ANNUAL POWER REVIEW 2020

Analysis
Robust GCC policy response to COVID-19 crisis

Crucial role
HVACR sector assists life-critical infrastructure

SURVIVING THE SHOCK
THE POWER SECTOR IS SWITCHED ON

INSIDE
Cables
UPS
Logistics
Brand View

ELECTRICAL EQUIPMENT AND MATERIALS BUYERS' GUIDE 2020

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36 Years
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Serving Middle East Business

Democratic Republic of the Congo launches its first power plant in Kinshasa

Installation of new infrastructure

Investment in renewable energy

The impacts of the pandemic on the energy sector

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EDITOR’S NOTE

THE POWER INDUSTRY is slowly getting a sense of this uncertain new world. The good news is that some firms are finalising deals, showing signs of some progress compared with previous months (p14). While the cable firms are resorting to business continuity plans (p30), the HVACR sector is redefining its role (p24). We also take a look at how the GCC bloc is instilling confidence in businesses (p20). A report on 5G and its power needs gives a perspective about the emerging trends (p28). Elsewhere in this issue, we feature an expert insight on the benefits of autonomous drones for several industries. Other reports include emerging trends in warehouses and logistics, and a round-up of innovations. Also, do not miss our Annual Electrical Equipment Buyers’ Guide (p42), offering a comprehensive guide to the region’s power industry.

At Technical Review we always welcome readers comments to trme@alaincharles.com
Turkey: Local, renewable resources contribute 66 per cent of electricity

TurkEY produced 66 per cent of its electricity from local and renewable resources in the first five months of 2020, said the country’s Energy and Natural Resources Minister Fatih Dönmez.

“We continue to reap the fruits of our long-term investments,” Dönmez wrote on Twitter, given that Turkey wants to fully utilise local and renewable energy resources efficiently to support its development and to reduce its dependence on energy imports.

Last year Turkey’s electricity production from local and renewable resources stood at 62 per cent, he noted.

But on May 24, Turkey saw an all-time daily record as local and renewable energy resources accounted for 90 per cent of the country’s electricity generation, the minister added.

On May 24, hydro plants constituted the largest portion at 43.7 per cent, while local coal plants contributed 16.5 per cent to electricity generation. Wind plants produced 14.5 per cent and solar plants constituted 7.2 per cent. Geothermal and biomass plants added 5.3 per cent and 2.6 per cent, respectively.

Elsewedy Electric for Trading and Distribution signs US$13.27mn deal

EGYPT’S ELSEWEDY ELECTRIC for Trading and Distribution has signed a contract to build Al Lahoon substation with a value of US$13.27mn in Faiyum governorate on a turnkey basis. The engineering, procurement and construction (EPC) contract will be implemented over a six-month period.

Elsewedy Electric for Trading and Distribution is one of the leading wires and cables and integrated energy solutions providers in the Middle East and Africa.

The company has a portfolio incorporating traditional and renewable energy areas along with related services. Last year, the company signed an EPC contract worth US$18.54mn to build a transmission line and an internal network for the Canal Sugar Company in Egypt.

DEWA’S JEBEL ALI desalination plant in JAPS, Dubai, has achieved three million man-hours without lost time injuries (LTIs) as construction passes the 70 per cent completion mark.

This milestone has been attained while strictly observing all the international and local protocols put in place to mitigate the COVID-19 pandemic.

ACCIONA and BESIX are the EPC contractors for the JEBEL ALI Seawater Reverse Osmosis (SWRO) desalination plant, which will produce 183,000 cu/m of potable water per day. It will serve a population of 500,000 inhabitants, making it one of the largest desalination plants in the Emirates.

Jebel Ali SWRO desalination plant is expected to be completed by the end of 2020.

The zero LTIs record is the result of good teamwork by the client, the engineers and the construction consortium. Several health and safety measures are in place, including specific training for employees involved in activities that carry a relative risk such as working at height, driving and working in confined spaces.

The preventive measures at the construction site include regular coordination meetings with the subcontractors, weekly visits to analyse the state of work, and a training schedule during construction. All these initiatives have allowed the early detection of potential risky situations, and have prevented occupational accidents from happening.

Empower releases guidelines for uninterrupted cooling services

EMIRATES CENTRAL COOLING Systems Corporation (Empower), has urged its customers to apply simple steps to ensure the continuity in cooling services during the summer, a period when there is high demand for cooling services from consumers.

“We seek to provide best and sustainable district cooling services to our customers, and we have much confidence in them to avoid breakdowns and apply the instructions that would ensure them the high-quality cooling services during this hot season,” remarked its CEO Ahmad Bin Shafar.

The advanced technologies that Empower uses and develops year after year, help customers to monitor and plan their consumption of district cooling services, which in turn contributes to lowering energy consumption and achieving significant power savings, he stated.

PDO starts commercial operation of Amin PV Power Plant

PETROLEUM DEVELOPMENT OMAN (PDO) has begun operations of the 100-MW Amin Photovoltaic Power Plant.

The US$94mn facility in the south covers an area of four sq km and can produce up to 100 megawatts of electricity through solar panels.

The energy generated is sufficient to power 15,000 homes and could lead to an annual reduction of more than 225,000 tonnes of CO2 emissions – the equivalent of taking 23,000 cars off the road.

Using solar-generated electricity as an alternative to natural gas to support PDO operations, the project is expected to provide an equivalent fuel economy of 95.5 million cubic metres of gas per annum.

PDO Managing Director Raoul Restucci said, “Solar intensity in Oman provides an attractive platform to enable a lower carbon and more sustainable future. This flagship project is another building block in support of PDO’s continued transition to a fully-fledged energy company. The Amin power plant represents an excellent example of Oman’s outstanding potential in renewable energy.”
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Renewables continues to beat cheapest coal competitors on cost: IRENA

RENEWABLE POWER IS increasingly cheaper than any electricity capacity based on fossil fuels, according to a report by the International Renewable Energy Agency (IRENA).

Renewable power generation costs in 2019 showed that more than half of the renewable capacity added in 2019 achieved lower power costs than the cheapest new coal plants.

The report highlights that new renewable power generation projects now increasingly undercut existing coal-fired plants. On average, new solar photovoltaic (PV) and onshore wind power cost less than keeping many existing coal plants in operation, and auction results show this trend accelerating – reinforcing the case to phase out coal entirely. Next year, up to 1,200GW of existing coal capacity could cost more to operate than the cost of new utility-scale solar PV, the report shows.

Replacing the costliest 500GW of coal with solar PV and onshore wind next year would cut power system costs by up to US$23bn every year and reduce annual emissions by around 1.8 gigatons (Gt) of carbon dioxide (CO2), equivalent to five per cent of total global CO2 emissions in 2019. It would yield an investment stimulus of US$940bn, equal to around one per cent of global GDP.

“We have reached an important turning point in the energy transition. The case for new and much of the existing coal power generation, is both environmentally and economically unjustifiable,” said Francesco La Camera, director-general of IRENA. “Renewable energy is increasingly the cheapest source of new electricity, offering tremendous potential to stimulate the global economy and get people back to work. Renewable investments are stable, cost-effective and attractive offering consistent and predictable returns while delivering benefits to the wider economy.”

Renewable electricity costs have fallen sharply over the past decade, driven by improving technologies, economies of scale, increasingly competitive supply chains and growing developer experience. Since 2010, utility-scale solar PV power has shown the sharpest cost decline at 82 per cent, following by concentrating solar power (CSP) at 47 per cent, onshore wind at 39 per cent and offshore wind at 29 per cent.

Costs for solar and wind power technologies also continued to fall year-on-year. Electricity costs from utility-scale solar PV fell 13 per cent in 2019. Costs for solar and wind power technologies also continued to fall year-on-year. Electricity costs from utility-scale solar PV fell 13 per cent in 2019. Costs for solar and wind power technologies also continued to fall year-on-year. Electricity costs from utility-scale solar PV fell 13 per cent in 2019. Costs for solar and wind power technologies also continued to fall year-on-year. Electricity costs from utility-scale solar PV fell 13 per cent in 2019. Costs for solar and wind power technologies also continued to fall year-on-year. Electricity costs from utility-scale solar PV fell 13 per cent in 2019. Costs for solar and wind power technologies also continued to fall year-on-year. Electricity costs from utility-scale solar PV fell 13 per cent in 2019. Costs for solar and wind power technologies also continued to fall year-on-year. Electricity costs from utility-scale solar PV fell 13 per cent in 2019. Costs for solar and wind power technologies also continued to fall year-on-year. Electricity costs from utility-scale solar PV fell 13 per cent in 2019. Costs for solar and wind power technologies also continued to fall year-on-year. Electricity costs from utility-scale solar PV fell 13 per cent in 2019. Costs for solar and wind power technologies also continued to fall year-on-year. Electricity costs from utility-scale solar PV fell 13 per cent in 2019. Costs for solar and wind power technologies also continued to fall year-on-year. Electricity costs from utility-scale solar PV fell 13 per cent in 2019. Costs for solar and wind power technologies also continued to fall year-on-year.
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LET'S TALK ABOUT THE FUTURE

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GE supporting Middle East with reliable power grids as summer arrives

AS GRID STABILITY is critical for seamless operations in infrastructure, GE is supporting the next phase of the fight against COVID-19 in the Middle East by ensuring power grids are ready. GE technical professionals are working around the clock to maintain the reliability and efficiency of the region’s power grids to meet peak demand brought on by soaring temperatures.

“We are working on many projects that are critical to our customers,” said Mohammed Mohaisen, president and CEO of GE Renewable Energy’s Grid Solutions business in the Middle East, North Africa and Turkey. “This work is important especially now, with many countries easing lockdowns as the summer arrives. Peak demand for electricity could be higher than usual this year since most people are staying at home with minimal plans to travel abroad.”

GE’s Grid Solutions continues to make use of its remote training modules to cross-train field engineers on new equipment and technologies. “We are taking different measures to continue supporting our customers across the region especially in such times. We are also training our professionals across all work sites in the region, and getting them up to speed with enhanced skillsets so we can continue to move ahead with projects despite limits on international travel,” said Mohaisen.

Further, GE is driving localised manufacturing and innovation to support the industrial sector in general, and grid stability in particular. GE’s Grid Solutions Khorab Integration Facility (KIF) in Dammam – which has evolved as a high-end Saudi-based manufacturing ecosystem helping to address gaps in the global supply chain through the pandemic – manufactures protection and control panels that customers need in order to expand and upgrade substations ahead of peak summer electricity demand.

In Iraq, GE’s Grid Solutions team has successfully energised two 132/33kv substations that will reduce bottlenecks in eastern Baghdad. The Baladiyat and Al-Amari substations will support the transfer of energy from generating power plants such as Besmaya, the largest power plant in Iraq, into the community. This is part of GE’s commitment to supporting Iraq in building a sustainable grid.

Even in the most complex of times, supporting the stability of the grid must be done with safety as a priority. GE is focused first and foremost on protecting its people, customers, and technology, through following strict protocols across its operations.

GE is leveraging digital technology in promoting frontline work safety including smart helmets for field engineers that have cameras which send data by secure high-speed internet to its facilities abroad. Remote grid asset experts can then provide insights on troubleshooting and resolving issues when it might not be available locally.

SEC awards five stars to Waad Al Shamal Power Plant Project EHS standards

SAUDI ELECTRICITY COMPANY (SEC) has awarded five stars to Waad Al Shamal integrated solar and combined cycle power plant project for Environment, Health and Safety (EHS) standards.

GE is providing turnkey services, including engineering, procurement and construction (EPC) works, and supplying four GE 7F gas turbines, one steam turbine and four heat recovery steam generators (HRSGs), as well as other equipment for the project. One of the turbines at the site is the first GE gas turbine rolled out locally in the Kingdom from GE Saudi Advanced Turbines (GESAT) - a joint venture (JV) between Dussur and GE.

Fahad H. Al-Sudairi, president and CEO of SEC, said, “At SEC, we continuously assess progress against strict measures meant to ensure occupational safety and health across all our offices, existing facilities and projects rating.”

Strict measures have been implemented to enable project staff to continue working safely following the COVID-19 outbreak.
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85-800 KVA
APICORP invests in JWPC

THE ARAB PETROLEUM Investments Corporation (APICORP), has announced its first direct equity investment in a wind energy venture, the Jordan Wind Project Company (JWPC), the developer of the Tafila Wind Project in the Hashemite Kingdom of Jordan.

APICORP’s 20 per cent equity stake in the project also marks its first equity investment in the country.

JWPC’s mandate is in line with Jordan’s ambitious target to have clean energy account for 20 per cent of the country’s overall power generation by 2021, thereby developing new and sustainable energy sources as part of the country’s energy mix. The US$287mn 117MW wind farm connected to the national grid accounts for 12 per cent of Jordan’s total operating renewable energy generation, generating around 350GWh of clean energy annually which can power 83,000 homes.

Tafila Wind Farm is owned and operated by the Jordan Wind Project Company PSC (JWPC), in which Abu Dhabi’s renewable energy firm Masdar owns a 50 per cent stake. APICORP and Tamasuk Holding, the infrastructure and development arm of Al Blagha Holding for Investments Co., partnered to acquire the remaining 50 per cent stake, owning 20 per cent and 30 per cent beneficial stakes, respectively.

Officially inaugurated in December 2015, Tafila Wind Farm displaces nearly 235,000 tons of CO2 emissions per year. It also undertook a comprehensive Environmental and Social Impact Assessment (ESIA) during its development period to identify environmental and social impacts the project may have in the surrounding areas, and continues to implement a strict social and environmental regime in accordance with lenders’ requirements, Jordanian environmental guidelines and international best practices.

Dr Ahmed Ali Attiga, CEO of APICORP, commented, “This equity investment affirms APICORP’s position as a trusted partner to the region’s energy sector and underscores the strategic drive to enhance access to sustainable power, an area in which Jordan continues to be a regional leader. With the Arab world’s abundant wind resources, we see wind power as a viable component and key technology in the region’s future power generation mix, offering a sustainable, cost-effective energy source that will enable wider access to modern electricity to millions of people and spur employment and economic growth.”

KIZAD breaks ground on new facilities

KHALLFA INDUSTRIAL ZONE Abu Dhabi (KIZAD), a subsidiary of Abu Dhabi Ports, has announced breaking ground for its new products to support the increasing demand for pre-built facilities in KIZAD.

The range of small-to-medium light industrial warehousing units comprise the fourth, fifth, sixth and seventh phases of the KIZAD Logistics Park and are set to be introduced to the market starting from the end of the year to cater to increasing customer demands for additional ready-to-move facilities.

