

TECHNICAL REVIEW

النشرة التقنية - الشرق الأوسط

MIDDLE EAST

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Annual Power Review 2016

ANNUAL POWER REVIEW 2016

Overcoming adversity

Tackling the region's growing energy demands through investment and diversification

Adopting sustainability

'Green building' comes of age throughout the MENA region

INSIDE

Solar Power
Gensets
UPS
Process Control
Intersolar Middle East

STABLISING THE GRID

GCC STATES INCREASE INVESTMENT TO MEET GROWING DEMAND FOR POWER

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EDITOR'S NOTE

RISING POPULATIONS AND huge infrastructure projects have, in recent years, placed much strain on the region's power industry, as demand for adequate power supplies continues to increase. Add to the mix the need to diversify power resources and lower carbon emissions, and you would be forgiven for thinking that utilities throughout the region are at breaking point. As we demonstrate in our Annual Power Review (p10), however, efforts are well underway to solve the potential crisis and, in spite of lower oil prices, Middle East nations continue to invest in securing the future of the power sector. In this issue of *Technical Review Middle East* we also look at the latest developments in the HVAC market (p18 and p28) and 'green building' (p24), while our annual Electrical Equipment and Materials Buyers' Guide (p48), offers a comprehensive guide to the region's power industry manufacturers and suppliers.

At Technical Review Middle East we always welcome any readers' comments to trme@alaincharles.com

IN THIS ISSUE...

BUSINESS & MANAGEMENT

Market News 6
Investment boost to Saudi Arabian manufacturing industry; Dubai to build world's largest CSP plant; Clarke Energy wins Algerian on-site power deal

ANALYSIS

Diversifying the Mix 10
GCC governments look to diversify their energy mix to secure long-term power generation demands

HVACR

Cool Solutions 18
Industrial refrigeration event highlights how the HVACR sector is overcoming its latest set of challenges

CONSTRUCTION

Building Sustainably 24
How innovative designs and eco-friendly solutions are transforming the way we think about construction

PROCESS CONTROL

Clever Instrumentation 30
The latest range of products from Yokogawa aims to reduce costs while increasing operation efficiency

UPS

Safeguarding Supplies 34
Eaton Middle East's Frank Ackland talks about the latest UPS solutions and safeguarding power supplies

EVENTS

Saudi Power 36
Intersolar Middle East 38

INNOVATIONS

Industrial Solutions 40
Featuring SDMO, FG Wilson, HIMOINSA, Megger, Chicago Pneumatic, Baur, Jeremias and ICAR

ANNUAL BUYERS' GUIDE

Electrical Equipment and Materials 48
The region's leading guide to manufacturers and suppliers from across the power sector

ARABIC

News 4
Analysis 7



8



26



46

TECHNICAL REVIEW

1981 خدمة شركات النظم منذ 1981

SERVING THE REGION'S BUSINESS SINCE 1981

النشرة التقنية - الشرق الأوسط

MIDDLE EAST

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Briefly

MAN Diesel & Turbo to build Rabigh power plant

MAN DIESEL & Turbo has received an EPC contract to build a power plant for the Arabian Cement Company (ACC) in Saudi Arabia.

The 40MW plant will be equipped with two type 18V48/60 TS engines and will provide power to a cement factory in Rabigh, around 120 km north of Jeddah, on the Red Sea coast. The plant will be operated by heavy fuel oil and diesel oil. The MAN 48/60 TS engine offers two-stage turbocharging, delivering extra power, greater power density and increased turbocharging efficiency when compared to an engine with a single turbocharger.

Climatic conditions will also have to be overcome during delivery of the project according to MAN Diesel & Turbo senior project manager Ralf Göppel, who said, "Ambient temperatures up to 50°C, ambient air full of dust and sand, and occasional heavy rainfall are the kinds of conditions we have to deal with here."

Construction of the agreed first phase of the power plant has been scheduled for 2016/17. The plant's capacity will be increased to a total of 120MW through two additional phases of construction which will see a further four engines installed.

Clarke Energy wins Algerian engines deal

UK-BASED CLARKE Energy, GE's authorised distributor of Jenbacher gas engines in Algeria, has been selected by Algerian industrial conglomerate Cevital Group to supply a 39.6MW on-site power plants for the group's Brandt household electronic appliances factory in Setif and its Laminor factory in Oran.

The natural gas-fuelled stations will utilise nine of GE's 4.4MW, J624 Jenbacher gas engines to support expansion at the two factories.

The order is Clarke Energy's largest to date in North Africa, with the Jenbacher gas engines scheduled to be commissioned in summer 2016.

Ali Hjaiej, business development director for Clarke Energy, said, "With Algeria's continued industrial expansion, the deployment of high-efficiency distributed generation capacity will play a key role in meeting the country's increased energy demands."

SAIIC and GE deal set to boost manufacturing sector in Saudi Arabia

SAUDI ARABIAN INDUSTRIAL Investments Company (SAIIC) has signed a Memorandum of Understanding (MoU) with GE that will see both entities co-invest in strategic sectors, which will aim to develop and localise industrial value chains in Saudi Arabia.

Joint investments totalling US\$1bn will be rolled out by 2017 that will drive projects in the water, energy, aviation and digital sectors, with further potential investments totalling US\$2bn set to follow.

The investments will attempt to aid in the transformation of the Saudi Arabian economy through industrial diversification, value chain localisation and strengthening of the private sector. Investments will also be made in SMEs as the MoU attempts to create more job opportunities for Saudi Arabian nationals.

H.E. Eng. Abdullatif Al-Othman, chairman of the board at SAIIC, remarked, "This agreement with GE to form joint ventures and co-invest in strategic, high-growth industrial and digital sectors, is at the core of SAIIC's mission and supports the Saudi Vision 2030 to strengthen the Kingdom's economic diversification."

"SAIIC's mandate is to invest in and establish strategic industrial value chains in Saudi Arabia that promote the development of local manufacturing capabilities, quality jobs and attract new technologies and investments."

Jeffrey Immelt, chairman and CEO of GE, said, "We will work together to build the manufacturing capabilities of GE in Saudi Arabia and develop



H.E. Eng. Abdullatif Al-Othman, SAIIC chairman of the board (back left), said that the agreement with GE was at the core of SAIIC's mission and would support the Saudi Vision 2030 initiative.

more 'Made in Saudi' high-tech technology, creating a robust local supply chain.

