyzer EM24-DIN with Modbus over an Ethernet port.

The Modbus TCP protocol is a specific version of the traditional Modbus RTU, which uses Ethernet over a TCP port. It can be used, without adding any further wiring, wherever a LAN is installed: a meter can just be added to the network via a suitable switch.

The EM24 series now has a Modbus TCP port, without requiring any external adaptor, while keeping all the advantages of its compact size and its ability to directly measure up to 65A or to manage 5A current transformers.

The EM24 is also certified according to MID Directive, Modules "B" + "D" of Annex II, for legal metrology relevant to active electrical energy meters, so it can be used whenever a money transaction is due for the energy supply. Both the versions (65A and 5A) are also cULus certified for North American applications up to 480VLL.

"Main features of the EM24DIN E1 are its compact dimensions, which allow its installation also into small switchgears, and its flexibility," Andrea Bernardi – International Product Manager, says. "With the launch of this device Carlo Gavazzi is taking a further step towards adding new protocols to its wide Energy Meter range, thus confirming its reputation as a worldwide supplier of innovative and cost and time effective metering solutions."

Developed by our Competence Centre in Belluno, this energy analyzer is ideal for applications in industrial and building automation.

To withstand particularly harsh areas the construction includes:

- Class 1 (kWh) according to EN62053-21
- Class B (kWh) according to EN50470-1-3
- Accuracy $\pm 0.5\%$ RDG (current/voltage)
- Direct connection up to 65A or by 5A CT
- Communication port: Modbus TCP (other available ports: Modbus RTU and M-bus)
- Self power supply
- Dimensions: 4-DIN modules
- Protection degree (front): IP50
- Certified according to MID directive, Modules B and D of Annex II, for legal metrology relevant to active electrical energy meters (see Annex V, MI-003, of MID)
- CULus approved

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Stäubli Electrical Connectors is ISO/TS 22163 (IRIS) certified

Stäubli Electrical Connectors has proven itself for decades as a successful supplier of future-oriented connection solutions in railway technology. This competence is now extended by certification acc. to ISO/TS 22163, a standard defining a high level of quality throughout the supply chain of products for the railway industry to ensure safety and reliability.

The ISO/TS 22163 certification, formerly IRIS - International Railway Industry Standard, is a reference system created on the initiative of major equipment manufacturers in the rail transport sector. It is a tool for continuous improvement and research excellence and is managed by UNIFE (Union des Industries Ferroviaires Européennes).

This standard, as an extension of ISO 9001, addresses specifically the railway sector and defines primarily the rules for project management, special process control, risk analysis and knowledge management. The aim is to ensure the safety and reliability of the products used by the railway industry by defining a high level of quality throughout the supply chain.

This new certification of Stäubli Electrical Connectors today confirms the suitability of the company's quality management system and know-how for the requirements of the railway sector. "We are proud to meet the strict criteria of the IRIS Assessment Sheet by aligning all activities in our company with the process-oriented approach," comments Vincent Rey, Managing Director of Stäubli Electrical Connectors SAS in Hémingue (France), the Competence Centre for Rail Technology.



An advertisement for BEKA. At the top, there's a logo for 'BEKAWORLD' with a globe icon and 'Asia Pacific' text. Below it is a large image of a modern industrial factory complex. The text below the factory image reads: "BAIER + KÄ-PPEL, established in 1927, is a leading manufacturer of automated maintenance systems, with three production plants in Germany. BEKA offers customized solutions for centralized lubrication, environmental technology and telemetry. The BEKA quality management is certified according to ISO 9001 and the environmental management to ISO 14001." Below this text are three smaller images: 'Oil Lubrication Pumps', 'PROGRESSIVE DISTRIBUTORS', and 'Grease Lubrication Pumps'. At the bottom, there's contact information for 'BAIER + KÄ-PPEL GMBH + CO KG' and 'BEKAWORLD SINGAPORE PTE. LTD.', including UEN, address, and phone/fax/mobile numbers. There are also images of BEKA lubrication products and a 'MADE IN GERMANY' logo.