Abdulrah Al Hameli, acting head of Industrial Zones Cluster, Abu Dhabi Ports, said, “Industrial activity and warehousing demand has been quite resilient, and we are confident that launching these ultra-modern units will propel tremendous growth in Abu Dhabi’s manufacturing base. Customers are looking for flexible and asset-light options, and we are expanding our portfolio to address these needs through the launching of a new modular, pre-built units in various sizes and configurations.”
New reports highlight nuclear power as important pillar of post-pandemic recovery

THE ORGANISATION FOR Economic Co-operation and Development’s Nuclear Energy Agency (OECD-NEA) has launched a series of policy briefs that examine nuclear energy’s role in the post-pandemic economic recovery.

The policy briefs highlight that investment in nuclear energy is proven to create many highly skilled jobs, with every job in the nuclear industry generating a further 3.2 jobs throughout society. Investments into nuclear also deliver widespread economic growth, along with strengthening energy independence and security of supply.

On the issue of cost and financing, sometimes cited as a key obstacle to the development of nuclear power, they note that there are a number of financing models that can be applied for large-scale infrastructure projects. These models would be well-suited to support near-term nuclear new build projects and could in turn, significantly reduce the final cost of nuclear energy, helping ensure affordable and secure electricity supply.

Agneta Rising, director general of World Nuclear Association, commented, “Nuclear energy is a pillar of stability; nuclear reactors are resilient electricity system. Investment into nuclear energy is a window of opportunity for governments to not only boost economic growth and create many highly valued and largely local jobs, but also fulfill our climate change commitments and build a clean and resilient electricity system.”

 Trojan Holding launches digital training programme

TROJAN HOLDING, one of UAE’s leading construction companies, has launched the fourth edition of its ‘Trojan Young Engineers’ programme to empower the next generation of engineers.

Since launching in 2016, the programme has benefitted more than 300 young engineers and is set to expand to universities across the Middle East by the end of the year.

The programme, which began on 23 June, is being offered online for the first time, and will focus on Abu Dhabi’s new ‘Water’s Edge’ development at Yas Island. The aspiring engineering students, selected from UAE universities, will understand how Trojan Holding’s team of professionals are managing the planning, design and execution stages of the project. The students will virtually explore the under-construction project with the guidance of Trojan’s engineers, learn about the day-to-day responsibilities and gain an insight of the career in both management and construction roles. Following the conclusion of the programme, Trojan Holding will award six-week internships to selected students.

Engineer Hamad Al Ameri, managing director of Trojan Holding, said, “While a university qualification can potentially open the doors to a career, experience remains one of the most important assets for a graduate. Trojan Holding is committed to giving back to the community and through the ‘Trojan Young Engineers’ programme, it will help UAE’s future leaders of the construction industry gain the practical knowledge and understand the day-to-day responsibilities of the sector.”

Water treatment partnership launched

ECOLOG INTERNATIONAL AND Siemens Energy’s Water Solutions business have joined forces to provide an efficient and service-oriented treatment option to the water and wastewater industry.

Anthony Pink, CEO of Siemens Water Solutions, said, “Wastewater has to undergo a complex, energy-intensive process to reach the required level of purity. Siemens Energy’s specialist technology supports this process, and our agreement with Ecolog enhances our technological portfolio with key treatment technologies and vast wastewater experience, aligned with local high-performance services, allowing Ecolog and Siemens to jointly serve the wastewater industry in a broader way, as required.”

All Venoei, Group CEO of Ecolog International, said that the partnership is set to bring advanced and integrated solutions to the customers and enable them to focus more on managing production and less on waste management and side streams.

More renewable progress needed, says report

GROWTH IN RENEWABLE power has been impressive over the past five years, but too little is happening in heating, cooling and transport, according to REN21’s Renewables 2020 Global Status Report (GSR). The journey towards climate disaster continues, unless we make an immediate switch to efficient and renewable energy in all sectors in the wake of the COVID-19 pandemic, the report says.

“Renewable power has made fantastic progress. It beats all other fuels in growth and competitiveness. But the progress in the power sector is only a small part of the picture. And it is eaten up as the world’s energy hunger continues to increase. If we do not change the entire energy system, we are deluding ourselves,” said Rana Adib, REN21’s executive director.

The report shows that in the heating, cooling and transport sectors, the barriers are still nearly the same as 10 years ago. “We must also stop heating our homes and driving our cars with fossil fuels,” Adib added.
## EXECUTIVES’ CALENDAR 2020

### OCTOBER

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Readers should verify dates and location with sponsoring organisations, as this information is sometimes subject to change.

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### Kuwait Green Building Forum 2020

Green building is the practice of creating structures and using processes that are environmentally friendly and resource-efficient throughout a building’s life-cycle from siting to design, construction, operation, maintenance, renovation and deconstruction.

The International Energy Agency has estimated that the world’s primary energy needs will grow by 55 per cent by 2030, also estimating that US$33 trillion investment is required to meet expected demands.

With buildings currently consuming 40 per cent of the world’s energy demands, 25 per cent of harvested wood and 17 per cent of water, many regional governments have been working to improve building energy efficiency and sustainability.

In this context, the 8th Kuwait Green Building Conference & Exhibition, a sustainable built environment focused forum, will take place on 14-15 October in Kuwait. It will bring together leading sustainability experts and stakeholders to debate and share best practices and innovative solutions to the construction industry.

The conference aims to promote sustainability and green practices as well as the use of suitable building materials, technologies, services and processes that improve the environmental performance and energy efficiency in buildings. It also aims to enhance cities’ capacity to respond to climate change while at the same time improving the efficiency of the built environment.

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### New dates for Expo 2020 Dubai revealed

UAE’S EXPO 2020 Dubai has been postponed by a year due to the impact of COVID-19 and will officially take place between 1 October 2021 and 31 March 2022.

Given the impact of the global health crisis, the decision taken by the Bureau International des Expositions’ executive committee to postpone the event was met with support from several international and regional organisations.

Dimitri Kerkentzes, secretary-general of the Bureau International des Expositions (BIE), said, “The difficulties raised by the COVID-19 pandemic illustrate the importance of sharing solutions and coordinating our actions.

“The time we spend apart leads us to reflect on the importance of being together, and reminds us that even in the digital age, shared experiences are the essence of our humanity. The world is now more than ever looking forward to Expo 2020 Dubai to connect, reflect and celebrate the future.”

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Photo Credit: Expo 2020 Dubai
ON THE WEB

A round up of the leading developments and innovations recently featured on Technical Review Middle East’s online portal.
To read more or to stay up to date with the latest industry news, visit www.technicalreview.me

IMKAN awards US$64.25mn contract for AlJurf development

ABU DHABI-BASED PLACE-MAKER IMKAN has awarded Al Dhabi Contracting LLC a US$64.25mn contract to build the first phase of the master-planned development of AlJurf, its second home coastal destination set along the pristine coast of Sahel Al Emarat, the UAE’s Riviera.

Scheduled for completion in 2022, the first phase of AlJurf, AlJurf Gardens, will see Al Dhabi Contracting LLC build 146 residential and two show villas over a total area of 57,851 sq m.

www.technicalreviewmiddleeast.com/construction

Netskope expands NewEdge network in the Middle East

NETSKOPE, GLOBAL SECURITY cloud provider, has expanded the Netskope NewEdge network to a new data centre in the UAE, serving customers across the Middle East.

Netskope NewEdge is a carrier-grade private cloud network that is reserved exclusively for Netskope customers.

The efforts to digitally transform enterprises have pushed the capabilities of the public internet to its maximum. Inherently unpredictable and unsecure, the public internet is strained by users who demand great web, cloud and private application performance and enterprises that demand more security.

Compounding this challenge, legacy security tools often introduce delays to accessing these critical services.

www.technicalreviewmiddleeast.com/it/communication

Volvo autonomous electric hauler wins Red Dot award

VOLVO AUTONOMOUS SOLUTIONS’ TA15 autonomous electric hauler has won a Red Dot Product Design Award 2020 – a seal of high design quality from the world’s largest and most distinguished design competition. The battery-electric load carrier is a new machine concept, compared to traditional off road hauling, and forms one element of Volvo Autonomous Solutions’ TARA transport solution. It is designed to disrupt today’s off-road hauling.

www.technicalreviewmiddleeast.com/logistics

SWPC signs US$245mn financial closure for Dammam project

SAUDI WATER PARTNERSHIP Company (SWPC) and a consortium led by the Metito Group, comprising Metito, Mowah Co. and Orascom Construction, have confirmed the financial closing of the kingdom’s first Independent Sewage Treatment Plant (ISTP).

The project will be awarded to the private sector, under the build own operate transfer (BOOT) concession model, with a tenor of 25 years, in Dammam West. The financial closing of this project comes despite the global lockdown, caused by the COVID-19 pandemic. The Dammam ISTP, with a designed capacity of 350,000 cu/m and an initial capacity of 200,000 cu/m per day, will serve the western region of Dammam.

www.technicalreviewmiddleeast.com/water-a-environment

Abu Dhabi Airport introduces touchless elevators

ABU DHABI AIRPORTS has partnered with Meta Touch, a groundbreaking UAE company, to deploy touchless technology across 53 elevators at Abu Dhabi International Airport (AUH), helping to prevent cross-infection from interacting with elevator buttons and enable a COVID-19-free airport environment. The new technology, Tchk (Touch-less Keypad Technology), was designed and manufactured by Meta Touch.

www.technicalreviewmiddleeast.com/hse

SDRPY launches energy and water projects in Yemen

THE SAUDI DEVELOPMENT and Reconstruction Programme for Yemen (SDRPY) has launched a package of development projects in Socotra governorate to activate and operate two power plants in Hadibu and Qulansiyah and manage water resources. Tariq Al-Zaidi, director of SDRPY in Socotra, confirmed in a speech at the launch that the programme had built the Hadibu and Qulansiyah power plants to the highest international technical specifications, the same as for Saudi electricity stations.

SDRPY launched electricity services at Hadibu Station, which has a capacity of 3,750 kW and includes a building to house the plant and all accessories, such as transformers, tanks and cables. All electrical and mechanical work has been completed to feed the electrical network in Socotra Governorate.

www.technicalreviewmiddleeast.com/power-a-water
IT'S FAIR TO say that 2020 has not panned out the way power companies — nor anyone else for that matter — would've liked or expected.

Things had been moving in the right direction for big engine makers, suppliers and contractors at the start of the year, with the Middle East market enjoying steady growth. That was until the coronavirus pandemic engulfed much of the world, shuttering economies and stifling demand for energy and pretty much all else.

The COVID-19 pandemic has set in motion the largest fall in global energy investment in history, the International Energy Agency (IEA) said in a new report, with spending expected to plunge in every major sector this year, from fossil fuels to renewables.

It reckons total global energy investment will drop by 20 per cent — or almost US$400bn — compared with last year. The IEA’s executive director Dr Fatih Birol called it a “deeply troubling” scenario.

For the Middle East, the collapse in oil prices brings with it further problems, spelling trouble for the likes of Saudi Arabia, Kuwait and Abu Dhabi. The gas sector has proved more resilient, though, which could work in favour of big LNG exporters like Oman.

Nonetheless, demand and investment is down right across the board, with expectations extremely subdued for the near-term future.

Subdued outlook
Against this backdrop of uncertainty and volatility, predicting what comes next is a bit like gazing into a crystal ball.

Still, the IEA notes in its World Energy Investment 2020 guide, published this May, a number of factors to watch for in the coming year. Its baseline expectation for 2020 is a widespread global recession that will undermine energy demand and investment globally.

A more rapid V-shaped recovery could spur a more optimistic scenario but, by the same token, there is the possibility of an even more profound slump in the event that a second wave of infections later in the year prompts renewed restrictions and lockdowns.

Where crisis meets opportunity
Power firms are braced for a challenging year ahead but remain confident of the Gulf’s long-term potential as major shifts, from industrial diversification to a transition to clean energy, open up fresh opportunities. Martin Clark reports.

The COVID-19 pandemic has set in motion the largest fall in global energy investment in history, the International Energy Agency (IEA) said in a new report.
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Moreover, the IEA believes the energy industry that emerges from the current crisis will be significantly different from the one that came before. That might include an acceleration to cleaner energy technologies and away from traditional thermal-based power generation.

More immediately, though, energy-related government revenues — especially in the main oil and gas exporting countries — have been profoundly affected, with knock-on effects on budgets available to state-owned energy enterprises.

This is likely to influence spending patterns in the Gulf states, though even here, there are examples where deals are still being done.

**Business resilience**

While it’s hard to find examples of unbridled optimism right now, it’s not all doom and gloom either.

Many of the well-known players in this field — the likes of Volvo Penta, MAN Energy Solutions, EFEN Gmbh, Perkins Engines, Baudouin and Cantonri Motors — are no strangers in navigating through volatility, especially in the emerging markets.

While 2020 may have provided the ultimate test in business resilience, work on existing projects still continues and new tenders are out there and up for grabs.

Remember, it was not so long ago — just a few months — that the Middle East was one of the most exciting and high-potential markets in the world for power companies.

Prior to the health crisis, the region was estimated to require US$109bn in power infrastructure investment over the coming five years, according to the MENA Power Industry Outlook.

That value may have eroded sharply in the past few months or so, but the fundamentals of the region — a rising, youthful population, expanding economies and sustained energy demand — all looked encouraging, at least until the COVID-19 outbreak.

**Deals being done**

Indeed, the ability of major power projects such as the 500MW Ibri solar plant in Oman to achieve financial closure in the current climate bodes well for further deals — and perhaps points to stronger interest in the renewables segment.

The US$400m project is lead by Saudi Arabia’s ACWA Power, which successfully attracted pledges worth US$275m in debt from a mix of local and international banks. The largest utility-scale solar IPP in Oman, ACWA Power’s chief financial officer Rajit Nanda hailed it as a triumph given the “trying financial and macroeconomic challenges” across the world.

In a further sign perhaps of the general shift to renewables, the company reported that it had won the 900MW photovoltaic fifth phase of Dubai’s Mohammed bin Rashid Al Maktoum Solar Park offering a “world-beating” tariff. Working again with Gulf Investment Corporation, a partner on the Ibri solar plant, it said the US$570m project was awarded at a world-record tariff of 1.6953 dollar cent per kWh.

Despite the gloomy economic backdrop, it means business is still being done and contracts are still being signed.

This, of course, brings with it welcome news for the supply chain, with manufacturers and contractors still hunting for new business.

In May, for instance, Hyundai Electric landed US$29m worth of new orders to supply power transformers and gas insulated switchgear to Saudi Electricity Co.