"The agreement will also lead to strengthening the culture of digital innovation in the Kingdom," he added. "The joint investment and collaboration will be a game changer for the Kingdom's industrial and digital sectors."

SAIIC, a joint venture of Saudi Arabian Public Investment Fund (PIF), Saudi Aramco and Saudi Arabia Basic Industries Corporation (SABIC), has a mandate to invest in and develop globally competitive industrial sectors within the Kingdom, in order to help drive inward investments in non-hydrocarbon industries.

Dubai power authority launches world's largest CSP project

DUBAI ELECTRICITY AND Water Authority (DEWA) has announced that it is building the world's largest concentrated solar power project (CSP), which will generate 200MW next year and will reach 1,000MW by 2030.

Three months after Morocco launched a 160MW CSP plant, said to currently be the largest facility of its kind, DEWA said that the Dubai project, which marks phase two of Mohammed bin Rashid Al Maktoum Solar Park, will be operational in April 2017. The 13MW phase one has already been operational since 2013. The park is the largest single-site solar park in the world that uses the independent power producer (IPP) model.

The CSP project is expected to reduce approximately 6.5mn tonnes of carbon



DEWA CEO Saeed Mohammed Al Tayer.

emissions annually and will provide seven per cent of Dubai's total output from clean energy sources by 2020, 25 per cent by 2030 and 75 per cent by 2050.

DEWA CEO Saeed Mohammed Al Tayer said, "The advantage with CSP is that thermal heat can be stored, which makes it possible to produce electricity in the evening."

"The plant will have thousands of heliostats located around a tower to receive radiation from the sun. The heat-transfer fluid will then be used to power the steam turbine to generate electricity."

"DEWA is working to diversify Dubai's energy mix to include 61 per cent from natural gas, 25 per cent from solar energy, and seven per cent from both clean coal and nuclear energy respectively by 2030," he added.

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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

ENEC announces formation of Nawah Energy Company

THE EMIRATES NUCLEAR Energy Corporation (ENEC) has announced the formation of its operating subsidiary, Nawah Energy Company, which has been mandated to operate and maintain Units 1 to 4 at Barakah Nuclear Power Plant in Abu Dhabi.

"This is a significant milestone for the UAE peaceful nuclear energy programme," said HE Khaldoon Khalifa Al Mubarak, chairman of the board of directors of ENEC.

www.technicalreview.me/power-a-water



Nawah Energy Company will oversee operations at all four units of Barakah Nuclear Power Plant.

Limak wins US\$4.4bn airport contract

KUWAIT HAS SIGNED a US\$4.4bn contract with Turkish firm Limak Construction for a new terminal at Kuwait International Airport that will more than triple passenger capacity.

Announced by Kuwait's public works minister Ali al-Omair, the new terminal, due to be completed in six years, will raise capacity at Kuwait's only airport to 25mn passengers annually from around seven million now.

It will accommodate all aircraft types at 51 gates, an addition of 30 new gates, and will be able to serve 21 Airbus 380 superjumbos simultaneously, al-Omair said.

www.technicalreview.me/logistics

New Dubai tower to be taller than the Burj Khalifa

EMAAR PROPERTIES HAS revealed that a new tower to be built at Dubai Creek Harbour will be 100 metres taller than the Burj Khalifa.

The new tower will reach a height of 928 metres, usurping the title of the tallest building in the world from the Burj Khalifa, which stands at 828 metres tall.

Emaar Properties chairman Mohamed Alabbar said that work on the project would begin in July 2016, with the US\$1bn tower designed by the Spanish-Swiss architect Santiago Calatrava.

www.technicalreview.me/construction



Upon completion, the new tower will take the title of world's tallest building from the Burj Khalifa. (Photo: Funny Studio)

'World's first' 3D printed office unveiled in Dubai

A 3D PRINTER was used to print a 250 sqm building in Dubai, which took 17 days to print and two days to install on site.

The arc-shaped office cost approximately US\$140,000 to build and was constructed using a mixture of cement and a set of building materials designed and made in the UAE and the USA.

"This is the first 3D-printed [office] building in the world," claimed UAE minister of cabinet affairs Mohamed Al Gergawi, who suggested that studies have estimated the building technique could cut building time by 50-70 per cent and labour costs by 50-80 per cent.

www.technicalreview.me/it

Haulotte scissor lifts help to facilitate covering of holy Kaaba

HAULOTTE ELECTRIC SCISSOR lifts facilitated the annual covering ceremony of the holy Kaaba in Mecca, Saudi Arabia.

The annual ceremony where the holy Kaaba is covered with new kiswa (cover), which occurs every year on the tenth Dhul Hijjah coinciding with Hajj, the annual Islamic pilgrimage to the Holy City, is an important ritual in the holy calendar.

This year the ritual was facilitated by Haulotte Compact 14 model electrical scissor lifts.

www.technicalreview.me/construction



The scissor lift's non-marking tires that do not damage floors was one of the reasons Haulotte said it was chosen for the task. (Photo: Haulotte Group)


Turkish firm to build natural gas power plants in Iran

TURKISH ENERGY COMPANY Unit International has reached a US\$4.2bn deal with Iran's energy ministry to build seven natural gas power plants in the country.

Construction of the seven plants, which will have a combined installed capacity of 6,020MW, has been planned to begin in Q1 2017 and will be built in seven separate regions of Iran.

Unal Aysal, head of Unit International, said that the company had signed a 20-year contract with the Iran Energy Ministry.

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As solar energy prices continue to fall, GCC countries look set to capitalise on their solar resources for power generation. (Photo: gui yong nian/Fotolia)

Energy mix to enhance power generation in GCC

As the region diversifies its energy production and moves towards the further utilisation of solar power, there is an increasing need for GCC governments to be robust in their spending over the next couple of years – be it in conventional or renewable power – in order to become self-sufficient.

While nuclear power and renewable energy are set to become part of the GCC's energy mix, natural gas will continue to play an important role over the next 20 years.