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Stäubli's Power-Blox Rewarded - Supporting Tsunami Aid

The innovative energy cube Power-Blox is finalist of the Array Change Technologies Award by PV Magazine. Currently, the Power-Blox cubes are being utilized by the Swiss Humanitarian Aid Unit in its emergency intervention in Indonesia. The portable and modular energy system, based on swarm technology offering alternating current (AC), is part of the comprehensive solution portfolio of Stäubli Electrical Connectors, a specialist with more than 20 years of experience in photovoltaics and expert for advanced contact technologies.

The “plug ‘n power” system Power-Blox has been evaluated out of more than 40 entries by the expert jury of PV Magazine and been nominated as finalist for the Array Change Technologies Award to be rewarded at the end of the year. The Array Changing Technologies Award of the leading trade publication PV Magazine is being given annually since 2015. It recognizes excellence in innovation for solar components and PV power plant development and operation.

Power-Blox is a fully-fledged power system that includes all required components built in a distinguished red box delivering 230 V AC besides the traditional 5/12 V DC. The modular design allows to build a mini-grid or to power individual appliances by simply stacking “cubes” until the required power and capacity is reached. Through the patented Swarm technology, the grid can be commissioned, extended, downsized or split by just adding or removing “cubes” without any engineering efforts. Like at a fish swarm in nature, all components adjust themselves to the condition of the environment without a central master component that takes over the control.

When electrifying households or small businesses in rural areas, features like the easy installation, fail safety, and robustness are vital. Lately also the defence industry takes note of the Swarm technology and peruses the deployment in their forward moving bases (FOB), specifically to power, communication and water purification equipment. International development organizations and aid agencies apply the Power-Blox system in a number of programs.

“Reliable electricity is essential for almost all of the Sustainable Development Goals as well as in all disaster relief operations. Currently, our energy cubes are being used by the Swiss Humanitarian Aid Unit in Indonesia for the electrification of water treatment plants and shelters during the tsunami relief operation,” says Matthias Mack, Director Alternative Energies at Stäubli Electrical Connectors. “The nomination by the specialists of the PV Magazine jury proves the ingenuity of the concept and the potential value for off-grid projects.”



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STÄUBLI

Retrofit LED Saves Up to 65 Percent Energy, Lowers Maintenance Costs in Hazardous Task Lighting

Raising the bar in lighting performance, operational efficiency and employee safety, Emerson launched the **Appleton™ Contender™ LED**, an extra low-profile enclosed and gasketed LED luminaire that brings energy and maintenance savings of up to 65 percent to challenging low clearance areas, such as walkways, catwalks, stairwells and tunnels. Designed specifically for retrofit applications, this cost-effective solution mounts directly to the hood of a competitor's **High-Intensity Discharge (HID)** hazardous location luminaire without an adapter, saving time and labor costs.

"Until recently, HID has been the primary light source for hazardous locations. LED is now the go-to choice for retrofitting the installed base of tens of thousands of HID luminaries," said Michael McCormack, director of product marketing, Emerson Automation Solutions. "To meet this growing market demand, the Appleton Contender LED was designed to directly retrofit to one of our competitor's most popular HID models. Additionally, it is certified with Appleton Mercmaster™ LED Low Profile globes and many of its accessories including the visor, angled reflector, globe guards and safety cable."

Oil and gas facilities, chemical processors and other hazardous locations place critical demands on luminaries, especially when it comes to extreme temperature ranges and long service lives. The **Appleton Contender LED** provides rated illumination through its full ambient operating temperature range of -40° F to +149° F to make sure facilities are safely lit in arctic cold or when the going gets hot. In addition, it features a rated L70 lifetime of 100,000+ hours -- the equivalent of more than 11 years -- adding value while minimizing maintenance requirements.