**Tapping clean energy**

Niche business opportunities are also presenting themselves amid the growing interest in cleaner energy.

Wartsila is to supply engineering services and equipment for a new 44MW plant at Saudi Arabia’s Mansourah & Massarah gold mine.

It will be the first new-build power project in the country to utilise a hybrid energy concept, with both engine technology and solar energy.

The order was placed in March by India’s Larsen & Toubro, the main contractor for the mining project.

The power plant itself will comprise six Wartsila 32 engines, with five in operation and one on constant stand-by.

The Wartsila 32 engine is already well known in the kingdom, with more than 100 units installed in 15 base-load power plants.

The new batch of equipment is to be delivered on a fast-track basis within just 10 months of contract signing, with the plant scheduled to be commissioned by May 2021, with commercial operations launching a year later.

Maximising the use of renewable energy is central to the projects strategy, noted Amit Swarnkar of Larsen & Turbo.

He said the Wartsila technology was chosen “because of its capability to enable the integration of PV solar into the system, which is important for this project.”

Again, it highlights a clear trend towards cleaner energy technology that will no doubt gain momentum and shape the direction for all industry players in the years ahead.
Industrial projects
As well as the trend towards renewables and hybrid plants, opportunities may continue to present themselves in the industrial sector as the big oil and gas states push for more diversification.

The Mansourah & Massarah gold mine — to be operated by a subsidiary of Saudi mining group Ma’aden — forms part of the Saudi government’s Vision 2030 initiative to diversify the national economy away from oil and promote the mining sector.

It’s possible to spot similar long-term trends elsewhere, irrespective of the current wave of economic uncertainty. At the end of last year, MAN Energy Solutions landed a major contract to provide power for drinks can factory in Iraq. It will supply six MAN 18V32/40 CD engines, with a total capacity of 53MW that will generate power for the Royal Can Making Company manufacturing site in Baghdad and to other nearby industrial plants.

Local presence
Other major players have been taking the time during recent months to nurture customer relationships and grow their regional networks. Perkins Engines appointed in early May a new distributor for Algeria, Onnyx Ltd, as it seeks to make gains in the North Africa market.

With pent-up demand for energy services across the Middle East and North Africa region — at least prior to the pandemic — the big hope is that these and other markets will spring back to life sooner rather than later.

In a further sign perhaps of the general shift to renewables, ACWA Power reported that it had won the 900MW photovoltaic fifth phase of Dubai’s MBR Solar Park offering a “world-beating” tariff.

In a further sign perhaps of the general shift to renewables, ACWA Power reported that it had won the 900MW photovoltaic fifth phase of Dubai’s MBR Solar Park offering a “world-beating” tariff.
AL-BAHAR, THE LOCAL Cat dealer in the UAE, is playing a critical role in the Gulf nation’s fight against COVID-19. The UAE was the first Middle East country to report a coronavirus-positive case following the outbreak in January after a family of four arrived from Wuhan, China. Al-Bahar has been providing assistance ever since, supplying rental generators to the Abu Dhabi Distribution Company, which is managing the power supply to five drive-through COVID-19 testing clinics.

The Cat C13 gensets, delivered in April, are equipped with an Automatic Transfer Switch (ATS), which enables an automatic transfer of power in the event of grid failure. Each unit is capable of supplying enough power for the entire drive-through setup. The UAE has carried out various health tests on as many as 35,000 residents per day.

Mohamed Kaddour, vice-president of energy and transportation at Al-Bahar, said the company has received calls from various customers asking for assistance and help to support them with power solutions during the pandemic.

“We mobilise, deliver, install, maintain, and manage the generators to ensure they are running all the time. We are providing an end-to-end solution during this critical time,” he said.

The Cat dealership also provided 17MW of rental power to two quarantine facilities located 100km outside of Abu Dhabi for foreign workers who had recently travelled abroad.

Al-Bahar also operates in Kuwait, Oman, and Bahrain, where it has been engaged in additional projects. In Kuwait, it supplied generators to two COVID-19 field clinics run by the Kuwaiti Army. This includes two Cat C18 gensets and a C13. “Al-Bahar and Caterpillar are taking all necessary actions to provide uninterrupted access to the products and services our customers need to get the job done safely and effectively,” said Kaddour.

GOVERNMENTS CAN ALIGN immediate economic stimulus needs with medium to long-term decarbonisation and sustainable development objectives by targeting policy measures and public spending towards the energy transformation, according to the International Renewable Energy Agency (IRENA).

Post-COVID recovery: An agenda for resilience, development and equality outlines immediate stimulus action for the next three years (2021-2023) as well as measures for a mid-term 2030 recovery perspective over the next decade. It provides practical insights and recommendations for governments as they drive investment and policy actions for post-COVID-19 economies.

The report shows that on an annual basis, scaling-up public and private energy spending to US$4.5 trillion per year would boost the world economy by an additional 1.3 per cent, creating 19mn additional energy transition-related jobs by 2030. Jobs in renewables alone could triple to 30mn by 2030, creating three times more jobs than in fossil fuels.

“Renewables have proven to be the most resilient energy sources throughout the current crisis,” said Francesco La Camera, director-general of IRENA. “This evidence should allow governments to take immediate investment decisions and policy responses to overcome the crisis. With today’s recovery plan for governments, IRENA uses its global mandate on energy transitions to inform decision-making at this critical time, while staying on course toward a fully decarbonised system by 2050.”

Doubling annual transition investments to US$2 trillion over the next three years will provide an effective stimulus and can leverage private sector investments by a factor three to four. Reforming fossil fuel prices, retiring fossil fuel assets, driving green financing and bailouts, and strategically investing in energy transition must be immediate priorities, IRENA’s report advises.

Any recovery strategy should include innovative solutions and emerging technologies such as green hydrogen with the potential to eventually deliver a net zero energy system. By investing in their commercialisation, governments and businesses can ensure sustained long-term growth.
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Deft moves to weather COVID-19 storm

As the pandemic has inflicted tragic human and financial sufferings across the globe, the ‘Positive response’ to COVID-19 disruptions by GCC governments shows the way forward, says economist Moin Siddiqi.

The cumulative loss to world output over 2020-21 could stand at US$9tn, greater than GDP of Japan and Germany, combined IMF data reveals.

The world’s major oil producers stand in uncharted waters, as they face simultaneous crises in the health, commerce and hydrocarbons sectors. The combination of these three crises – unprecedented in modern history – has impacted the Gulf Cooperation Council (GCC) region as governments seek to protect citizens and support private businesses against external headwinds. The pandemic has inflicted tragic human and financial sufferings across the globe. The necessary containment measures have had detrimental effects upon global economy and world trade. The cumulative loss to world output over 2020-21 could stand at US$9tn, greater than GDP of Japan and Germany, combined (IMF data). Those reliant on tourism, travel, hospitality, and entertainment for their growth are experiencing colossal disruptions.

For the first time since the Great Depression (1930s) both advanced economies and emerging market and developing economies (EMDEs) have fallen into recession. The latter group faces additional challenges with large reversals in capital flows as global risk appetite decreases, and currency pressures, while coping with fragile health systems, and extremely limited fiscal buffers to provide support. The G20, currently under Saudi Arabia’s Presidency, granted debt relief to low-income nations to help free up funds to fight the pandemic.
Temporary downturn
The dual shock (oil slump and lockdowns) has taken a toll upon GCC economy, raising challenges for those countries where services industry constitutes a larger share of output (Bahrain and UAE). Manufacturing has slowed, and final investment decisions (FIDs) on mega-projects are delayed. Oil GDP is also expected to decline in 2020— in tandem with recent OPEC+ agreements. The disruption of global value chains (GVCs) have reduced demand for crude oil, refined products and petrochemicals, while financial market volatility and uncertainty over the duration of the virus, too, curtailed domestic investment and consumption—reflected in weak aggregate demand.

“Under our base-case scenario, we assume that these measures will be relatively short lived and forecast a gradual recovery in non-oil activity from third-quarter 2020,” said Mohamed Damak, director of research at Standard & Poor’s (S&P).

Despite having exceptionally low production costs, GCC producers’ fiscal planning rely on much higher prices; for example, Saudi Arabia had assumed an oil price of US$60 per barrel in its FY 2020 budget. The futures curve suggests that the market expects prices (currently at 17 years low) to recover slowly. If oil trades around US$20/barrel for the rest of 2020 (though unlikely) GCC-states could lose an estimated US$554mn/day, according to various estimates.

Timely policy action
Stiff containment measures such as controlling internal mobility, suspending local and international flights, and mandatory curfews in some places were enforced in GCC-bloc—far ahead of other countries—along with enhanced screening and adequacy supply of testing kits and personal protective equipment at hospitals.

The authorities have put ‘unprecedented’ policy responses in place to soften corporate and household distress by strengthening existing social safety nets, improving consumer protection, and targeting specific needs of vulnerable groups.

GCC states took measures such as direct cash transfers, suspension of rent and utilities bills, loan moratoriums as well as temporary exemptions and delays of fees.

“Under our base-case scenario, we assume that these measures will be relatively short lived and forecast a gradual recovery in non-oil activity from third-quarter 2020”

Mohamed Damak, director of research at Standard & Poor’s (S&P).

The GCC Region Vital Indicators

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Memorandum

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<td>World Trade Volume (goods &amp; services) *</td>
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<td>LIBOR ~ US dollar deposits (six months)</td>
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* Annual percent change; // As percent of GDP; ** Average of prices of UK Brent, Dubai Fateh & West Texas Intermediate Crude; # Based on futures markets as of early April 2020. ~ LIBOR: London Interbank Offered Rate (percent).


Note: Despite global turmoil, the growth downgrade for GCC countries are the smallest among Middle East & North Africa country groups. This shows the importance of public health systems, which are more advanced in the GCC and of timely-targeted policy responses.

Human Development Index (2020); ranked between 1-184 countries.

UAE: 33; Saudi Arabia: 39; Bahrain: 42; Oman: 47; Kuwait: 55.
measures. There has been direct support to domestic equity markets. “The support, with relevant conditions, will help firms survive the income crunch and prevent mass layoffs. Prioritisation on strategic sectors — most notably network industries and services such as transport, logistics, distribution and finance — is critical to protect production capacity and support a future recovery,” noted the World Bank.

Supportive stance
The GCC-countries are among financially most sound in emerging-market region, hence can ‘afford more significant support’ to cope with COVID-19 pandemic. Although budget deficits have soared due to low oil prices, they can still dip into significant foreign assets (including sovereign wealth funds) to sustain economic activity and/or revive local markets. All GCC governments have already allocated substantial sums in stimulus packages ranging from around two to 30 per cent of GDP (IMF data).

Last April, the Central Bank UAE doubled the country’s stimulus package to AED256.9bn (US$70bn). Dubai unveiled a number of measures to reduce the cost of doing business and boosting its trade sector. These included 20 per cent customs duty refund for goods imported and sold locally-applicable to imports declared to Dubai Customs between 15 March 2020 and 30 June 2020; 90 per cent reduction of clearance fees - critical to large importers as each customs declaration is subject to a AED 90-110 fee (avg.); and the refund or cancellation of the AED 50,000 bank fees for three-months. The government had also deferred payment of customs duties for 30 days, with a possibility of extension beyond 30 days for most affected business sectors. Saudi Arabia has tapped global bond markets twice this year — borrowing a total of US$19bn.

Investments in technology (including digital) proved effective in virus fight. Gulf’s banking sector remains vibrant to support the recovery thanks to strong capitalisation by international standards. GCC Islamic and conventional banks reported average Tier-one ratio of 17.9 and 16.6 per cent, respectively, at end-year 2019. S&P expects capitalisation to continue to underpin the creditworthiness of GCC banks in 2020.

Post-crisis recovery
Looking ahead, growth in GCC bloc is expected to rebound in 2021, reflecting a revival in trade/travel, uptick in oil prices and spillovers of global monetary policy easing. PwC, global audit-consultancy firm, in a special report “The GCC way” suggested the challenges are building a resilient economy of the future. It identified a number of policy areas based on economic diversification and transformation, chief among which are:

* Reconsider national development priorities, expenditures and investments, capabilities, and constituent engagement in the context of recovery plans;
* Strengthen medium-term fiscal frameworks and activate performance-based budgeting, and link it to sustainable development goals;
* Identify alternative forms of revenues to compensate for lower corporate earnings and enact tax reforms that promote robust growth;
* Implement labour market programmes to boost job creation, skills upgrading and retraining for the unemployed; and
* Improving government efficiency and fostering innovation, as well as promoting private-sector participation.

“*The dual shock of the COVID-19 pandemic and lower oil prices will eventually end. By taking decisive steps now, GCC governments can prepare for the recovery and keep their long-term economic development on track. They can lay the groundwork for a sustainable economic recovery powered by diversification and innovation,*” noted PwC.

The UAE government is determined to regain its pre-COVID-19 glory “faster than any other country in the world”. Sheikh Mohammed bin Rashid Al Maktoum, Vice President, Prime Minister and Ruler of Dubai said: “Our national priorities need to be reviewed to cope with the post-COVID-19 world. The door is open for new ideas. Our financial and human resources need to be redirected to strengthen our medical, food and economic security through new programmes and project. We are ready to rebuild all our sectors to secure the happiness, prosperity and stability for our society.”

While governments around the world are trying to mitigate the economic damage, GCC bloc proved successful thanks to exceptional policy actions.

Growth in GCC bloc is expected to rebound in 2021, reflecting a revival in trade/travel, uptick in oil prices and spillovers of global monetary policy easing.
RECOGNISING SUSTAINABLE DEVELOPMENT, TECHNOLOGICAL AND DIGITAL ACHIEVEMENTS IN THE CONSTRUCTION INDUSTRY.

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WHILE THE COVID-19 lockdowns allowed functioning of only essential services, the heating, ventilation, air-conditioning and refrigeration (HVACR) industry has raised a pertinent question – why should governments around the world include the HVACR industry in the list of essential businesses?

In the light of an escalating pandemic and increased demand for critical infrastructure, the role of HVACR shouldn’t be underplayed, according to the industry leaders.

Eurovent Middle East, along with other international industry organisations, has published a position paper to warn of severe consequences to critical infrastructure if the supply and servicing of HVACR equipment becomes stalled.

Eurovent Middle East points to consequences of industry shutdowns on life-critical infrastructure in the healthcare, cold chain and data centre sectors. Abhishek Paul reports.

HVACR businesses are essential for the provision of critical equipment to healthcare, food supply chain and IT cooling.