THE TOTAL SPEND for new power projects in the GCC in the next five years is estimated to reach an additional US\$150bn, on top of the current value of US\$247bn, with almost US\$100bn for power generation projects, US\$20bn for transmission and the remaining for distribution, reveals Powertech Switchgear's executive director Yousuf Sait.

According to investment bank Apicorp, the region alone will add 76.8GW of capacity for power generation between 2016 and 2020. The International Renewable Energy Agency (IRENA) reports that electricity consumption in the region is expected to reach 856 terawatt-hours by 2020, requiring 100GW of additional power over the next 10 years to meet the increasing electricity demand.

The total value of GCC power projects is currently estimated at US\$247bn, Apicorp

reveals. Saudi Arabia has, until now, registered the highest project value worth US\$118bn and has plans to invest US\$133bn in the next 10 years to cope with the Kingdom's rising power demands. Sait added that Saudi Arabia will almost double its capacity from 50GW to 90GW by 2020. The UAE and Kuwait have made investments worth US\$54.1bn and US\$39bn respectively until now, according to Apicorp.

Iraq and Iran will also aim to catch up and are showing determination to push their ambitious oil and gas plans forward.

Analysts say that strong economic and demographic growth, driven in part by the GCC economies' highly energy-intensive industrialisation programmes, is leading to a dramatic surge in power consumption in the region.

Noaman Amjad, lead division manager, power grids – ME and Africa at ABB, says

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that electricity demand in the GCC countries is growing at a rapid rate, where reliable power infrastructure is required to secure the supply of electricity.

Sunny days ahead for renewables

Renewable energy – primarily solar and wind – seems to have become an unstoppable power in the GCC. The region plans to pump up to US\$100bn into renewable energy projects over the next two decades, Apicorp suggests. Solar adoption in the region is projected to grow with as much as 4,000MW of new projects lined up for tendering in 2016, according to Middle East Solar Industry Association (MESIA). “Claims that the growth of solar energy will slow down in 2016 because of low oil prices appear to be unfounded,” says Raed Bkayrat, director of research at MESIA.

“On the contrary, as countries in the region start to adjust their hydrocarbon subsidies, correct their electricity pricing strategies and seek to reduce domestic consumption of oil and gas, we expect solar to stand out as the single most attractive option for power generation,” he adds.

The UAE

According to IRENA, renewable energy has become economically attractive in the UAE, the leader of solar power projects in the GCC. “Increasing renewable energy to 10 per cent of the country’s total energy mix, and 25 per cent of total power generation, could generate annual savings of US\$1.9bn by 2030 by reducing fossil-fuel consumption,” IRENA reveals.

Dubai Electricity and Water Authority (DEWA) is building the world’s largest concentrated solar power project (CSP), which will generate 200MW next year and will reach 1,000MW by 2030. Three months after Morocco launched its 160MW CSP plant, currently the largest in the world, DEWA said that the project, which is the phase two of Mohammed bin Rashid Al Maktoum Solar Park, will be operational in April 2017. The 13MW Phase 1 has already been operational since 2013. It will provide for seven per cent of Dubai’s total output from clean energy sources by 2020, 25 per cent by 2030 and 75 per cent by 2050.

Shams 1 CSP plant in Abu Dhabi is another epitome of clean energy. Since its inception in 2013, the 100MW generates enough electricity to power 20,000 homes and saves around 175,000 metric tonnes of carbon emissions per year.

The UAE’s National Bank of Abu Dhabi (NBAD) has also committed to lend



According to Apicorp, nuclear projects require substantial upfront capital but exhibit lower operational and fuel costs over their lifetime – which is typically 50 years. (Photo: Dmitry Pistrov/Fotolia)

US\$10bn over the next 10 years on sustainable projects in the country as banks in the region open up financing for clean energy initiatives, a significant part of which will be channeled into solar projects.

Speaking at MENASol 2016 in Dubai, Yousuf Al Ali, associate director – business development at Masdar, told *Technical Review Middle East*, “Solar is a natural resource in the GCC and it is only normal to tap this resource. As the technology is advancing, more energy can be extracted from PV panels. The UAE’s regulatory and financial system is becoming more supportive of renewable energy projects.”

However, Keith Webb, HIMOINSA’s general manager – Middle East, has a different view on the adoption of solar strategy in the region. “The solar sector hasn’t really taken off as expected in the GCC and, contrary to popular belief, countries with hot climates do not necessarily equate to the more traditional solar PV. A CSP plant, however, is operational in Abu Dhabi and is the largest outside of the USA at a cost of US\$600mn for a 100MW plant. This is quite pricey.”

Saudi Arabia

Saudi Arabia announced its plan to develop 3.5GW of renewable energy by 2020, as part of its Vision 2030. It has set an overall plan for 9.5GW of renewables schemes to assist with meeting future energy demand, with no timelines set for achieving this target.

Ibrahim Babelli, deputy minister at the Ministry of Economy and Planning, said that the Kingdom can meet its growing power needs only through the deployment of solar projects. Speaking at MENASol 2016, he added that the rising need for baseload power to fuel industrial growth should be met by the targeted deployment of PV power and CSP.

Saudi Arabia-based ACWA Power chief technology officer Thomas Altmann asserts

there is stimulation in private sectors and the government is more than willing to support renewables. “There is a consensus between the utilities and the providers to switch to renewable energy. Even though fossils fuels may be able to cater to the power needs now, with the population growth in 10 years, it will be impossible to sustain on conventional energy alone.”

Kuwait

Kuwait plans to reach its target of generating 15 per cent of its energy from solar power by 2030. The government has earmarked US\$9.9bn for infrastructure projects, including power, and progress is being made on greenfield thermal and renewable projects. Kuwaiti authorities are eyeing 9,000MW in additional new capacity by 2020 to meet power demand. The Ministry of Electricity and Water is seeking to generate a total of 2,000MW of renewable energy by 2030 by launching three projects. The first project will be a 70MW energy park scheduled to be completed by 2016. Construction is also underway at the US\$399mn Al-Shagaya renewable energy park. Managed by Kuwait Institute for Scientific Research (KISR), the 100 sq km complex, with a compound capacity of 200GW, is expected to be completed by 2017.

Qatar

The FIFA World Cup 2022 host has set a benchmark with its implementation of programmes in deploying large solar power plants. The country’s first solar power station is set to be operational later this year.