To withstand particularly harsh areas the construction includes:

- a proprietary epoxy powder coat finish for unmatched corrosion resistance
- a rugged IP68 watertight hub to ensure water in the conduit is kept out of the luminaire, heavy industrial-grade gaskets
- high vibration and shock resistance
- plus a robust 6KV surge suppression circuit to protect against damaging transients.

With three lumen output options and four interchangeable and field replaceable globes options -- clear and diffused polycarbonate, clear glass or prismatic glass refractor -- this luminaire delivers the lighting equivalent of 70W to 175W HID luminaires to provide a fully customized solution.

To ensure safe operation in areas where flammable gases or vapors may be present, the **Appleton Contender LED** is engineered to meet or exceed industry standards to assure workers in places such as offshore rigs, petrochemical and chemical processing plants, water treatment plants, and grain elevators can work productively and comfortably. It is NEC/CEC certified for hazardous locations rated Class I, Division 2 and Class I, Zone 2, Class II, Division 1 and 2, Zone 21 and 22, and Class III, as well as NEMA Type 3R, 4 and 4X wet locations and is IP 66/67 and ABS certified.



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Japanese Electric Vehicle Manufacturer GLM Takes Next Steps to Expand its Business with Dassault Systèmes

Dassault Systèmes announced that GLM Co. Ltd., an emerging Japanese developer of environmentally friendly automobiles and related services, has deployed the 3DEXPERIENCE platform to expand its electric vehicle development business.

As the first company in Japan to mass-produce an electric sports car, GLM will be able to meet the high demand for its expertise and its own technical platform of electric vehicle development solutions including chassis, power systems, and vehicle control units, which automotive manufacturers and new entrants from other industries are using to deliver market innovations. "GLM aims to solve the problems of companies that enter the electric vehicle business. For us, abundant creativity and fast execution are critical, not only for developing our original electric vehicle model but also for providing our customers with electric vehicle development solutions," said Tomohisa Tanaka, Chief Operation Officer, GLM. "Dassault Systèmes' 3DEXPERIENCE platform is widely used by companies in various industries. With it, we expect to reinforce our current partnerships and to expand the range of prospective ones to sectors such as high-tech and materials development. We believe that adopting the 3DEXPERIENCE platform will enable us to accomplish our product development with the full creativity that we always strive for."

GLM will rely on the "Electro Mobility Accelerator" industry solution experience based on the 3DEXPERIENCE platform. GLM can integrate design and development processes, improve efficiency, leverage its knowledge and know-how to expand its range of products and services, and accelerate their delivery to OEMs, suppliers, and other companies involved in electric vehicle development. The 3DEXPERIENCE platform's cloud-based digital environment enables collaboration on multiple projects with its partners in Japan. It will also facilitate collaboration with future partners when GLM expands to new markets.

"Electric, self-driving, connected vehicles, the sharing economy ... the transportation and mobility business environment is undergoing changes that occur once in a century," said Olivier Sappin, Vice President, Transportation & Mobility Industry, Dassault Systèmes. "Electric vehicle innovators need to make a strategic move toward sustainable growth. The 3DEXPERIENCE platform and the capabilities delivered by its cloud-based applications can pave the way for GLM to quickly innovate, expand its business, and create value. After all, Japan has a tremendous legacy in efficient approaches to automotive development. GLM can become part of this legacy."



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SME 2019 Digital Manufacturing Challenge

SME — an organization dedicated to developing the future manufacturing workforce — has announced its 2019 Digital Manufacturing Challenge, themed: **Additive for energy transfer & heat exchange**.

Student designers and engineers are challenged to go beyond the classroom or laboratory and showcase their technical and commercial talents by demonstrating new and **creative ways additive manufacturing can add value**. Entries are welcome from both college/university students and high school students.

One university winner and one high school winner will be selected and will be awarded with a complimentary conference pass to **RAPID + TCT** event, stipend of **\$1,000** to use for travel and lodging to the conference, a **certificate of achievement**, a complimentary, one-year SME student membership and more.