Brian Suggitt, president of Eurovent Middle East, said, “Governments currently imposing shutdowns on HVACR businesses need to keep in mind that this not only disrupts the supply chain in their own country, but cuts off other countries and regions dependent on imports of essential products. This is especially true for developing countries around the world that do not have the capacity to sustain the functioning of vital, life-critical infrastructure without the necessary products.”
For the Middle East, the shutdowns in other countries, however, will have a significant impact on local production due to shortages in the supply chain. An even more severe effect is likely in those sectors where there is a high dependency on imports. This is specifically true for IT cooling equipment and refrigeration systems, where most of the products are manufactured in Europe.

Data from Eurovent Market Intelligence indicates that Italian factories alone provide about 20 per cent of all finished products to the European HVAC market. In the IT cooling segment, Italy’s role is even more significant, with a share of production of almost 45 per cent in the EMEA region. It is estimated than more than 50 per cent of the HVAC production in Europe is directly affected by shutdowns, while a majority of the remainder are struggling with faltering supply chains and shortage of components.

To share the knowledge, ASHRAE offered the archived course ‘Designing and Operating High-Performing Healthcare HVAC Systems’, highlighting the role of HVAC systems in infection control in hospitals with a live Q&A session to cater to Europe, Middle East, Africa and Asia regions.

“Infection control is a primary purpose of HVAC systems in hospitals,” said course instructor, Dan Koenigshofer P.E., MS Public Health, HFDP, SASHE.

Maher H Mousa, director of product management, sustainability and energy efficiency policy, Al-Salem Johnson Controls (YORK), echoed similar views.

“When we think about pollutants, we often think about those found outside, whether in the air, on the ground, or in the water, even though indoor air quality (IAQ) is just as vital to our everyday lives and health, and the pollutants found inside buildings and closed public areas should concern us just as much, if not more, especially these days when the world is faced with the challenge of fighting the spread of the COVID-19,” The Arab News quoted Mousa.

According to Mousa, the design and operation of HVAC systems can help prevent disease transmission in several ways. When HVAC systems supply clean air to susceptible occupants, such as in crowded and closed spaces, it helps in reducing the possibility of disease transmission, he added.

Crucial solutions

Al Salem Johnson Controls (YORK) revealed that – so far – 21 government and private hospitals are benefitting from the YORK Hospitals Initiative, which launched in March and has been ongoing ever since.

The company is providing free inspection and repair services for all types of commercial and industrial chillers and other HVAC Units located in hospitals across seven cities – Makkah, Riyadh, Dammam, Dhahran, Alkhobar, Jeddah and Madinah. This first-of-its-kind initiative is fast expanding to cover other cities as well.

Mohanad Al Sheikh, CEO of Al Salem Johnson Controls (YORK), Saudi Arabia, Egypt, Lebanon and Yemen, said the initiative is part of the company’s corporate social responsibility and demonstrates its leading role in supporting hospitals and healthcare facilities, especially the government hospitals, to enhance their operational performance in the fight against COVID-19.
Developing climate-friendly solutions

Daikin MEA’s Paolo Nascetti, vice-president-applied and Paras Adhvaryu, general manager-applied talk to Technical Review Middle East about impact of COVID-19 on the HVAC sector, technology trends and market developments.
When double-conversion on-line UPSs first appeared in the seventies, they used transformer-based designs. However, advances in power semiconductor technology have facilitated a general industry move towards transformerless solutions. This has brought several advantages, including some related to efficiency. Firstly, the topology is inherently more efficient. Even at optimal, near full load conditions, transformer-based designs remain well below 95 per cent – and as the load reduces towards 25 per cent, efficiency approaches just over 85 per cent. By contrast, the PowerWAVE 9250DPA can achieve efficiencies up to 97 per cent with loads from 25 to 75 per cent of nominal capacity.

However, the benefits extend further; the considerable size and weight reductions achieved by transformerless designs mean that complete UPS solutions can be implemented as small, rack-mounting modules rather than as large, monolithic units. The advantages of this can be explained by considering a PowerWAVE 9250DPA example.

This comprises the UPS supporting, say, a 200 kW load; it would use four of its 50 kW modules – or five, to provide N+1 redundancy. Then, if the load increases, incrementing the UPS’s capacity by plugging in another 50 kW module (vertical scaling) is cost-effective, easy, and can be done without even interrupting power to the load. Further capacity can be provided by horizontal scaling, i.e. adding more racks in parallel. Note that both benefits – redundant capacity and scalability – are achieved with minimal excess capacity, space and cost, due to the modules’ granularity.

By contrast, a monolithic system typically has to be significantly oversized for future-proofing. Additionally, N+1 redundancy must be implemented using two complete systems, so neither can ever be more than 50 per cent loaded even in the best case. These factors force the monolithic system to work with low loads, where efficiency drops away sharply.

Maintaining high efficiency
We have seen how modular topology improves UPS efficiency, but it’s crucial to maintain these high-efficiency levels under low loads. One way to facilitate this is to use a smart module switching technique called Xtra VFI.

Xtra VFI is an intelligent feature that minimises loss and improves efficiency on double-conversion modular systems like the PowerWAVE 9250DPA. With this mode enabled, the UPS automatically adjusts the number of active modules to match changing load requirements. Surplus modules are switched to standby but remain ready to transfer to active mode if the load increases or the mains fails. The active modules share the load equally.

The efficiency improvements are particularly significant when the load is less than 25 per cent of full capacity. Power availability is protected, as the system allows for desired redundancy levels in its module-switching calculations. Xtra VFI operation is summarised in Fig.1 below.

Eco mode
In eco-mode, power flows directly from the utility mains supply to the load during normal operation, so bypassing the rectifier and inverter inefficiencies. If a mains problem is detected, the critical load is switched to the inverter output.

While eco-mode efficiency can reach 99 per cent or more, it exposes the load to any incoming mains problems during regular operation. Accordingly, users should weigh the benefits of increased UPS operating efficiency against the risk created by operating in eco-mode.

Source: KOHLER Power
Operators are facing a power cost crunch. As 5G emerges, network operators face rising energy costs in their mobile and data centre networks and must adopt new approaches to thrive.” That’s the message at the heart of a new report from MTN Consulting.

Of course, it’s difficult to be precise about this but the report suggests that 5G could double or triple energy consumption in mobile networks. Site power requirements are a particular concern, suggests the report. It says, “5G macro base stations may require several (new) power-hungry components, including microwave or millimetre wave transceivers, field-programmable gate arrays (FPGAs), faster data converters, high-power/low-noise amplifiers, and integrated MIMO antennas.”

In addition, the increased power demands of a 5G site will make demands on AC power supply, backup battery capacity, high-power long-distance transmission and inevitably electricity bills.

Additionally, 5G will introduce hyperdense networks. The density of small cells needs to increase with 5G, especially if deployed on higher frequencies – and these small cells need to be powered.

Then there’s edge computing, which will bring applications nearer to the end user or device. It will play an important part in the development of new IoT services. In turn, the term ‘micro data centres’ will become current. However, powering these sites will add to the utility bills of operators, and add a layer of complexity to network operations as edge power costs need to be minimised.

The report also mentions 5G pioneer China Mobile, which has already seen its electricity costs rising fast with 5G. Network design might have some ameliorative effect, but 5G base stations will carry much more traffic and push up power consumption.

It’s not just about the network, either. Whether the battery life worsens with 5G or not, total device power consumption is expected to increase. That means users who upgrade to 5G handsets will be paying more.

All of the RAN vendors are now including power efficiency topics within their marketing pitches.
for the device, more for the service, and more for the power into the device.

There are many areas where power might be better managed. As Matt Walker, chief analyst with MTN, tells Technical Review Middle East, asset sharing, already an operator focus due to likely cost concerns, may help. But how could sharing — not just of towers but of many other assets such as sites, fibre, cloud systems and RAN equipment — enhance power efficiency?

Walker explains, “Operators scale their networks in order to cope with peak capacity, plus a buffer. Unless operators have identical traffic patterns, the pooling of resources can lower the total capacity required. There are other benefits, such as avoiding the cost of constructing or renting real estate assets — and benefiting from the scale and expertise of specialist companies.”

He also points out that pooling can lower the risk of bad forecasts. That is, if an operator expects traffic to grow at a certain rate in a specific cell or city, but actual growth is far less, the cost of this bad forecast is generally higher if you own the resources yourself. “Further,” he concludes, “there are benefits to scale, in multiple areas. Buying bulk power, for instance, or installing a larger (and lower cost/unit) generator.”

Has Walker seen MNOs trying to learn any useful lessons about managing 5G power consumption based on their experience of LTE rollout?

“LTE rollouts made clear to operators that power costs could quickly hit profitability without changes in the network.” This problem created opportunities for vendors, which have developed more sophisticated software tools to aid operators in their network design efforts. The problem also fostered the growth of the independent tower sector.

Speaking of opportunities, the MTN report mentions Huawei’s Network Energy product line. Are more hardware, software and consultancy groups moving into the energy efficiency space?

“All of the RAN vendors are now including power efficiency topics within their marketing pitches. They all need to help operators understand not only the initial capex of building the network, but the long-term operating cost implications of their buying decisions. Monthly utility bills are a major component of this opex.”

Of course to address power efficiency, network design is a key consideration — and that extends to in-building and campus coverage, where power costs can be significant. “For instance,” says Walker, “Ericsson’s Radio Dot product: the (claimed) energy efficiency of this product was a selling point with 4G, and it is a priority for the vendor in the 5G world as well.”

Good news — perhaps. But could energy issues potentially slow 5G rollout — notably to remote areas, a relevant consideration as 5G starts to roll out across the Middle East and North Africa?

“For some operators in areas with very high power costs, or where grid power is unreliable or unavailable, yes power costs could slow 5G rollout,” Walker agrees. Again, however, if vendors do their job in helping operators cope with the problem up front, the slowdown should not be significant. “The bigger issue could be down the road, when operators face unexpectedly high power costs that eat into the profitability of serving specific areas.”

We’ve barely reached 4G rollout in much of the world and yet we’re already discussing 6G. What does Walker advise when it comes to powering the generation after next?

“A big part of power efficiency starts at the chip level,” says Walker. “As 6G chips are being developed, power is likely to be a key differentiator from the outset. In addition, the frequency that is used for 5G (or 6G) will be a factor. So, operators are likely to be more aggressive in lobbying regulators for spectrum allocations that help them deploy services profitably. The ITU will have a role here with, for instance, its WRC event, held once every few years. The next one will be in 2023, and power will certainly come up.”

*MTN Consulting is an independent industry analyst firm founded in 2017. Its mission is to provide best-in-class data, insight, and strategic support to network operators and their suppliers. (For more on WRC, see https://www.mtnconsulting.biz/5g-need-for-harmonized-spectrum/) For more information, visit https://www.mtnconsulting.biz/.
THE POWER INDUSTRY has shown remarkable resilience during the COVID-19 era, keeping energy supplies smooth at a time when all else seemed unsettled. Nonetheless, it has presented great challenge for utilities and contractors. That includes the leading power cabling firms such as Ducab, Elsewedy Electric and Bahra Electric, among others, who have had to adapt rapidly to new working and safety practices during the pandemic. That includes a shift to working from home, the use of protective equipment, and social distancing measures where possible. Saudi Cable Company (SCC) granted its employees over 55 years of age special leave because of the outbreak. But on top of these practical shifts, there are potential long-term business ramifications too, including a now-changed market outlook. Gauging how this will affect business in the latter half of 2020 and beyond is difficult to predict, though there are some hopeful indicators. In March, prior to the main impact of the virus, Ducab Group reported a 5 per cent rise in profitability for 2019, highlighting a generally healthy business climate. This was underpinned by strong energy demand across the Middle East. The Dubai-based cables firm likewise announced a raft of measures to protect its workforce and minimise business disruption, and managed to continue with essential operations on the ground. A raft of new contract awards handed to Egypt’s Elsewedy Electric suggest that things might not be too bleak at all, with underlying, long-term demand for electricity intact. The largest of these deals, worth EG£475m, was to build a new network to electrify a 50,000 acre site in East Owenat. In April, the company secured a deal with Dubai Electricity & Water for 22.5 km of new transmission lines as the emirate expands its grid system. Still, Elsewedy Electric’s overall revenues and gross profits were down somewhat in the first quarter of 2020 compared to the same period a year earlier. While it’s too early to say to what extent business will bounce back in the region’s biggest economy, Saudi Arabia, another major player Bahra Electric will have done its reputation no harm at all by donating funds to fight the coronavirus. It was among the Saudi companies from the power sector to support the Ministry of Health with a contribution of one million Saudi riyals. Oman Cables made a similar gesture in Oman, underlining its solidarity and support for the Ministry of Health and frontline workers in the battle against COVID-19. Analysts remain cautious upbeat about prospects going forward. The issue on 27 April of a tender for the contract to develop Abu Dhabi’s mega power transmission project provided a “major boost” to the market, according to Jennifer Aguinaldo of GlobalData. The joint tender by the Abu Dhabi National Oil Company and Abu Dhabi Power Corporation sets out to develop the region’s first high-voltage, direct current (HVDC) subsea transmission system, that will connect offshore production facilities to the onshore electricity grid. The project will eventually provide a rich source of new work for cabling firms. “Despite the seeming complexity and novelty of a subsea cable transmission project, it is a project investors will not want to miss, adds Aguinaldo. “It will also likely reinforce the GCC infrastructure sector — particularly Abu Dhabi’s — as a safer investment haven compared to other sectors or markets post COVID-19.” Rather than game over, it is very much game on for the Middle East power cables market.
How reliable and individual is your power supply?

Jürgen Pump, sales manager of Standard Aggregatebau Evers GmbH & Co. KG, one of Germany’s leading generator set manufacturers, talks about reliable solutions for electrical power supply.

**Technical Review Middle East (TRME):** Your company’s name ‘Standard Aggregatebau’ implies that you are a series manufacturer of generator sets, like numerous other generator set packagers worldwide. What differentiates you from the competition?

**Jürgen Pump (JP):** Our company’s name resumes from the early days of generator sets manufacture in 1961 when we were one of the first to assemble diesel-driven generator sets in Germany. At that time, there were no technical regulations in place for the assembly of generator sets, so we set our own high standards of consistent design and quality. There are many packagers of generator sets in nearly every country of the world, from small garage companies to multinational corporations. What most of these enterprises have in common is their focus on serial production with standardised generator sets and firmly defined options. We set ourselves apart by successfully focusing on the right project-designed generator sets for applications with sophisticated requirements and individual manufacture.