Two national companies – Qatar Electricity and Water Company (QEWC) and Qatar Petroleum (QP) – are planning to join forces to set up a US\$500mn joint venture company with the purpose of investing in renewable energy projects within the country. Qatar has also announced plans to



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set up 1,800MW solar power capacity by 2020, which is expected to contribute up to 16 per cent of total power generation. Qatar also plans to set up 10GW of solar power capacity by 2030.

Meanwhile, while Qatar has exceptional solar energy potential, price competitiveness and lack of a renewable energy policy framework pose challenges to the growth of the sector in the country.

Jordan

Jordan will also see renewable sources contribute 20 per cent of its energy mix by 2020, and has attracted solar and wind energy projects worth US\$1.6bn at a total capacity of 1,000MW, of which 500MW will be connected to the grid by the end of 2016, according to Prime Minister Abdullah Ensour. The mix currently ranges from three to four per cent, according to official figures.

Increased support for nuclear power

Nuclear power would 'free up' more oil and gas for export in the GCC region, Apicorp announced in a recent report.

In the face of rising electricity demand, the research agency says nuclear power should enable GCC states to 'diversify their sources of energy and reduce their carbon footprint'. Apicorp reveals, "But the outlook is mixed. While six countries have nuclear projects under way, planned or proposed, raising power generation capacity by 39 GW, three Gulf countries have cancelled proposed nuclear projects in the wake of the Fukushima disaster.

"Fiscal constraints are one of the major barriers to progress, and the expectation is that nuclear power will account for only three per cent of the region's electricity generating capacity by 2040."

Factors that make the nuclear option attractive include: Nuclear plants emit considerably fewer greenhouse gases compared with fossil fuel-fired capacity; cost competitiveness has improved in recent decades, allowing nuclear technology to become a serious component of energy diversification strategies; and nuclear also attracts human capital in the new energy sector. Nuclear projects require substantial upfront capital but exhibit lower operational and fuel costs over their lifetime – typically 50 years.

The UAE

The UAE's first nuclear plant in Barakah, about 53km from Ruwais in the Western Region, is due to come online in 2017 and by 2020. The nuclear power plant will supply around a quarter of the country's electricity needs. The UAE started construction on four units of 1,400MW each to generate 5,600MW in April 2010.

Saudi Arabia

The OPEC heavyweight announced a three-year feasibility study in February 2016 to construct nuclear reactors at a cost of US\$7.5bn in partnership with South Korea. This was initiated after the country's nuclear plant was back in focus after the COP21 agreement in Paris to produce clean energy.

The Kingdom plans to construct 16 nuclear power reactors over the next 20 years at a cost of more than US\$80bn, with the first reactor online in 2022. In June 2015, Russia and Saudi Arabia had signed an agreement to cooperate on nuclear energy development, where Russia will build 16 nuclear reactors in the country.

Jordan

Jordan has made strides in its efforts to implement a programme to build two nuclear reactors with 1,000MW capacity each. "The first reactor is slated to be ready by 2023 and the second by 2025. We have legal and technical agreements necessary to go ahead with the project," Prime Minister Abdullah Ensour said. According to Ensour, Jordan will produce 48 per cent of its electricity using nuclear power by 2025 once the project is implemented.

Meanwhile, Kuwait, Oman and Qatar have cancelled their proposed nuclear plans in the wake of dwindling funds and the Fukushima disaster in Japan.

Fossil fuels here to stay, for now

Traditional sources of electricity, fossil fuels like coal and natural gas, are still a large part of the energy mix in the Middle East region and account for more than 80 per cent of electricity generation. Even with lower oil prices, but renewables still being competent, the region is not letting go of its traditional sources of power generation in coal and natural gas.

Powertech Switchgear's Sait notes that energy prices are getting higher. The utilities can no longer afford to offer high subsidies. The demand for supply is ever rising. Also, sources of coal and domestic gas are dwindling. Solar power, with all its initial challenges, is certainly becoming a multibillion dollar opportunity, Sait says.

However, HIMOINSA's Webb takes the opposite stand. "Until energy storage solutions are truly economical, the fossil fuel sector will always be needed because it operates 24/7," he states.

The UAE

This year, DEWA announced a US\$1.8bn project to meet the emirate's growing power demands. Over the next three years, 64 more power stations will be built and connected to Dubai's electrical grid. Each of the 132/11kV substations will have a capacity of 150 megavolt amperes (MVA).

DEWA currently has 48 132kV substations under construction, in addition to ongoing work to upgrade existing substations. DEWA

Conventional Energy Projects

Project Name	Country	Start date	End date	Estimated value (US\$m)
Nuclear Power Plant in Abu Dhabi	UAE	Q2 2013	Q4 2020	20,000
Al Zour North IWPP	Kuwait	Q2 2013	Q4 2022	4,700
Facility D IWPP	Qatar	Q3 2015	Q3 2018	3,150
Yanbu Power and Desalination Plant – Phase 3	Saudi Arabia	Q4 2012	Q2 2017	3,000
Al Zour North IWPP – Phase 1	Kuwait	Q2 2014	Q2 2016	2,700

Source: Apicorp

Renewable Energy Projects

Project Name	Country	Start date	End date	Estimated value (US\$m)
KA-CARE – Alternative Energy Projects – Nuclear Power Plant	Saudi Arabia	Yet to be announced	Yet to be announced	7,000
KA-CARE – Alternative Energy Projects – PV+CSP	Saudi Arabia	Yet to be announced	Yet to be announced	6,000
Mohammed bin Rashid Al Maktoum Solar Park – Phase 3	UAE	Q3 2016	Q4 2018	1,200
Al Shagaya Renewable Energy Complex – CSP plant – Phase 3	Kuwait	Q4 2020	Q4 2024	1,000
Al Abdaliya Integrated Solar Combined Cycle (ISCC) plant	Kuwait	Q4 2016	Q1 2019	750

Source: Apicorp

is also looking to expand the existing K Station power plant at Jebel Ali to increase capacity by about 500MW.

With regards to natural gas for electricity production, it is seen that transport and infrastructure costs are massive. Even then, natural gas is still the leading form of producing electricity as it is less carbon-intensive than other fossil fuel alternatives.