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Energy and the work it can do are fundamental to our world and they exist in many forms. Harnessing energy through its generation or conversion, transfer and storage, is often accompanied by heat.

The 2019 Digital Manufacturing Challenge emphasizes the thermal management or temperature control of systems, processes or devices that generate, convert, transfer or store energy.

Cross-functional teams are challenged to leverage the design freedom inherent in additive manufacturing in order to simplify or integrate features and functions while simultaneously reducing size, weight and increasing the efficiency of a thermal management system, process or device.

A virtual prototype is to be created comprehending one or more of the seven available additive manufacturing processes.

Contestants must recommend and justify their additive design, process and material selections through their research and cost-benefit/value analysis, and must also include a discussion of all manufacturing considerations in order to achieve the form, function and capability/performance claimed.

SME has been supporting the manufacturing industry for over 85 years. Working closely with manufacturing professionals, companies, educators, schools and communities, it shares knowledge and resources that generate solutions to manufacturing industry challenges.

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Red Dot Award Product Design 2019

The 2019 Red Dot Award: Product Design will open for submissions from October 15. Designers and companies from around the world are invited to submit products from all areas of daily life for a chance to win an award at one of the world's largest design competitions.

"The first thing I notice is the huge variety of categories and the growing quality of products," commented Red Dot jury member and UK design strategist Michael Thomson during the adjudication process in 2018.

The Red Dot Award: Product Design is open to manufacturers and designers from all over the world whose products are manufactured using an industrial production process.

The deadline for registrations is January 9, with a late deadline of February 1, 2019.



red**dot** design award

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5th Additive World Design for AM Challenge

Additive Industries has launched its fifth edition of the Additive World Design for Additive Manufacturing Challenge. Competing in two categories, both professionals and students are encouraged to redesign an existing conventional part of a machine or product for 3D printing.

A professional jury will evaluate all designs submitted and assess whether they contain the distinctive features and freedom additive manufacturing has to offer. All six finalists will be invited to Additive World Conference on March 20th, 2019 in Eindhoven, where the winners of the Design Challenge 2018 will be announced during the Additive World Awards Dinner.

The deadline for registration is February 1, 2019.



The advertisement is a colorful collage of industrial products and company information. It features logos for THK, MITSUBISHI ELECTRIC, KSS, and YAMAHA. Text includes 'COOL MUSCLE 2 Integrated AC Servo System', 'Miniature Actuator', 'Direct Motor Drive Ball Screws', 'Motion Control Clips', 'Linear-type Stepper Motor', 'Distributed Control with PAC - Motionnet & EtherCAT', and 'King servo AC Servo System'. Contact information for Elshin International Pte Ltd is provided, including a website, phone number, fax number, and email address. The company is listed as an importer, distributor, and stockist.

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• LM Guide
• Super Fit
• Actuator
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MITEC Malaysia International Trade & Exhibition Centre, Kuala Lumpur

19 - 21 MARCH 2019

INTERNATIONAL TRADE FAIR AND CONFERENCE FOR SUSTAINABLE BUILDING & DESIGN
Kuala Lumpur Convention Centre, Kuala Lumpur Malaysia

TRADE FAIR FOR THE ELECTRICITY & ELECTRONICS INDUSTRY (TENAGA KUALA LUMPUR)
Kuala Lumpur Convention Centre, Kuala Lumpur Malaysia

ASEAN SOLAR EXPO & FORUM
MITEC Malaysia International Trade & Exhibition Centre, Kuala Lumpur

20 - 22 MARCH 2019

THE 3RD INDONESIA INTERNATIONAL RAILWAY TECHNOLOGY, EQUIPMENT, SYSTEMS & SERVICES EXHIBITION & CONFERENCE 2019
JIExpo Kemayoran, Jakarta Indonesia