**TRME:** But isn’t individual manufacturing much more expensive?

**JP:** All too often apparent investment savings backfire and actual losses turn out to be much more costly than an adequate initial project design and execution. Many times it is in the news that an emergency generator did not work correctly in shopping malls, airports, data centres, and even hospitals – although the well-reputed engine and alternator brands were installed and often in redundancy. While lack of maintenance causes some incidents, others are simply due to improper design, system integration, or workmanship. Such failures can cause the operator at best “only” monetary losses, but fatalities in the worst cases. This is particularly bad as nearly all cases can be avoided by proper design and selecting suitable specialist firms with the execution of mission-critical projects instead of choosing just the cheapest offer from a dealer whose technical capability ends with presenting just datasheets. Although the business has become much more complex, the fundamental laws of business have not changed. Still, the gap between ambition and reality is quite significant when it comes to complete systems in which several companies are involved. We support project owners, design engineers, and contractors likewise throughout the whole project and successfully handle every order individually to achieve the best price-performance-ratio for our customers for almost 60 years.

**TRME:** So, diesel-driven generator sets are still the measure for reliable backup power?

**JP:** Yes. However, no mechanical system can be expected to perform with 100 per cent reliability over time. Modern diesel standby power systems come with an annual availability above 98 per cent very close to this ideal – provided they are properly designed and maintained. The vast majority of problems result from human error or neglect, both during system engineering and operation, while power system component failure is a relatively rare event.

**TRME:** But 98 per cent availability does not sound very impressive and reliable?

**JP:** This figure applies to a standard code compliance generator set commercially available from many manufacturers and dealers. The availability is not only determined by failures but also planned downtimes for maintenance. For mission-critical installations, SAB, as a specialist firm, can increase the availability of up to 99.999 per cent by implementing redundancies into the system design. This starts with quite cheap but effective measures for most vulnerable components, like adding a redundant starting facility, and goes up to completely redundant power lines, which are fault-tolerant as they have no single points of failure. As each project is different in its requirements, off-the-shelf solutions do usually not achieve the desired results. Close coordination between all parties and suppliers during design, installation, and commissioning is vital for maximising reliability, and this challenging task should be left to experienced professionals like ourselves.
Project Focus

Background
The project calls for an expansion of Subiya power plant located at Subiya, Al Jahrah, Kuwait. The project includes combined-cycle gas turbine (CCGT) expansion to boost the capacity of the power plant by an additional 750MW. The scheme is part of The Ministry of Electricity and Water’s (MEW) fast-track programme to boost the country’s generation capacity as demand for power continues to grow at a rapid rate. MEW estimates an additional 10,500 MW will be required to meet the projected 2022 peak load.

Project Status

<table>
<thead>
<tr>
<th>Date</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apr 2020</td>
<td>The Subiya power plant expansion has reached 88.6 per cent completion.</td>
</tr>
<tr>
<td>Feb 2020</td>
<td>Al Ghanim International commences steam blowing procedure as part of the initial stage of start-up operation.</td>
</tr>
<tr>
<td>Sep 2018</td>
<td>The project is under construction and the General Secretariat of the Supreme Council for Planning and Development has revealed that Subiya project is 36.7 per cent complete.</td>
</tr>
<tr>
<td>Jul 2017</td>
<td>MEW awards Siemens a contract to supply the key power generation equipment for the project. Siemens will supply two SGT5-4000F gas turbines, two hydrogen-cooled SGen5-2000H generators, one SST5-5000 steam turbine, and a SGen5-2000H steam turbine generator.</td>
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<tr>
<td>May 2017</td>
<td>The EPC contract has been awarded to Al Ghanim International. Engineering works have started internally, and will be progressing after the signing of the contract.</td>
</tr>
<tr>
<td>Jun 2015</td>
<td>The Ministry of Electricity and Water (MEW) invites companies to submit their bids for the engineering, procurement and construction (EPC) contract to increase the capacity of the existing Subiya power plant.</td>
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Project Schedules

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<th>Project Announced and Feasibility Study</th>
<th>1Q &amp; 3Q-2014</th>
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<tr>
<td>EPC ITB</td>
<td>3Q-2015</td>
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<tr>
<td>Engineering, Procurement &amp; Construction</td>
<td>2Q &amp; 3Q-2017</td>
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<tr>
<td>Completed</td>
<td>4Q-2020</td>
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## MAJOR POWER PROJECTS, KUWAIT

<table>
<thead>
<tr>
<th>Project</th>
<th>City</th>
<th>Sector</th>
<th>Facility</th>
<th>Budget</th>
<th>Award Date</th>
<th>Status</th>
<th>Start Date</th>
<th>Completion Date</th>
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<tr>
<td>KAPP - Al Abdaliyah Integrated Solar Combined-Cycle Plant (ISCCP)</td>
<td>Al-Abdaly</td>
<td>Power, Renewable</td>
<td>Solar</td>
<td>3,00,00,00,000</td>
<td>Feasibility Study</td>
<td>2008-Q1</td>
<td>2022-Q2</td>
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<td>KAPP - Al Khiran Independent Water and Power Project (IWPP)</td>
<td>Kheiran</td>
<td>Power, Water</td>
<td>Independent Water &amp; Power Project (IWPP)</td>
<td>4,10,00,00,000</td>
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<td>2011-Q1</td>
<td>2023-Q1</td>
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<td>KAPP - Al Zour North Independent Water and Power Project (IWPP) - Phase 2 &amp; 3</td>
<td>Al Zour</td>
<td>Power, Water</td>
<td>Independent Water &amp; Power Project (IWPP)</td>
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<td>2017-Q3</td>
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<td>KAPP - Kabad Municipal Solid Waste Project</td>
<td>Kuwait City</td>
<td>Power, Renewable</td>
<td>Incineration Plant</td>
<td>79,00,00,000</td>
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<td>2021-Q1</td>
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<td>Construction</td>
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<td>MEW - Infrastructure Development Of Fuel Receiving Systems At Doha West Station</td>
<td>Doha</td>
<td>Power</td>
<td>Power Plant</td>
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<td>Engineering &amp; Procurement</td>
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<td>IPWP (Independent Power &amp; Water Project)</td>
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<td>MEW - Subiya Power Plant Conversion</td>
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<td>MEW - Subiya Power Plant Expansion - Phase 3</td>
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<td>MPW - Bubiyan Seaport Project - Phase 1 - Package 3D (Power Plant)</td>
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<td>Power, Infrastructure</td>
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<td>2021-Q4</td>
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**GIQ Study: COVID-19 to push Middle East energy sector towards a digital tipping point**

**THE ECONOMIC DEMAND** destruction triggered by the COVID-19 pandemic should propel the Middle East energy industry to accelerate its adoption of the 4th Industrial Revolution digital toolbox and embed greater operational efficiencies, according to Gulf Intelligence. The global energy sector, and the Middle East in particular, have been slow adopters of digital transformation strategies, which offer a new chapter in human development, enabled by extraordinary technology advances that commensurate with those of the first, second and third industrial revolutions.

“It’s a tipping point for the industry for a variety of reasons,” Mark Moody-Stuart, a member of the Board of Saudi Aramco and the former chairman of the Royal Dutch Shell PLC, said in the GIQ Study. “This is a point where oil transforms into a normal commodity, like iron, nickel and copper, where low-cost producers dominate in market share and the higher-cost producers fill in the tail end – this has been coming for some time, but COVID-19 accelerated it,” Mark added.

Global investment in the energy sector is expected to plunge 20 per cent this year, or by almost US$400bn, compared to last year as the pandemic takes a beating on the energy sector, the International Energy Agency reported last week. Before the pandemic, the global energy investor sector was on track for growth of around two per cent, which would have been its largest annual rise in spending in six years.

Gulf Intelligence, the UAE-based strategic communications and research firm, has published a GIQ Study – Middle East Energy Technology Dialogues – on how the COVID-19 pandemic will impact the Middle East’s energy sector’s adoption of digital technologies, such as artificial intelligence and robotics. The Special Report profiles a series of contributions from 16 digital experts in leading energy technology companies such as ABB, BASF, Halliburton and Schneider Electric to name a few.

Digitalisation is already improving the safety, productivity, accessibility and sustainability of energy systems. It is changing markets, businesses and employment. New business models are emerging, while some old models may be on their way out.

“While the world is going to be very, very different post-COVID-19, the only thing we don’t know is how different it will be. I expect we will see a massive acceleration in the digitalisation of the Middle East power sector, a huge improvement that will represent a step-change as we go forward,” said Paddy Padmanathan, CEO of ACWA Power.
Paradigm shift in logistics sector

Macroeconomic factors, tenant needs, last-mile delivery and ever-rapid technology developments are all factors that are reshaping the demand and design for warehousing and logistic networks. Abhishek Paul reports.

The materials handling webinar ‘Forecasting future demand for logistics and warehouse space’, hosted by Messe Frankfurt, has discussed the strategic evolution of supply chain strategies and focus on the growing demand to satisfy inventory controls, supply chain diversification and e-commerce needs in the COVID-19 era.

Giving a top-line overview of implications of COVID-19 on the UAE Industrial & Logistics market, Peter Haywood, Industrial & Logistics Agency MENA, JLL, noted that the trend is shifting from retailers to e-commerce platforms and sophistication of the supply chain.

“The impacts of COVID-19 have not fully materialised, but the initial impacts have been felt,” said Peter. “There is optimism that the abruptness of these events has forced the markets into adapting, which will have a positive outcome for the future.”

The future of retail is changing at an accelerated pace as the businesses are choosing advanced warehouses, new technologies, automation and re-shoring, he said.

Logistics firms offering services to hard-hit sectors such as retailers, manufacturing, automotive are facing challenges due to the pandemic, said Mohsen Ahmad, CEO, Logistics District, Dubai South. To mitigate the impact of COVID-19, it is imperative to look at reducing the operating costs, collaborating with customers, addressing cash flow challenges and finding innovative operational methods, according to Mohsen. How to keep the business functional even in the lockdown is a lesson learnt by many of the companies, he pointed out.

Ako Djaf, vice-president, Contract Logistics /SCM & Land Transport Middle East and Africa, DB Schenker, noted, “As a consequence of e-commerce growth and advanced technology, automation and innovation, we believe, will determine the future success in our industry.

The growing shortage of labour in matured logistics nations and in our region in many locations and explosion in demand of online retailers will automatically drive automation and innovation, according to Ako.

However, re-skilling the labour force is needed to collaborate and maintain the new machines in the facilities, he said.

Talking about the strategies, he noted that advanced warehouse management system with AI features and interface capabilities is picking up rapidly. Enabling customers better material flow through visibility and traceability is increasing in terms of customers expectation, he added. Creating a value proposition and stable strategic partnerships remain vital for all the logistics firms, in Ako’s view.

Another panellist, Alain Kaddoum, general manager of Swisslog Middle East, said, “The traditional retailers in the market are expecting that 50 per cent of their transactions will be 30 per cent to 50 per cent on e-commerce for the next one year at least due to COVID-19 impact. People will get a habit of ordering online more than before.”

Sharing his insights on the trends, Alain said that retailers are moving to the e-tailer approach having a smaller footprint of a retail shop and delivering more on e-commerce.

All the panellists have agreed that macroeconomic factors, tenant needs, last-mile delivery and rapid technology developments are all factors that are reshaping the demand and design for warehousing and logistic networks across the region.

As operators pivot to deal with the long-term ramifications of the pandemic, supply chain strategies will be overhauled and this will lead to a resulting boost in warehousing demand, according to the industry experts.
Radar technology has established itself as a real problem solver in the field of level measurement. So far, however, the price of the devices has prevented their general use in standard applications. Now, the compact radar sensor Vegapuls is also gaining the upper hand in price-sensitive applications in the wastewater industry.

Technical Review Middle East (TRME): Radar is the better ultrasonic – why?
Jürgen Skowaisa (JS): The nature of the wave makes the difference. Ultrasonic signals are sound waves, and as such, are greatly affected by temperature, gas composition, and pressure. The signals emitted by radar sensors, however, are electromagnetic waves, and for them, such process conditions are practically of no consequence. Radar sensors are thus independent of all typical process conditions and can be used universally.

TRME: If radar is more accurate than ultrasonic and available at the same price, why does ultrasonic still even exist?
JS: The way we see it, radar will completely replace ultrasonic in process measurement in the foreseeable future. There is no application where ultrasonic works better than the new 80-GHz radar sensors. That’s why our radar sensors are equipped with the same typical connection components as ultrasonic sensors – so they can replace ultrasonic sensors 1:1.

TRME: To what extent can VEGA sensors be connected to cloud solutions?
JS: For several years now we have been offering components that allow our sensors to transmit measured values to a cloud via radio. The new radar technology opens up completely new possibilities here as well. Our energy-saving radar chip, in combination with new, high-performance batteries and new radio modules, enables totally new sensor concepts. For example, we are currently working on a wireless radar sensor that can be easily mounted on an IBC container. At two measurements a day, the sensor will send level data to a cloud for ten years – something like this was unthinkable just a few years ago.

Our radar sensors are equipped with the same typical connection components as ultrasonic sensors – so they can replace ultrasonic sensors 1:1.
Making most out of autonomous drones

The impact of the coronavirus can be mitigated by autonomous technology, such as drones. Ariel Avitan, co-founder and chief commercial officer at Percepto explains how this technology could prove cost-effective and productive during challenging times.

The coronavirus has exposed the soft underbelly of critical infrastructure and industrial sites worldwide – workforce availability. As more and more companies implement business continuity plans to deal with the outbreak, fewer and fewer employees are able to fully function. When facilities don’t know who can and will show up for work, both planning and operations are seriously impeded. In Western Australia, for example, the coronavirus is potentially affecting some 60,000 fly-in, fly-out (FIFO) workers at remote mine sites and onshore and offshore oil and gas plants.

And this challenge is compounded by a flagging demand for commodities – oil, natural gas, ore, and other resources – as global industries and economies slow down or even grind to a halt. Given the ongoing price war between Saudi Arabia and Russia and the resulting price drops, the oil industry is particularly hard-hit, with companies bracing for lower revenues, diminished investment, and even large-scale layoffs.

Thus, even as companies are unable to produce at full capacity, they are also unable to sell at full capacity – leading many to take a much closer look at current and future operational expenses and efficiency.

This is leading many companies to rethink the role that autonomous technology – and specifically autonomous drones – can and should be playing in their operations.

Large industrial sites are high-value assets that require constant maintenance and monitoring – independent of both production volumes and market conditions. Even when production is slowed or stopped, and when maintenance personnel are unable to function or even show up at work – critical components still need to be closely monitored, security perimeters need to be maintained, and scheduled maintenance needs to be conducted. The alternative to such monitoring and maintenance can be not only costly but also deadly.

Autonomous drones are an essential part of the contingency plans that support business continuity. Drones are always available, even if operators are under quarantine, and can help alleviate the challenges associated with volatile market trends and workforce availability.