Saudi Arabia

Saudi Arabia, in June 2016, announced that it is planning to scale back solar projects and double its natural gas production. Energy minister Khaled Al-Falih said, "Gas makes up 50 per cent of our energy mix now and we aspire to raise this to 70 per cent from all sources, be it from local sources or imported at a competitive price."

The Kingdom is already eyeing Iranian gas field Farzan-B and has drilled wells on the area falling in its territory, which it has named Hasbah field, to begin production. The Saudi Arabian side of the field contains around three trillion cubic feet of gas. Production of dry gas or fuel for use in power plants will rise to 17.8bn cubic feet

per day from 12bn cubic feet, according to the plan.

Kuwait

Kuwait's first gas-fired combined cycle power and water desalination plant — Azzour North One — is due for completion by Q4 2016. Once completed, the plant will boast a capacity of more than 1,500MW of electricity, which represents 10 per cent of the country's power capacity.

Eaton general manager Frank Ackland says that, even though there are increasing solar investments in the GCC. "We are seeing continual investment across the region in conventional power projects, with consultants currently bidding to work on Kuwait's Ministry of Electricity & Water (MEW) plan for the country's electrical networks up until 2035."

Qatar

The Apicorp report outlines, "Our estimates suggest that Qatar will need to invest around US\$9bn to add 5.2GW to meet rising demand in the medium term — US\$6bn in generation and US\$3bn in

transmission and distribution (T&D)." State-owned Kahramaa has recently launched a mega project to monitor its electricity distribution network in a bid to prevent outages. The monitoring for asset management of 11kV Electricity Distribution Network, which serves households, would have the capability to sense the conditions that could cause large-scale power supply disruptions. The scale of the above project is being considered as first-of-its-kind in the GCC region as a whole covering the entire electricity distribution network, according to Kahramaa.

Jordan

The construction of Jordan's first oil shale-fuelled power plant was set to mid-2016. The Attarat Power Company (APCO), however, is in the process of securing the remaining finance needed for starting construction on the US\$2.2bn facility, Jordan's minister of energy and mineral resources Ibrahim Saif reveals, adding, "This project is part of the government's efforts to diversify its energy resources through utilising the country's reserves of oil shale."

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The rise of the utilities market

Saudi Arabia is the biggest power market of all the GCC countries, and analysts forecast increased investment in utilities over the next 10 years and beyond, to meet rising demand from a growing population.

“The integration of diversified generation capacity, primarily gas capacity over our 10-year forecast period – will reduce reliance on oil-fired power generation and enhance the Kingdom’s ability to absorb economic shocks to its oil-dependent economy,” says a recent BMI report.

ABB’s Amjad says that electricity demand in the GCC countries is growing at a rapid rate, where reliable power infrastructure is required to secure the supply of electricity. However, the power balance is tipping irreversibly towards renewables, driven by policy and disruptive technology cost reduction. Although conventional generation will continue, variable renewables such as wind and solar will see rampant growth.

Eaton’s Ackland reveals that there are two major factors impacting utilities in the GCC at present — the increasing demand for energy and use of desalination to provide clean water, a process that is extremely energy intensive. “This, and the need to provide much more efficient power, will see ongoing investment in energy efficiency, smart grid and automation technologies. The move towards the unbundling of power generation, transmission and distribution (T&D) segment is also allowing for a more innovative and competitive market place.”

Activity in the utilities sector is also seeing an intensive drive in the solar industry. Ackland reiterates that apart from Saudi Arabia and the UAE, Qatar is likely to be a strong market for power in the coming years, with all three countries having continuing plans for investment in infrastructure and construction.

According to Powertech Switchgear’s Sait, “With low oil prices, the growth in GCC for new infrastructure is slow, but in my opinion the demand for energy will continue to rise and investment in all GCC countries is going to be high with the rise in population and growth of industry, transport and infrastructure.”

Meanwhile, Megger’s general manager Nick Parton says that these are testing times. “The utilities market in the GCC right now is not easy,” he notes. “We are coping with much lower government revenues because of very low oil prices for the last two years. We are increasingly seeing projects delayed and a reduction in the number and value of new projects in the region.”

Demand for fresh water from growing population centres throughout the region has resulted in the commissioning of energy-intensive desalination plants. (Photo: Shao Weiwei)



Is solar the answer? Parton notes, “We see a lot of growth opportunity on the renewable energy front, and some significant new projects being agreed, although there is still some work to do getting the legal frameworks put in place. Because of the low oil price, the utilities or governments are looking to maximise the revenues they are getting from the barrels they produce, rather than giving it to the local energy companies at very low prices to produce cheap local electricity. So we will surely see an increased drive towards renewable energy.” He also adds that Iran is a market to look out for.

Webb reiterates that in terms of power utilities’ demand and growth, one does not have to look far but to Dubai, where there has been gradual growth in the construction market ahead of Expo 2020. “Saudi Arabia is, for sure, also one of the largest markets in the entire region and most of it untapped by outside companies. Being a vast country, it needs a lot of distribution,” he adds.

Upcoming trends in the power sector

Ackland believes that the most prominent trends for the region will ultimately come from the feed mix, increased automation and energy efficiency goals. An increasingly large portion of the grid in the Middle East is now reaching the 40-50-year-old mark – there is a need for investment in retrofitting and upgrading these facilities as well as the construction of new ones, as can be seen from the recent projects being announced in the sector. He adds that energy storage too is becoming a much more carefully considered solution for the power sector – batteries in particular. This can also include DC switching and protection, bi-directional storage inverters, AC switching and protection, customised packaging, metering and monitoring.

Amjad notes that there is also a heightened sense of meeting the increasing

demand for power in a sustainable way. In several countries, legislation and regulatory drivers following the COP21 Paris Agreement on low carbon emissions will continue to drive the growth of renewables in the energy mix. “With the growing influence of renewables, the world needs power grids that can integrate renewables and allow smarter energy choices. We see the need for interconnections also growing in the region.”

According to Sait, all of the utilities in the GCC are presently trying to implement smart grids to achieve a high level of efficiency and reduce losses. Going forward, the countries will need to introduce feed-in tariffs (FITs) and other incentive schemes to accelerate the implementation of renewable energy.