THE 11TH INDONESIA INTERNATIONAL TRADE SHOW FOR AUTOMOTIVE INDUSTRY 2019
JIExpo Kemayoran, Jakarta Indonesia

21 - 23 MARCH 2019

INTERNATIONAL TRADE FAIR FOR THE AUTOMOTIVE INDUSTRY
Kuala Lumpur Convention Centre, Kuala Lumpur Malaysia

APRIL 2019

4 - 6 APRIL 2019

THE 3RD INDONESIA INTERNATIONAL SMART OFFICE, SMART BUILDING & SMART CITY TECHNOLOGY EXHIBITION 2019
JIExpo Kemayoran, Jakarta Indonesia

THE 6TH INDONESIA INTERNATIONAL SOLAR POWER & PV TECHNOLOGY EXHIBITION 2019
JIExpo Kemayoran, Jakarta Indonesia

MAY 2019

2 - 4 MAY 2019

INTERNATIONAL INVENTION, INNOVATION & TECHNOLOGY EXHIBITION
Kuala Lumpur Convention Centre, Kuala Lumpur Malaysia

7 - 9 MAY 2019

INTERNATIONAL TRADE FAIR FOR SEMICONDUCTOR TECHNOLOGY
MITEC Malaysia International Trade & Exhibition Centre, Kuala Lumpur

15 - 18 MAY 2019

INTERNATIONAL MACHINE TOOLS AND METALWORKING TECHNOLOGY EXHIBITION
MITEC Malaysia International Trade & Exhibition Centre, Kuala Lumpur



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JULY 2019

3 - 4 JULY 2019

VIETNAM INDUSTRIAL MANUFACTURING
FAIR
Binh Duong Province Convention Centre,
Vietnam

3 - 5 JULY 2019

TRADE FAIR FOR PORTS & SHIPPING
Renaissance Johor Bahru Hotel,
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1 - 4 AUGUST 2019

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Putra World Trade Centre, Kuala
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SEPTEMBER 2019

23 - 24 SEPTEMBER 2019

INDUSTRIAL AUTOMATION FIESTA 2019
Dewan Taman Mawar, Pasir Gudang
Johor Malaysia

OCTOBER 2019

15 - 17 OCTOBER 2019

INTERNATIONAL TRADE FAIR FOR
LABORATORY EQUIPMENT AND
TECHNOLOGIES
Putra World Trade Centre, Kuala
Lumpur Malaysia

NOVEMBER 2019

14 - 15 NOVEMBER 2019

OIL & GAS FIESTA VIETNAM
Imperial Hotel Vung Tau, Vietnam

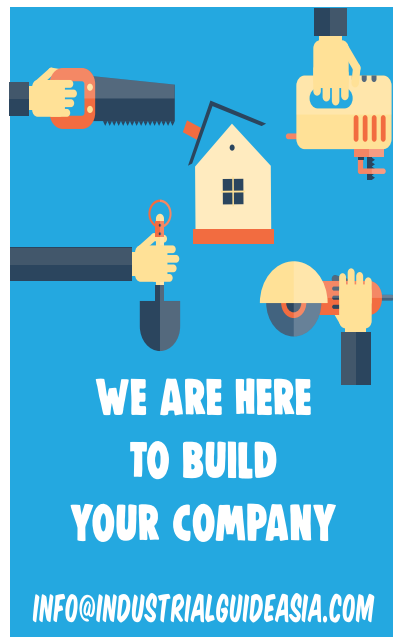
25 - 26 NOVEMBER 2019

OIL & GAS FIESTA PENERANG
The Westin Desaru Coast Resort
Convention Hall

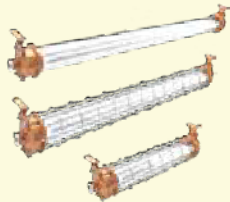
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4 - 7 DECEMBER 2019