Multi-mission autonomous drones can conduct security, safety and inspection missions – and be quickly and flexibly re-tasked to meet changing operational demands. This makes them a force multiplier – since a single person operating autonomous drones can replace multiple security, safety and inspection employees.

Moreover, autonomous drones can be controlled remotely, from anywhere in the world. This means that – as long as companies have suitable regulatory permits – employees can work from home, yet operate autonomous drones as if they were on site.

Finally, even when a near-pandemic is not sweeping the globe – multi-mission, on-site autonomous drones have been proven to increase efficiency and reduce operational costs. By delivering consistent visual asset monitoring, autonomous drones provide true data-driven maintenance, which according to one study can result in up to 45 per cent less downtime and up to 60 per cent greater output or production. Without costly human pilots, autonomous drones provide a massive boost to existing efforts to improve preventative maintenance and reduce unexpected downtime – which can dramatically affect the bottom line in the best of times and help organisations better deal with the loss of revenues in the worst.

Although coronavirus will not, thankfully, be the new normal – it should be a business continuity wake up call. To adapt to the fluctuations of a truly global marketplace, companies need to prepare for all contingencies – including those where human employees cannot fulfill their roles on-site. Investment in autonomous technology today can help critical infrastructure and industrial companies smooth operational and financial bumps in the road both today and in the future.
TRACTOR OF THE Year (TotY) has a new partner: BKT, one of the leading manufacturers in the world of specialist Off-Highway tires. The partnership will last for four years and came into force on 6 May.

TotY is a historic award that started in 1988 and has "brought together" the main names from the media world of agricultural mechanisation, leading to the creation of a jury of 25 experts. Every year the jury studies technologies and solutions and gives the Tractor of the Year Award to the best European tractor.

TotY and BKT have a lot in common: the Award is a symbol of cutting-edge technology and a vision of the future, two concepts which are very dear to BKT. Uniting the Indian multinational with TotY are also the principles of the central role of sustainability, absolute quality and support for technological research.

Commitment, sharing and growth are the founding values of TotY and BKT, which the company has clearly expressed in its slogan, Growing Together.

The new partnership, in which BKT will act as an expert on the ‘tyre’ component, was created to disseminate know-how and expertise in agricultural mechanisation. The Award aims to become a source of information and updates, and there are numerous initiatives to follow in this regard.

"I am enthusiastic about this project," said Lucia Salmaso, CEO of BKT Europe. "I can’t wait to start. TotY is a genuine institution and a reference point in the agricultural world. We are proud to be part of this group. We have a lot to offer as regards the tire world, an essential component for the machinery-system. TotY looks to the future and so does BKT, this unites us."

"This new edition of the Award is absolutely fascinating and we are only at the start," said Fabio Zammaretti, chairman of Tractor of the Year. "It’s an honour to be able to start this new adventure alongside BKT, a very dynamic company with which we will work side by side to offer a range of innovations, starting from the first digital version of the TotY, which will culminate in the awards to the winning vehicles from four different categories. The best of luck to the team and may the best tractor win!"

‘Let the challenge begin’ has always been the slogan for the Tractor of the Year, now more than ever, and alongside BKT, it is ready to face the new journey into technology and the future.
Siemens unveils 80 GHz compact radar transmitters

SIEMENS HAS INTRODUCED Sitrans LR100 series 80 GHz radar transmitters, compact instruments with a narrow beam for flexible installations in existing vessel openings, or even non-intrusively through plastic vessels. The transmitters’ 80GHz high frequency is capable of delivering reliable measurements even in challenging environments such as those with vapours, condensation, turbulence, or solids.

The custom microchip technology offers fast response and high sensitivity to detect even the weakest of signals.

The series consists of three products: Sitrans LR100 for basic measurement to eight metre, Sitrans LR110 with communication and hazardous approvals options and range to 15 metre, Sitrans LR120 with communication, longest range to 30 metre and optional submergence shield for flooding protection.

The transmitters’ dependable readings reduce workers’ exposure to hazardous situations.

Metso’s My Plant Planner for designing efficient crushing and screening plants

METSO HAS INTRODUCED a unique drag and drop 3D crushing and screening plant configurator that enables professionals in the mining and aggregate industries to design more productive and efficient plants through real-time insights. The design and simulation tool, called My Plant Planner, is available on metso.com and is free for anyone to use.

“We are really excited about My Plant Planner. Our aim is to help our customers easily test different configurations and operating conditions to see how they affect process performance. The tool allows you to either design and simulate a new crushing and screening plant in 3D or test how upgrading your current equipment can improve performance,” explains Guillaume Lambert, vice-president, Crushing Systems at Metso.

My Plant Planner is packed full of unique features and insights to help in the planning of optimised crushing and screening circuits. It is possible to download a detailed report of the designed plant. The tool is based on proprietary Metso software VPS and Bruno. Unique to My Plant Planner is the possibility to design and simulate the ideal crushing and screening circuit in the same tool in 3D. The configurator makes it easy to predict general power consumption of the system and to see the footprint of the circuit - a feature exclusive to My Plant Planner.

Sandvik presents DR410i rotary blasthole drill

SANDVIK MINING AND Rock Technology introduces the Sandvik DR410i rotary blasthole drill to enhance safety, improve productivity and reduce costs.

Compact, powerful and technologically advanced, Sandvik DR410i is designed to deliver productivity and return on investment for 6-97/8” (152-251mm) rotary and DTH holes, with a standard mast offering a first pass capability of 10m or 33 ft and a max depth of 46.6m or 153ft. The extended mast option delivers a first pass option of 14m or 46ft with a total depth capacity of 32.3m or 106ft across all recommended pipe diameters.

The Sandvik DR410i is automation-ready, when equipped with the AutoMine solution module which provides functionality for on-board and off-board automated needs.

The Sandvik intelligent control system architecture (SICA) provides the operator with real-time feedback regarding the machine’s performance and health, ensuring quality and consistency hole-to-hole.

SAB

STANDARD AGGREGATEBAU
Evers GmbH & Co. KG
Ostrarstraße 11
22444 Norderstedt | Germany
P: + 49 (0) 40/522 56 11 - 0
F: + 49 (0) 40/522 56 11 - 44
info@generatingset.com
www.generatingset.com

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Eaton Middle East launches mobile app

POWER MANAGEMENT

COMPANY, Eaton, has announced the release of a new mobile app, Eaton Asset Manager, to give customers the power to manage their Eaton products from the convenience of their mobile device.

In the office, at home or on the move, the new app, which is available from both the App store and Google Play, gives users the freedom to access product information, help manage products, and most importantly, authenticate genuine Eaton products.

With the global trade of counterfeit goods on the increase, the OECD estimated that the global trade of all counterfeit goods reached just over half a trillion dollars in 2016. Illegal counterfeit and unsafe electrical products and installations put lives and businesses at risk from death, injury and loss of property.

Using the Eaton Asset Manager app and a unique QR code on specific products users can authenticate genuine Eaton products.

Mitsubishi unveils Melta Assista series of robots

Mitsubishi Electric Corporation has launched its Melta Assista series of robots that work collaboratively with humans based on safety features such as collision detection and strict compliance with the international safety and robotic standards ISO 10218-1 and ISO/TS15066.

The series will introduce an intuitive engineering software, RT VisualBox, for quick, easy system deployment. Customers can use Melta Assista and RT VisualBox to realise more efficient production, reduce the total cost of ownership (TCO) of robotic manufacturing systems, and meet new needs for adequate distancing of workers in manufacturing sites.

LOGO.3 with fewer tie points offers increase in efficiency

THANKS TO THE well-balanced range of panels and the stable construction of LOGO.3 formwork, there are many practical ways of significantly reducing the number of tie points so that installing the LOGO.3 system is even more efficient without compromising in terms of safety.

The LOGO.3 wall formwork system is designed to withstand a high maximum fresh concrete pressure of 70 kN/m² with just 0.62 ties/m².

Especially in the prosperous housing construction sector with storey heights of up to 270 cm and the usual wall thicknesses and concrete strengths, the permitted fresh concrete pressure is often not achieved. That’s why the LOGO.3 wall formwork system has sufficient reserves to be exploited.

Concrete workers are good at this, for example, when installing a small LOGO.3 panel between large-size panels measuring 240 x 270 cm or 340 x 270 cm. Fewer tie rods are needed resulting in less clamping work for the concrete workers.

Cat’s C18 diesel generator offers power density

CATERPILLAR HAS LAUNCHED three new power nodes for the Cat C18 diesel generator set that offer higher power density, occupying up to 55 per cent less floor space than a leading competitive product offering the same power outputs.

Available now, the new Cat C18 diesel generator set features three 60-Hz power nodes offering standby ratings from 650 kW to 750 kW and prime power ratings from 600 kW to 680 kW. It is designed for applications requiring certification to US EPA Tier 2 emission standards, and an enclosure is available for applications requiring noise attenuation or protection from the elements.

“Standby power is a considerable investment for most smaller enterprises, so it’s critical to select an efficient, accurately sized solution that fits in the most compact space possible,” said Jason Kaiser, general manager for Caterpillar Retail Electric Power Solutions. “Caterpillar’s new generator sets with high power densities allow customers to get power when they need it most while substantially reducing upfront costs for site preparation, transportation, and installation.”

The Cat C18 generator set utilises the field-proven Cat ADEM A4 engine control module (ECM). This module seamlessly integrates all engine functions including ignition, governing, and air-fuel ratio control for optimal performance while protecting the engine.

Schneider Electric presents new public API to simplify management at Edges

SCHNEIDER ELECTRIC HAS released a public application programming interface (API) for cloud-based software EcoStruxure IT Expert. The first public API for EcoStruxure IT Expert, it enables IT solution providers and end users to seamlessly integrate a power and critical infrastructure monitoring platform into any preferred management system.

With the introduction of EcoStruxure IT Expert API, Schneider Electric is helping to simplify management at the edge for IT solution providers and end users who are managing distributed IT infrastructure.

Now enhanced with new public API capabilities, the platform keeps increasing its flexibility. For example, users can maintain a local data store and build custom applications that react to changes. With this increased access to energy and infrastructure resource data, users can make changes to increase efficiency and sustainability.
ABB augmenting technology to improve worker safety

ABB HAS LAUNCHED ABB Ability Augmented Field procedures with an aim to drive worker safety and efficiency across the energy sector. Developed specifically to meet the needs of field operators, the ABB Ability Augmented Field Procedures support seamless integration between the field and the plant distributed control system offering improved safety. With more than 20 per cent of industrial downtime reportedly due to human error, the technology is capable of enabling consistency when executing manual procedures, standardising operating procedures and maintenance or repair techniques in the field, tightening field to control room integration and digitally recording notes to ensure operational knowledge is captured and utilised.

Unlike traditional paper-based operating procedures, the technology enables interactive execution of procedures using a mobile device to guide operators through each step in a consistent, effective and safe way.

Operatives will be able to access hands-free, real-time data related to plant assets, processes or procedures using industrial tablets, smart phones and Microsoft HoloLens glasses, increasing real-time collaboration and enabling immediate data entry from the user interface in the field. Created in collaboration with industry majors, the system can be used in any industrial environment, in greenfield and brownfield sites, for start-up, routine maintenance, and shutdown activities. Supporting operators across oil, gas, chemical, process, power and water sectors, it will help transform plant operational procedures, putting the power of digitalisation, mobility, and connectivity into the hands of field workers.

Acciona unveils BIONS platform for water management

ACCIONA, A PROVIDER of sustainable infrastructure solutions, has launched Business Intelligence Of Network Solutions (BIONS), a new intelligent cloud-based data platform that integrates data to improve the efficiency of water supply management systems. This next-generation platform provides an in-depth vision of the water supply service in real time, for an overall view of the health of the network. A platform with a graphic and mobile interface displays all the data of the water distribution network in real time. Thanks to artificial intelligence (AI) and machine learning (ML) technologies, BIONS is able to not only detect, analyse and manage failures or incidents in the water supply network such as leaks, breaks or faulty assets – it can also predict when they are likely to happen as well.

As a result, BIONS predictive technologies help prevent water cuts and other system failures before they occur. One of the main advantages of this new platform – when integrated with ACCIONA’s proprietary software “GOTA” - is the efficiency of the operations and maintenance of the network, with shorter cycles of repair and incident resolution. This can deliver considerable savings to the operator, be they public or private.

BIONS is a multi-channel platform, which can be accessed and operated from mobile devices, tablets and personal computers. The platform’s cybersecurity architecture protects the water network’s data securely in the cloud, and also the system itself from external attacks.

Rotork unveils YT-3700 and YT-3750 digital smart positioners

ROTORC’S ENHANCED YT-3700 and YT-3750 digital smart positioners can be used for control and on/off valve applications where diagnostics are required. The YT-3700 and YT-3750 pneumatic smart positioners employ monitoring and graphic display of valve position, set point target over time and internal circuit board temperature over time.

With single and double-acting configurations available, they provide reliable control of pneumatic valve systems for linear and rotary applications.

Suitable for all markets, the new enhanced YT-3700 and YT-3750 digital smart positioners can be used for both control and on/off valve applications where diagnostics are required.

Valve diagnostic information to NE107 standard is provided, with Hart seven communication protocol included as standard and a display for all settings and local device interaction. Commissioning can be handled locally without the need of an additional device. All indications are clear and simple to follow thanks to the clear visual identification on the local display and the four push buttons. The enhanced diagnostic package offers position over time continuous monitoring, and graphical visualisation trough device description (DD) and device type manager (DTM) files.

Additionally, valve signature, advanced step tests and partial stroke testing (PST) can be operated from local or remote positions. Auto-tuning functionality and non-contact sensor are included for high frequency operating valves and an enhanced lifetime.