Securing the future

Solar power can drive the future of GCC countries, as the region’s 60 per cent surface area has excellent suitability for solar-photovoltaic deployment. But the lack of a clear policy framework is one of the main reasons for limited solar activity in the GCC. Therefore, re-energising the renewable energy programmes will give a boost to the solar power sector in the GCC.

Crude oil is seen as an inefficient energy source for power generation, and most economies have moved away from oil and focused on natural gas, hydro, nuclear or renewables to generate electricity. However, countries like Saudi Arabia still depend on crude oil for power, a trend that is to continue in the absence of alternatives.

The key is for the GCC to monetise its natural gas reserves to displace crude oil for domestic power consumption. While nuclear power and renewable energy are set to become a part of the GCC’s energy mix, fossil fuels will continue to play an important role, at least over the next 20 years. ■

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GCC countries rely largely on imports to meet most of their food requirement. (Photo: dred210/Fotolia)

Industrial refrigeration driven by food sustainability

There is an increasing need to innovate eco-friendly refrigerants to save the Middle East from rising energy costs and soaring emissions.

“The Kingdom is big into energy saving now and 60 per cent of state investment is going into HVAC.”

Ziad Al-Bawaliz, director, sales and marketing – Middle East and Africa at Danfoss

THE GLOBAL INDUSTRIAL refrigeration systems market is expected to grow moderately at a compound annual growth rate (CAGR) close to seven per cent by 2021, according to research firm Technavio, and the demand for industrial refrigeration equipment market worldwide is set to generate revenues worth US\$36.25bn within five years, the report added.

Although industrial refrigeration is very similar to commercial and residential refrigeration systems, certain parameters like size, refrigerant, system types and load temperature qualifies it for industrial purposes. Typical refrigerants, namely ammonia, HFC (R404A) and carbon dioxide (CO₂), are used in cold storages, the food

and beverage (F&B) industry, dairy plants, meat and seafood processing, pharmaceutical and chemical centres.

Saudi Arabia is one of the world’s largest markets in the volume of refrigeration products imports. However, many imports are not subject to quality checks and some of those manufactured locally are being sold directly into the market without satisfying any standard.

To give an insight on sustainable industrial refrigeration solutions and how to select the right product, Danfoss and *Technical Review Middle East* conducted two one-day seminar titled ‘Engineering Tomorrow’s Industrial Refrigeration Solutions in Saudi Arabia’ at Jeddah and Riyadh on 11 and 13 April 2016, respectively.

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According to Ziad Al-Bawaliz, director, sales and marketing – Middle East and Africa at Danfoss, who gave a presentation on drive applications in refrigeration, “The primary reason as to why we did the event in Saudi Arabia was to showcase what energy efficient solutions Danfoss can provide. The Kingdom is big into energy saving now and 60 per cent of state investment is going into heating, ventilation, air conditioning and refrigeration (HVACR). Therefore, if somebody can provide the Kingdom with solutions, that is going to be Danfoss.

“The trend today is sustainability. Saudi Arabia recently launched its Vision 2030 where one of the key points of the agenda is energy conservation. This was our main interest to communicate with the market via the event. In this way, technically we are not selling to end-users. It is more about educating them.”

He added that efficient drives can help save energy and more power saved means better business. Putting it simply, Al-Bawaliz revealed that 50 per cent of the world’s consumption of energy is electrical energy, with 40 per cent of this energy used by electrical motors, and it is the AC/frequency drive that controls the motors. “Danfoss drive solutions can help save 15-40 per cent of the energy consumption in motors. With this event, we want to bring to Saudi Arabia that we have the ideal solution to save costs and energy that companies are looking for.”

Talking about refrigeration for the food industry at the event, Ghaleb Abusaa, engineer-arbitrator, focussed on sustainable food production. During his session, he spoke about how, due to the scarcity of arable land and absolutely dry climate, agricultural food production in the GCC region has been minimal. According to the United Nation’s Food and Agriculture Organization (FAO), of the total world area, the land suitable for cultivation is just 1.7 per



Ziad Al-Bawaliz, director, sales and marketing – Middle East and Africa at Danfoss, speaking about industrial refrigeration in Riyadh. (Photo: Danfoss)

cent in Saudi Arabia and three per cent in the UAE, compared to 18.4 per cent in the USA, 23.7 per cent in the UK, 16.3 per cent in China and 51.6 per cent in India.

Abusaa also mentioned that GCC countries largely rely on imports to meet most of their food requirement. In 2007, the region imported as much as 37.2mn metric tonnes of food, more than three times the amount of food produced locally. Therefore, Abusaa noted that it is important that for food safety and extended shelf life of food items, refrigeration is a must from ‘farm to fork’, which refers to the stages of the production of food — harvesting, storage, processing, packaging, sales and consumption.

Ziad added that in the Middle East, for refrigeration, Saudi Arabia has always been attractive because it has the highest potential as a market compared to other countries in the region. “The population is

also one of the highest while Mecca and Madina attract 20mn visitors per year. This makes the market ever more lucrative. There is a huge demand for hotels and food services, and it is an important economy for everybody who wants to do business.”

Meanwhile, there is also an urgent need to look into eco-friendly refrigerants. Ammonia (NH₃) is a natural choice for a refrigerant as it is environmentally friendly, highly efficient, cost-effective and widely available. CO₂ is now becoming attractive as a refrigerant for its high operating pressures that is suitable for efficient operation. During standstill, the ambient temperature can reach and exceed the critical temperature and the pressure can exceed the critical pressure. Hence, systems are typically designed to withstand pressures up to 90 bar, or sometimes even equipped with a small standstill condensing unit to keep pressures low. At the same time, CO₂



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has a low compression pressure ratio (20 to 50 per cent less than HFCs and ammonia), which improves volumetric efficiency.

For plant owners looking at greener and more efficient secondary refrigerants, a CO₂/NH₃ cascade system is a viable option. In addition to providing 0 ozone depletion potential (ODP) and 1 global warming potential (GWP), CO₂/NH₃ cascade systems offer several benefits for food processing and low temperature distribution facilities. While CO₂ or NH₃ have been proven to be better for the environment, synthetic refrigerants continue to be used in many industrial refrigeration systems because companies need to invest in new equipment to switch to natural refrigerants. This is where retrofitting comes into play, which means that the components of a specific piece of refrigeration equipment has to be engineered specifically around the properties of the refrigerant used.