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SINGAPORE**



Carolyn Lee

☎ +65 6233 6765

✉ carolyn.lee@ubm.com

**UBM NETWORK
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25 & 26 Nov 2019 :

**The Westin Desaru Coast Resort
(Convention Hall)**

26 Nov 2019 :

**Golf Tournament
(The ELS Club)**

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- Venezuela
- Holland
- Thailand
- Philippines
- Myanmar
- Japan
- Indonesia
- Taiwan
- South Korea
- New Zealand
- German
- Singapore
- Vietnam
- Brunei

Attendance Includes :

Corporate Management: Chairman/ Director/ Managing Director/ Proprietor/ General Manager
/ Head of Unit/ Chief of Unit/ Managers=30%



Maintenance / Project / Production / Operation / Plant Operator / Engineer / Technician=35%



Assistant Manager / Marketing / Sales=10%



Procurement / Purchasing / Sourcing =5%



Health / Safety / Environmental=20%



Introduction :

Oil & Gas Roadshow (OGR) is introduced in assisting oil, gas and other heavy industry companies to meet the maximum interaction among industry personnel from Plant Engineering, Production, Maintenance, R&D & Project Engineering, QA/QC, Facility Management, Integrity, Safety, Environmental, Purchasing and other engineering related departments to get updates on technologies being applied to the oil & gas, offshore, deepwater & subsea engineering, petrochemical, chemical processing, power, fertilizer, oil palm, pulp & paper, marine & shipbuilding, steel mill and various heavy industries.

With reference to the success of the past Oil & Gas Roadshows, we are pleased to bring to you the OGR @ Johor and with industry focus :

OGR @ Johor is featuring Oil & Gas, Offshore, Marine & Shipbuilding, Deepwater & Subsea Engineering, Petrochemical, Chemical Processing, Power and Oil Palm M&E & Processing.

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Visitor Profile Of Oil & Gas Roadshow :

From Oil & Gas, Petrochemical, Chemical Processing, Power & Energy, and Marine, Offshore & Shipbuilding

- Chemical plant / factory
- Drilling contractor
- Education & training
- Electrical / utility board
- Engineering construction & contracting services
- Environmental protection / solution control
- Geological / geophysical seismic & services
- Inspection / maintenance equipment
- Laboratory & testing Services
- Manufacturer's representative / vendor
- Marine support & distribution
- Offshore platforms / supplies / services
- Oil & gas exploration, production
- Marine support & distribution
- Offshore platforms / supplies / services
- Petrochemical plant
- Pipelines operation / installation
- Plant engineering & construction
- Power & Energy
- Project consultancy
- Repair services (including welding shops)
- Research & development
- Rig / fabricator / operator
- Security
- Trade associations
- Transportation, storage & handling
- Marine & Installation
- Deepwater operations

Oil & Gas Roadshow Pre-Promotional Activities :

The Oil & Gas Roadshow be supported by early promotion plan.

- Online advertising in www.oilandgasroadshow.com
- Invitations sent to local industry area.
- Email updates in targeted local industries.
- Telemarketing to invite attendees.
- Road bunting around the covered areas to bring up show's publicity.
- Email shots will be conducted to the subscribers of industrial news online.
- Print advertisement in the Industrial Guide Asia, Oil & Gas Industry Section
- Marine, Offshore & Shipbuilding Industry Section.

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Step 3 : click on the **SIGN UP** button.

A registration form with fields for Name, Email, Password, and Confirm Password, along with a "Sign Up" button.

Step 4 : Fill in your particulars and press the **SIGN UP** button.

Step 5 : After you have **SIGN UP**, You will see your name on the top right hand corner.

Step 6 : Click on your name.



Step 7 : Click on the **COMPANY MANAGER**.



Step 8 : Click on the **ADD** button.



Step 9 : Fill up your **COMPANY DETAIL**

Step 10 : After you are done filling up your company detail press **SAVE**

A form titled "Company detail" with fields for Company Name, Address, Phone, Email, and Website. It also has a "save" button and a "cancel" button.

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