The steady state deviation analysis that they provide can detect friction in the valve or actuator, leakage in pneumatics and instances where there is insufficient supply pressure. A deviation time out alarm occurs when the difference between the target position and the actual position exceeds the pre-set deviation alarm point.
### Section One: Listings by category

#### Electrical Equipment
- **AC Alternators**
  - Mecc Alte UK Ltd.
- **AC Drives**
  - Canton Motor S.A.
  - Mohammad Al-Ojaimi Contracting Est.
- **Air Compressors**
  - Rotair S.P.A
- **Air Conditioning / Chillers /Heat Exchangers**
  - LG Electronics Gulf FZE
  - Rittal Middle East FZE
- **Auto Recloser**
  - Mohammad Al-Ojaimi Contracting Est.
- **Automation Systems**
  - Phoenix Contact Middle East FZ LLC
- **Batteries**
  - Mohammad Al-Ojaimi Contracting Est.
- **Cable - Conductor Products**
  - HellermannTyton UAE
  - Mohammad Al-Ojaimi Contracting Est.
- **Cable Fault Locator**
  - BAUR GmbH
  - Megger Ltd.
  - Mohammad Al-Ojaimi Contracting Est.
- **Cable Handling Equipment**
  - HellermannTyton UAE
  - Mohammad Al-Ojaimi Contracting Est.
- **Cable Jointing & Termination**
  - HellermannTyton UAE
  - Mohammad Al-Ojaimi Contracting Est.
  - Mosdorfer GmbH
- **Cable Labeling**
  - Brady Middle East FZE
  - HellermannTyton UAE
  - Mohammad Al-Ojaimi Contracting Est.
- **Cable Laying Equipment**
  - HellermannTyton UAE
  - Mohammad Al-Ojaimi Contracting Est.
  - Rotair S.P.A
- **Cable Protection & Support**
  - HellermannTyton UAE
  - Mohammad Al-Ojaimi Contracting Est.
- **Cable Testing Equipment**
  - BAUR GmbH
  - Megger Ltd.
- **Cable Trays**
  - HellermannTyton UAE
- **Cables & Cable Accessories**
  - Brady Middle East FZE

#### Materials
- **Cathodic Protection**
  - DEHN SE + Co KG
- **Cogenration**
  - KOHLER SDMO
- **Components**
  - HM Elektromekanik Uretim A.S.
- **Compressors**
  - MAN Energy Solutions SE
  - Rotair S.P.A
- **Conduit & Fittings**
  - HellermannTyton UAE
- **Connectors and Fittings**
  - HellermannTyton UAE
- **Control Equipment/Systems**
  - HM Elektromekanik Uretim A.S.
  - MOROTECHE GmbH
- **Control System - Industrial & Residential**
  - COELMO Spa
- **Conversion & Storage of Electrical Energy**
  - HVR PENTAGON
  - Cooling & Heating Equipment
  - HVR PENTAGON
- **Copper Rod & Wire**
  - DEHN SE + Co KG
  - John Deere Power Systems
- **Damper System**
  - Mosdorfer GmbH
- **Detectors**
  - VEGA Technique
- **Diesel Engines**
  - Baudouin
  - Cummins Middle East FZE
  - John Deere Power Systems
  - Jubaili Bros
  - KOHLER SDMO
  - MAN Energy Solutions SE
  - Perkins Engines Co. Ltd.
  - Volvo Penta
- **Earthing / Lightning Equipment & Accessories**
  - Cressall Resistors Ltd.
  - DEHN SE + Co KG
  - Phoenix Contact Middle East FZ LLC
- **Education & Training**
  - VEGA Technique
- **Electric Cabling & Substation Technology**
  - Mohammad Al-Ojaimi Contracting Est.
- **Electric Drives**
  - Canton Motor S.A.
  - Electric Generators - Turbo Generators & Hydro Generators
  - AJ Power Ltd.
  - Cummins Middle East FZE
  - Linz Electric S.p.A
  - Marelli Motor S.p.A.
  - Mecc Alte UK Ltd.
- **Electric Motors / Repairs Equipment**
  - Canton Motor S.A.
  - Marelli Motor S.p.A.
- **Electronics**
  - LG Electronics Gulf FZE
- **Enclosures**
  - AP Lanka Pvt. Ltd.
  - Jubaili Bros
  - Rittal Middle East FZE
- **Energy Efficiency/Savers**
  - IREM S.p.A.
- **Energy Management & Services**
  - IREM S.p.A.
  - Lovato Electric S.p.A.
- **Energy Measurements**
  - Lovato Electric S.p.A.
  - Phoenix Contact Middle East FZ LLC
- **Engineering Services**
  - AP Lanka Pvt. Ltd.
  - COELMO Spa
  - Jubaili Bros
  - Mosdorfer GmbH
  - MOROTECHE GmbH
- **Engine/Engines/Engine Parts**
  - Baudouin
  - Canton Motor S.A.
  - Cummins Middle East FZE
  - KOHLER SDMO
  - Marelli Motor S.p.A.
  - Volvo Penta
- **Equipment for Electric Motor Repair**
  - Marelli Motor S.p.A.
- **Equipment for Power Transmission Lines**
  - Cressall Resistors Ltd.
  - Mosdorfer GmbH
- **Explosion Proof Equipment / Lighting & Switchgear**
  - Marelli Motor S.p.A.
- **Fault Recorder/Event Recorder**
  - Mohammad Al-Ojaimi Contracting Est.

#### Field instrumentation / Process
- **Control / Valves**
  - MOROTECHE GmbH
  - VEGA Technique
- **Filters**
  - Jubaili Bros
- **Gas & Power Equipment**
  - COELMO Spa
  - FG Wilson
  - KOHLER SDMO
  - MOROTECHE GmbH
- **Gas Engines**
  - Cummins Middle East FZE
  - MAN Energy Solutions SE
- **Gas Turbines**
  - MAN Energy Solutions SE
- **Generating Sets**
  - ABZ Aggregate-Bau GmbH & Co. KG
  - AJ Power Ltd.
  - COELMO Spa
  - FG Wilson
  - Jubaili Bros
  - KOHLER SDMO
  - Linz Electric S.p.A
  - Lovato Electric S.p.A.
  - MAN Energy Solutions SE
  - Mecc Alte UK Ltd.
  - SAB, Standard Aggregatbau Evers GmbH & Co. KG
  - Teksan Generator
  - Visa S.p.A.

#### Generating Technologies
- **FG Wilson**
- **Generators**
  - AJ Power Ltd.
  - Caterpillar SARL
  - COELMO Spa
  - Cummins Middle East FZE
  - FG Wilson
  - FLORIDIA SRL
  - KOHLER SDMO
  - Linz Electric S.p.A
  - Mecc Alte UK Ltd.
  - Teksan Generator
  - Visa S.p.A.

#### Heat & Power Integration, Products & System, Co-Generation
- **Caterpillar SARL**
- **Marelli Motori S.p.A.**
- **Teksan Generator**
High-Voltage Equipment of Distribution & Control
Cressall Resistors Ltd.
Hydro-Electric Power Plant
Marelli Motori S.p.A.
Indicators/Controllers
VEGA Technique
Industrial Automation
Lovato Electric S.A.
Industrial Electronics
Phoenix Contact Middle East FZ LLC
Industrial Power Engineering
AP Lanka Pvt. Ltd.
FG Wilson
KOHLER SDMO
Rittal Middle East FZE
Inspection and Testing
Megger Ltd.
Instrumentation & Calibration
VEGA Technique
Insulation Materials
HellermannTyton UAE
Inverters
AEG Power Solutions B.V.
Fronius International GmbH
Irrigations Systems
Visa S.p.A.
Isolators
Phoenix Contact Middle East FZ LLC
Junction Boxes
AP Lanka Pvt. Ltd.
Rittal Middle East FZE
Labeling & Identification
HellermannTyton UAE
Level Detection & Control
VEGA Technique
Lightning Protection
DEHN SE + Co KG
Limit Switches
VEGA Technique
Load Banks
Cressall Resistors Ltd.
Magnetic Cores
AEM Unicore Machinery
Measure & Test
Equipment/Systems/Monitoring
BAUR GmbH
Megger Ltd.
Mohammad Al-Ojaimi Contracting Est.
Moodorfer GmbH
VEGA Technique
Measurement, Control & Diagnostic Instrumentation, Diagnostic Equipment
BAUR GmbH
Megger Ltd.
VEGA Technique
Minor Hydro-Power Engineering
Marelli Motori S.p.A.
Motors & Motor Winding Equipment
Cantoni Motor S.A.
New & Renewable Energy
AEG Power Solutions B.V.
Fronius International GmbH
HellermannTyton UAE
Teksan Generator
Visa S.p.A.
Overhead Line Equipment Materials/Hardware & Accessories
DEHN SE + Co KG
Photovoltaic
Fronius International GmbH
Pipe Laying
Rotair S.P.A
Pneumatics
MOTORTECH GmbH
Power Monitoring & Supplies
AEG Power Solutions B.V.
Power Plant Design
KOHLER SDMO
MAN Energy Solutions SE
SAB, Standard Aggregatebau Evers GmbH & Co. KG
Power Transformers
AEM Unicore Machinery
HVR PENTAGON
Process Control & Process Automation
VEGA Technique
Process Control Equipment
VEGA Technique
Pumps, Compressors & Filters
Rotair S.P.A
Sensors
VEGA Technique
Solar Energy Equipment
Fronius International GmbH
HellermannTyton UAE
Mohammad Al-Ojaimi Contracting Est.
Solar Power Engineering
Caterpillar SARL
Stand-Alone Sources of Energy
ABZ Aggregate-Bau GmbH & Co. KG
AJ Power Ltd.
Caterpillar SARL
SAB, Standard Aggregatebau Evers GmbH & Co. KG
Visa S.p.A.
Switchboards & Switchgear
AP Lanka Pvt. Ltd.
HVR PENTAGON
SAB, Standard Aggregatebau Evers GmbH & Co. KG
Switchgear Products, Low & Medium Voltage
AP Lanka Pvt. Ltd.
Caterpillar SARL
HellermannTyton UAE
HVR PENTAGON
Rittal Middle East FZE
Telecommunication Equipment
Mecc Alte UK Ltd.
Visa S.p.A.
Testing & Inspection Services
Mohammad Al-Ojaimi Contracting Est.
Transformers
AEM Unicore Machinery
Transmission & Distribution
HM Elektromekanik Uretim A.S.
AEM Unicore Machinery
Turbines
IREM S.p.A.
Ultrasonic Systems
VEGA Technique
Uninterruptible Power Systems
AEG Power Solutions B.V.
Marelli Motori S.p.A.
SAB, Standard Aggregatebau Evers GmbH & Co. KG
Voltage Stabilizers & Regulators
HM Elektromekanik Uretim A.S.
IREM S.p.A.
Welding Equipment / Electrodes / Services
Fronius International GmbH
Wind Energy
HellermannTyton UAE
Wiring Identification / Wire Markers
Brady Middle East FZE

Section Two: Suppliers

ABZ Aggregate-Bau GmbH & Co. KG
Gutenbergstraße 11
Henstedt-Ulzburg, D-24558, Germany
Tel: +49 4193 90360
Fax: +49 4193 93473
Web: www.abz-power.com
E-mail: info@abz-power.com

AEG Power Solutions B.V.
Weenerweg 29, AG Zwanenburg
Netherlands
Tel: +31 20 4077800
Fax: +31 20 4077801
Web: www.aegps.com
E-mail: info@aegps.com

AEM Unicore Machinery
Gillman, South Australia
5013, Australia
Tel: +61 8 83410086
Web: www.aemcores.com.au
E-mail: sales@aemcores.com.au

AJ Power Ltd.
1 Charlestown Drive
Carn Industrial Area
Craigavon
Northern Ireland
BT63 5GA
United Kingdom
Tel: +44 28 38361000
Fax: +44 28 38361010
Web: www.ajpower.net
E-mail: sales@ajpower.net;
info@ajpower.net
Agents:
United Arab Emirates - AJ Power Ltd.

AP Lanka Pvt. Ltd.
No 416/5 Leyland Road
Panagoda
Homagama
Sri Lanka
Tel: +94111 2 751 751/750 288
Fax: +94111 2 751 740
Web: www.timikenclosures.com
E-mail: info@timikenclosures.com

Apar Industries Ltd.
Apar House, Corporate Park
Sion Trombay Road
Chembur
Mumbai
400071
India
Tel: +91 22 25263400/67800400
Fax: +91 22 25246326
Web: www.aparcom
E-mail: corporate@apar.com

Agents:
United Arab Emirates - Petroleum Specialities FZE

Ausonia S.r.l.
Via Favara 452,
Marsala
91025
Italy
Tel: +390923722311
Fax: +390923721274
Web: www.ausonia.net
E-mail: ausonia@ausonia.net

Baudouin
Technoparc du Bregadan
Cassis
13260
France
Tel: +33 (0)4 88 68 85 00
Web: www.baudouin.com
E-mail: corporate@baudouin.com

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United Arab Emirates - COELMO S.P.A.
Agents:
E-mail: sales@coelmo.it
Web: www.coelmo.it
Fax: +39 081 8039724
Tel: +39 081 8039731
Italy
Agglomerato Industriale ASI
Via delle Industrie 278

Cantoni Motor S.A.
3 Maja 28 Street
43-400
Cieszy
Poland
Tel: +48 33 813 87 00
Fax: +48 33 813 87 01
Web: www.cantoniingroup.com
Email: motor@cantoniigroup.com

Cantoni Group is a global leader in manufacturing of electric motors, apparatus and tools with over 100-year-long tradition. Cantoni Motor, the International Sales Office located in Poland, coordinates the sales and purchasing for the whole Group. We offer a full range of induction electric motors, from 0,04kW up to 6000kW, in standard and special executions.