“We take global changes very seriously and so we continuously develop those products that are in sync with the new refrigerants, keeping in mind to have the best possible results with minimum power consumption,” Al-Bawaliz noted.

From a Danfoss point of view, the five drivers for industrial refrigeration are safety, reliability, energy efficiency, global warming and cost. Other factors include:

- Increased precision process control demands – accurate temperature, humidity and air quality that enhance product quality and improve shelf life of perishable goods;
- Stricter environmental legislation for organisations to focus on greener solutions that helps bring down the cost of environmental compliance;
- Food safety regulations;
- The need for energy efficient, reliable and low maintenance solutions that drive down total cost of ownership (TCO);
- Growing international food trade;
- Demand for higher operational safety, reliability and minimal service efforts.

Technavio has also defined a few emerging trends that have the potential to significantly affect the market and contribute to industrial refrigeration growth. The growth has been mainly attributed to the increasing demand from end-users such as the food processing industry and the oil and gas industry. Consolidation of market vendors as well as increased focus on total cost of ownership by the operators, will also positively impact the growth of the market, the research body noted.



The growth in industrial refrigeration is mainly due to the increasing demand from end-users such as the food processing industry and the oil and gas industry. (Photo: Panitanjohn/Fotolia)

Hugh Brenchley, senior researcher, World Intelligence Market (WMI) at Building Services Research and Information Association (BSRIA), said, “Key findings are that while the efficiency of a lot of household refrigerators currently on the market in Saudi Arabia compare favourably with the rest of the world, there is still room for improvement – especially for low-

cost products at the lower end of the efficiency scale.

“The picture for commercial refrigeration products is more complex due to the variety of configurations and bespoke products, some of which are manufactured in the Kingdom. Nevertheless, it is very likely that major efficiency gains can be achieved.” ■

Danfoss, in association with Alain Charles Managed Events, held two one-day seminars to touch base with its clients and educate stakeholders on the HVACR energy efficient solutions for the Saudi Arabian market.

With presentations on industrial refrigerants by Anatolii Mikhailov, product director – industrial refrigeration valves at Danfoss, Ziad Al-Bawaliz and Abusaa Ghaleb, the focus of the event was on how Danfoss solutions could help Saudi Arabia realise some of the goals of its Vision 2030 initiative and help the Kingdom save energy.

More than 100 delegates attended the events in Jeddah and Riyadh, consisting mainly of contractors, consultants and end-users. According to Al-Bawaliz, the feedback on the event was positive because it offered plenty of information on the extent of Danfoss’ HVACR ranges beyond heating and ventilation, which many were not aware of.

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Developers and city planners throughout the MENA region are becoming more aware of the need for a focus on intelligent urbanism. (Image: BillionPhotos.com)

GCC 'green building' surging on climate change accord

From innovative architectural designs to eco-friendly air condition systems, the shift towards intelligent urbanism is evident in the GCC region as it embraces 'green building'. Nnamdi Anyadike reports.

BLESSED WITH SEVERAL consecutive months of unbroken and scorching sunshine during most of the year, the countries of the Gulf region are uniquely placed to take advantage of solar energy and achieve some of the highest eco-building standards in the world. Yet, until recently, they have lagged behind other sunlit regions like Australia and the US state of California. Now – and led by initiatives such as the GCC's various Green Building Councils – the region is racing to catch up.

The task ahead, if the Gulf is to achieve the aim of reducing carbon emissions in accordance with last December's UN Climate Change targets, is enormous. World Green Building Council CEO, Terri Willis estimates that buildings alone comprise 30 per cent of global greenhouse gas emissions. The UAE's Green Building Council (Emirates GBC) is looking to achieve near 'zero-energy' buildings in the UAE by 2021.

In May, Emirates GBC chairman Saeed Al Abbar announced that the platform has now been set for concrete action to achieve this within the required timeframe. He will have been heartened by the conclusions of a report released by the Middle East Facility Management Association (MEFMA) at May's International Design Exhibition (INDEX) and Outdoor Design Build Expo, which claimed that GCC countries could save up to US\$3.5bn with energy efficient buildings. Facilities management is essential for the maintenance of green buildings as energy and facilities management together can account for 90 per cent of a building's costs. Santhosh Vallil, sales manager at Hunter Douglas Middle East, the Dutch architecture consultancy, said at the event the abundance of glass in the Middle East's modern architecture could save on energy costs, and deliver an aesthetically-pleasing design for buildings in the region.

Hunter Douglas launched what it describes as "the next generation" Flat Bar sliding shutter. It claims that its green characteristics can decrease energy consumption and keep houses cool. Because of its overlapping fins and sliding shutter of only five mm thickness – half the thickness of comparable shutter systems – in a nearly-invisible aluminium frame the minimalist shutter is said to reduce the amount of solar heat indoors by "up to 90 per cent". The shutter system was recently trialled in a housing complex in Brescia, Italy.

One of the biggest challenges in the Gulf, particularly if climate change proceeds as predicted, will be the provision of eco-friendly air conditioning. Recently, heating, ventilation and air conditioning (HVAC) product manufacturers have begun to embed more energy efficient and eco-friendly features. These are fast gaining traction in response to the increased regulations for energy efficient products locally and globally. Industry forecasts point to a substantial rise in the HVAC products and equipment market in the Middle East and Africa. The market as a whole is expected to generate more than US\$16.23bn value by 2022.

The report notes, "The governments, emerging green/smart building criterion and growing consumer concerns are pushing HVAC manufacturers, developers and system integrators to build and provide energy efficient, technologically advanced HVAC units."

LG Electronics, one of the major suppliers of air conditioning units to the Middle East region, is positioning itself to take advantage of this growth.

Kevin Cha, president – Middle East and Africa at LG Electronics, said, "The company recently made large investments for research and development, and constructed a new chiller manufacturing facility set to open in 2017." In the residential space, LG's latest Titan Split air conditioners have been tested to withstand extreme high temperature degrees of up to 60°C.