Caterpillar SARL
PO Box 262147
Jebel Ali Free Zone
South 3
Dubai
United Arab Emirates
Tel.: +971 4 880 6411
Web: www.caterpillar.com/demandcat_ME

Agents:
Bahrain - Mohamed AbdulRahman Al-Bahar CAT
Kuwait - Mohamed AbdulRahman Al-Bahar CAT
Lebanon - Jubaili Bros (Lebanon)
Oman - General Engineering Services Est.
Qatar - Jubaili Bros (Qatar)
United Arab Emirates - AL Yousuf Electronics
Yemen - Al-Baleal Trading Corporation

Cessna Resistors Ltd.
Evington Valley Road, Leicester
England, LE6 5LZ
United Kingdom
Tel.: +44 116 2733633
Fax: +44 116 2739911
Web: www.cessna.com
E-mail: sales@cessna.com

Agents:
Oman - Mohsin Haider Darwichi L.L.C
Saudi Arabia - Nazlah Power System
United Arab Emirates - Ali Haji Abdulla Awadh-Gargash L.L.C

Cummins Middle East FZE
PO Box 17636
South Zone 2
Jebel Ali Free Zone
Dubai
United Arab Emirates
Tel.: +971 4 8809911/800 2866467
Fax: +971 4 8860518/9
Web: www.middleeast.cummins.com
E-mail: cummins.middleeast@cummins.com

DEHN SE + Co KG
Hans-Dehn-Str. 1
Neumarkt
92318
Germany
Tel.: +49 9181 906-0
Fax: +49 9181 906 1100
Web: www.dehn-international.com/en
E-mail: info@dehn.de

Agents:
United Arab Emirates - DEHN Middle East FZE

FG Wilson
1 Millenium Way
Springvale Business Park
Springfield Road, Belfast
Country Antrim
Northern Ireland
BT12 7AL
United Kingdom
Tel.: +44 28 90495000
Web: www.fg wilson.com

Agents:
Israel - F.K. Electric Ltd
Lebanon - Al Jabli
Pakistan - S.M. Jaffer & Co
Saudi Arabia - Tamgo The Machinery Group LLC
United Arab Emirates - FG Wilson (Engineering) FZE

FLORIDIA SRL
Vie delle Industrie 26-97015 Modica
Italy
Tel.: +39 0932 777 900
Fax: +39 0932777 458
Web: www.floridiasrl.it
E-mail: export@floridiasrl.it

Agents:
United Arab Emirates - FLORIDIA SRL (OMMC BRANCH)

Ford International
United Arab Emirates

Fortune International Trading LLC
United Arab Emirates

HelmermannTytong UAE
SAIF Zone
PO Box 124011
Sharjah
United Arab Emirates
Web: www.helmerramtytong.ae
E-mail: info@helmerramtytong.ae

HVM PENTAGON
Unit 2, Kings Road Industrial Estate
tyseley
Birmingham
United Kingdom
Tel.: +44 121 773 2413
Web: www.hvmpentagon.com
E-mail: iain@hvmpentagon.com

IREM S.p.A.
Via Abegg 75
Borgore (Forino)
10050
Italy
Tel.: +39 011 9648211
Fax: +39 011 9648222
Web: www.irem.it
E-mail: svm@irem.it

John Deere Power Systems
Unit d’Orléans-Saran
1 rue John Deere
Fleury les Aubrais Cedex
45401
France
Tel.: +33 23 8826119
Fax: +33 23 8846266
Web: www.johndeere.com
E-mail: jdengine@johndeere.com

Agents:
Egypt - Drosim Trading SAE
Lebanon - Allied Direct S.A.R.L
Lebanon - Shaftor Machinery Co.
Oman - General Engineering Services Est.
Saudi Arabia - Electrical Work & Maintenance in
Turkey - AKSA Servis Ve Yedek Parca AS
United Arab Emirates - UnityDesign

Jubaili Bros
Jebel Ali Free Zone
United Arab Emirates
Tel.: +971 4 8832023
Fax: +971 4 8832053
Web: www.jubailibros.com
E-mail: jdbubai@jubailibros.com

Agents:
Kuwait - Jubaili Bros (Kuwait)
Lebanon - Jubaili Bros (Lebanon)
Qatar - Jubaili Bros (Qatar)

KOHLER SDMO
KOHLER SDMO
270 rue de Kerevem
CS40047
29801 Brest-Cedex 9
France
Tel.: +33 2 98 41 41 41
Fax: +33 2 98 41 63 07
Web: kohler-sdmo.com

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30 - Arico (Verona)
37040
Italy
Tel.: +39 045 7639201
Fax: +39 045 7639202
Web: www.linzelectric.com
E-mail: info@linzelectric.com

Lovato Electric S.p.A.
Via Don Mazza
12 Gorle (BG)
24020
Italy
Tel.: +39 035 4282111
Fax: +39 035 4282400
Web: www.lovatoelectric.com
E-mail: info@lovatoelectric.com
**MAN Energy Solutions SE**

**Stadtbachstr 1**

**86153**

**Germany**

Tel: +49 821 3220

Fax: +49 821 323382

Web: www.man-es.com

E-mail: info@man-es.com

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**Agents:**

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Via Sabbionara, 1

36071 - Arzignano (Vicenza)

Italy

Tel: +39 0444 479711

Fax: +39 0444 479888

Web: www.marellimotori.com

E-mail: henry.peruzzotti@meccalte.co.uk

**Mecc Alte UK Ltd.**

6 Lands End Way

Oakham

 Rutland

LE15 8RF

United Kingdom

Tel: +44 1572 771630

Fax: +44 1572 771160

Web: www.meccalte.com

E-mail: sales@meccalte.co.uk

**Megger Limited**

Millennium Tower

Office No.142, Bldg. No.205

Road 2803, King Mohammed IV Avenue

Block No.428 Seef Area

Bahrain

Tel: +973 17740620

Fax: +973 17740621

Web: www.megger.com

E-mail: mesales@megger.com

**Mohammad Al-Ojaimi Contracting Est.**

PO Box 1259

Dammam

31431

Saudi Arabia

Tel: +966 13 8325064

Fax: +966 13 8310241

Web: www.alojaimi.com

E-mail: es.info@alojaimi.com

**Mosdorfer GmbH**

Mosdorfergasse 1

Weiz, 8160

Austria

Tel: +43 3172 25050

Fax: +43 3172 250529

Web: www.mosdorfer.com

E-mail: office@mosdorfer.com

**MOTORTECH GmbH**

Horgewest, 21-23, Celle, 29223

Germany

Tel: +49 5141 93990

Fax: +49 5141 93999

Web: www.motortech.de

E-mail: sales@motortech.de

**Perkins Engines Company Limited**

Eastfield, Peterborough

Cambridgeshire, PE1 5FQ

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Tel: +44 1733 584029

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United Arab Emirates

Tel: +971 4 3416855

Fax: +971 4 3416856

Web: www.phoenixcontact.ae

E-mail: info.ae@vega.com

**Rittal Middle East FZE**

PO Box 17599

Dubai

United Arab Emirates

Tel: +971 4 3416855

Fax: +971 4 3416856

Web: www.rittal-middle-east.com

E-mail: info@rittal-middle-east.com

**SAB**

SAB, Standard Aggregatebau Evers GmbH & Co. KG

Ostrasse 11

Norderstedt

22844

Germany

Tel: +49 40 5225011 21

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Tel: +90 216 4448576

Fax: +90 216 3126909

Web: www.teksan.com

E-mail: zafermutlu@teksan.com

**Visa S.P.A.**

Via 1° Maggio 55

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Italy

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Gothenburg

40508

Sweden

Tel: +46 31 660000

Web: www.volvo.wordpress.com

E-mail: info.volvo.wordpress.com

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Al-Khaimah Building

North Entrance, Al Ittihad Road

Deira, DUBAI

United Arab Emirates

Tel: +971 4 294 7552

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Web: www.vega.com

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Manama
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E-mail: sanjeevawahasthi@ajmkoohieji.com

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CAT
Factory No. 110 Road 42
Manama Al Manamarah 356
Tel: +973 17 705177
Fax: +973 17 702560
Web: www.albahar.com
E-mail: basharb@albahar.ae

**EGYPT**

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Aguouza
Cairo
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Fax: +20 2 334 73191
Web: www.orascom.com
E-mail: marianm@orascom.com

Rich Uni (Triangle)
8 Kasr El Nile St.
Cairo P.O Box 23 Agouza
8 Kasr El Nile St.
Cairo
Tel: +972 39720566
Web: www.electra.co.il
E-mail: kq_teksan@yahoo.com

**ISRAEL**

F.K. Electra Ltd
Galil St
7019990 Airport City
Tel: +972 37920566
Web: www.electra.co.il

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**LEBANON**

Allied Diesel S.A.R.L
PO Box 90-1232
Nahr El Mot Roumiet Road
Allied Building
Beirut
Tel: +961 1 877205
Fax: +961 1 887583
Web: www.allieddiesel.com
E-mail: alidsi@dm.net.lb

AR Jubaili
Bchamoun, Zhourour street, previously Coca Cola
Warehouses
Tel: +961 05 806141 / 2; +961 03 734
Web: https://arjubaili.com/
E-mail: info@jubaili.com;
sales@jubaili.com

Ghadar Machinery Co.
P.O. Box - 110 Sidon
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Fax: +961 7 221 754 / 223 322
Web: www.ghadar.com
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**LIBYA**

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Coastal road
Next the Engineering College M
2426
Tel: +218 91 3226474
Web: www.belhaiinternational.com.ly
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CAT
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Web: www.albahar.com
E-mail: info@albahar.com

**PAKISTAN**

Jubaili Bros (Qatar)
Doha
Tel: +974 44160121
Fax: +974 44162257
Web: www.jubailibros.com
E-mail: jubilipakistan@jubailibros.com

**QATAR**

LG Qatar Office
PO Box 10480
Jaidah Square Building
Airport Road
Doha
Tel: +974 6 6817241
E-mail: gilbert.koussa@lge.com

**SAUDI ARABIA**

Abdul Latif Jameel Machinery
P. O. Box 12630
Haramain Rd.Al Nakhil District
P. O. Box 12630
Jeddah
Tel: +966 50 190206/44011788
E-mail: adharsh@jumbogqatar.com

**TURKEY**

Naizak Power System
PO Box 31377
9th floor; Kashoggi Building
Dhahran Street
Al Khobar
31952
Tel: +966 3889 2085
Fax: +966 3889 2086
Web: www.naizak.com
E-mail: athimovx@naizak.com

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Jeddah 21492
Tel: +966 (0) 12 683 2216
Web: www.tamgo.com

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King Fahad Road
Sakaka
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Al Mukanannah
Web: www.zahid.com
E-mail: inquiry@zahid.com

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Dubai Airport Free Zone
Office SEA 225, Dubai
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Fax: +971 6 4091291
Web: www.aequis.com
E-mail: sales.me@aequis.com

Al Ghandi General Trading
P. O. Box 5991, Dubai
33rd Floor, BB1 Tower
Dhahran Street
Al Khobar
31952
Tel: +966 3889 2085
Fax: +966 3889 2086
Web: www.naizak.com
E-mail: athimovx@naizak.com
Noja Power unveils dual supply switchgear for renewables

**ELECTRICAL SWITCHGEAR ENGINEERING** firm Noja Power has launched the Dual Supply GMK. Designed to maximise renewable generation asset uptime, the Dual Supply GMK provides renewable operators with an option to increase their commercial viability. While the energy market is evolving to handle the demands of high renewable penetration, the NOJA Power Dual Supply GMK allows solar and renewable installation operators to split their generation capacity among two supply incomers, providing a staged mitigation to load shedding or asset maintenance.

At its core, the Dual Supply GMK is essentially two grid connections in a cubicle. It has two OSM Recloser solid dielectric insulated vacuum interrupting circuit breakers, supplied complete with the NOJA Power RC control system. This topology provides all protection, control and automation required for renewable connections, including rate of change of frequency (ROCOF) and voltage vector shift (VVS) protection. Additional options such as revenue metering can be incorporated in the customisation of the equipment, allowing for a fully customised solution to be factory tested, shipped and delivered complete to site.

These two reclosers provide the protection and point of connection to the grid, with the reclosers’ outgoing busbars connected and unified to a single outgoing cable connection.

**HUBER+SUHNER enables continuous electric vehicle charging at 500 A**

HUBER+SUHNER, a GLOBAL supplier of electrical and optical connectivity solutions, has launched the RADOX HPC500, a new addition to the RADOX high power charging portfolio. The cooled charging cable system allows continuous charging at 500 Amperes even in high-temperature environments.

The HPC500 cable and connector builds on the proven performance and design of the HPC400 family, as well as the extensive field experience and continuous innovation in cooled cable solutions for EV charging stations. Several improvements and new features make the system ready for existing and future requirements. These enhancements include continuous 500 A charging at 500 Amperes even in high-temperature environments. The new plug-and-play cooling unit, which is pre-filled with coolant, fits into the coolant ventilators on both the system and replaceable contacts for longer service life.

Alongside the cooled cable system, HUBER+SUHNER has also developed a new 24 V cooling unit to increase cooling capacity and reduce operational temperatures of the power lines, enabling continuous 500 A charging at environmental temperatures of up to 50 °C.

The new plug-and-play cooling unit, which is pre-filled with coolant, fits into existing charging stations, significantly reducing installation time. The speed of both the ventilators on the heat exchanger and the coolant pump is automatically adjusted to achieve the most efficient performance, with normal operating levels requiring lower speed, significantly reducing noise level.

**Photo Credit: HUBER+SUHNER**
وتؤكد أسعار المواد المنخفضة للطاقة الشمسية الكهروضوئية في أبوظبي ودبي (المملكة العربية المتحدة)، فقيرة، وال=DB، وبوة، والمملكة العربية السعودية، أن القيم التي تصل إلى 0,03 دولار/كل يلاميات ساعية ممكنة للعمل.
ولتحق انتظام السنوي للدولة الدولية للطاقة المجددة أيضاً في قيما الاستهلاك في سوق لم تصل إلى 0,03 دولار/كل يلاميات ساعية ممكنة للعمل.
وتطرح المصادر الأخرى واتصالات زيادة الهواء في جريدة الوضوء.  
وأخيراً، يجب أن تكون مصادر الطاقة المجددة الفردية الفعلي للاستغلال الوقائي للكهرباء، والاحتياجات في أعقاب تنازلات كافير، 19.
ومن تلك الأسئلة المتصلة بالطاقة المجددة أن يعرف الأسوأ، ويحافظ على تطبيق مبادئ كافيرة في تغيير البديل.
وقد انتشرت الكهرباء المجددة بشكل جيد لدى مدار الاتصال الحاوي، مرفوعة لتحويل التكنولوجيا، ووفراتها، والمكتبة من جهد البريد، والتعليم المتقدم والطبيعة المتنوعة.  
ومن نوافمبر انتخابات 2020، من أطول، والتي فحصت في الفحم المجددة.

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المصادر المتجددة توفر طاقة أرخص من الفحم

كشف تقرير جديد صادر عن الوكالة الدولية للطاقة المتجددة (IRENA) أن الطاقة المتجددة أرخص بكثير من أية طاقة كهربائية جديدة تعتمد على الوقود الأحفوري. وتظهر تكاليف توليد الطاقة المتجددة في عام 2019 أن أكثر من نصف الطاقة المتجددة المضافة في عام 2019 حلت تكاليف أقل من أرخص مصانع الفحم الجديدة.

ويسلط التقرير الضوء على أن مشاريع توليد الطاقة المتجددة الجديدة تقوض بشكل متزايد المنتشث القائمة التي تعمل بالفحم. فتكلفة الطاقة الشمسية الكهروضوئية الجديدة وطاقة الرياح أقل، في المتوسط، من إقامة العديد من مصانع الفحم الموجودة قيد التشغيل. وتظهر نتائج الإجراءات تسارع هذا الاتجاه، مما يعزز قضية التخلص التدريجي من الفحم بالكامل.

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أرخص من الفحم

أكثر من نصف الطاقة المتجددة المضافة في عام 2019 حققت تكاليف طاقة أقل من أخفض مصانع الفحم الجديدة.

القرير السنوي للطاقة 2020