A number of the new projects, which are about to get underway in the UAE, are expected to feature new cooling technology such as that being marketed by LG Electronics. These include the green construction projects that were given the go-ahead by HH Sheikh Mohammed bin Rashid Al Maktoum, Vice-President and Prime Minister of the UAE and Ruler of Dubai, in April. These are namely:

- The Vertical Industrial City, a 280 hectare mixed-use site that will be designed by Italian architects;
- Gulf Safari, a 100 hectare golf complex with a training academy;
- A new 10,000 people capacity convention centre that will be home to two hotels, offices and the new Mohammed Bin Rashid Library;
- Dubai Steps, a cultural and sports project;
- And, The Hardware, Bicycles and 'Green Building' market that will include 100 shops and 53 bicycle showrooms.

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Leadership in Energy and Environmental Design (LEED) is the internationally recognised green building third party certification system. And LEED-certified projects in the Middle East now include:

- DEWA's Sustainable Building in Dubai, which is the world's largest government building to achieve the certification;
- The Middle East region's first single-family home to earn LEED Platinum in Saudi Arabia;
- And, Bee'ah, Sharjah's integrated environmental services company, which at the end of May held a contract awards ceremony at its new headquarters in Al Saj'ah. The design has achieved a Platinum LEED rating.

Meanwhile, Qatar and the rest of the Gulf are forging links with companies and countries from across the globe in order to deepen their eco-building knowledge base.

One partner country, which appears to be moving ahead of the pack, is Taiwan. The Far East country, whose Bureau of Energy (BOE) of the Ministry of Economic Affairs (MOEA) is promoting the success of its 'Million Solar Rooftop PVs' across the Gulf, exhibited at the recent Project Qatar event. It is also expected to be present at Qatar Green Building Council's (QGBC) 2nd Green Building annual conference, scheduled for 13-14 November 2016 at the Qatar National Convention Centre (QNCC). Taiwan's target is to expand domestic PV installation from 420MW in 2015 to 2,100MW by 2030.

Speaking in Qatar, George Hu, marketing director at Taiwan's Ministry of Economic Affairs Green Trade Project Office (GTPO) – a government-sponsored office that aims to bridge the gap between Taiwanese manufacturers and the international market – said that his country was keen to pass on its experience to Qatar. He said sustainable development was vital to transforming Qatar into a knowledge-based economy and enabling it to play a key role in building smart cities. The GTPO is offering Qatar a spectrum of solutions, mostly eco-friendly products in water management, 'green' construction materials, and also heat-proof products such as insulation coatings and insulation films. Throughout the Gulf and the wider Middle East and North Africa (MENA) region, developers and city planners are becoming more and more aware of the need for a focus on intelligent urbanism. Projects like Abu Dhabi's Al Bahar Towers are held up as international examples of eco-friendly design and sustainability, as are the UAE's Al Meydan City and ideas like Jordan's Hanna Salameh Design for Amman's Jordan Gate Towers.

In addition to eco-friendly air conditioning, another key solution to developing sustainable cities is the implementation and integration

A number of projects throughout the GCC, such as Masdar City in Abu Dhabi, have helped raise the profile of 'green building' techniques. (Photo: Masdar)



of 'smart technology', which can help residents monitor the safety and security of homes in their absence. This technology is also increasingly finding its way into offices and on the streets.

'Green' urban development, however, has not advanced across the region in lockstep. The GCC's largest economy Saudi Arabia, while being in overall terms the region's largest by GDP, still lags behind the UAE in the per capita delivery of green buildings. But now the Kingdom could be on the cusp of making huge strides. The *World Green Building Trends Study* from Dodge Data & Analytics predicts a fourfold growth in the share of green buildings in overall new construction by 2018 in Saudi Arabia, from the current eight per cent to 32 per cent.

MEFMA concurs, "There is a huge amount of new infrastructure due to be completed [in Saudi Arabia] in the next three to five years, much of it highly sophisticated and containing green buildings."

These include the King Abdullah Financial District with more than three million sqm of space; new offices and high-quality infrastructure in Jizan Industrial City; the King Abdullah Economic City, which will contain a sea port and industrial districts; and Kingdom City, covering more than five million sqm in Jeddah and which will be home to Kingdom Tower.

"Many Saudis have experienced Dubai and have seen the level of customer satisfaction...they want to have the same in Saudi Arabia," it continues.

The future for green buildings in the GCC over the coming years is indeed bright. However, as many observers point out, in a drier and harsher world there will be no alternative other than to strike a balance between urban growth and increasingly limited resources. It is already abundantly clear that cities across the MENA region are now testing the current limits of urban sustainability. ■

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Global HVAC equipment demand set to hit US\$122bn by 2020

THE GLOBAL DEMAND for HVAC equipment has been forecast to increase at an annual rate of 4.1 per cent through 2020 to US\$122bn, according to the latest HVAC industry update from US-based industry research firm The Freedonia Group.

In its *World HVAC Equipment* study, The Freedonia Group said the fastest increases in HVAC equipment demand would be registered in Saudi Arabia, India and Indonesia between 2015 and 2020, with analyst Kyle Peters remarking, "Investment in HVAC installations will continue to be strong in these countries as they seek to expand their base of HVAC equipment, and there will be ample new sales opportunities in both new building construction and in retrofit applications."

The report added that growth within the global market would slow from the pace experienced between 2010-2015, due primarily to an anticipated moderation in building construction spending in China. The world's largest market for HVAC equipment, however, would continue to post the largest gains of any nation in value terms, accounting for 31 per cent of the total increase in world HVAC equipment sales between 2015-2020.

Demand for HVAC equipment in Western Europe looks set to recover during the 2015-2020 period, the report revealed, as a number of countries in the region that have experienced economic



Saudi Arabia will be among the fastest growing markets for HVAC equipment between 2015-2020, according to The Freedonia Group. (Photo: Gena Fotografo)

weakness, which has affected building construction spending and HVAC equipment demand, begin to rebound.

Within the HVAC industry, heat pumps – utilised to provide more efficient cooling compared to traditional room air conditioners – will record the fastest increase in sales in both unit and value terms through to 2020. Demand for heat pumps will continue as consumer acceptance increases, while governments throughout the world offer financial incentives on implementing them.

The Freedonia Group report, which is available at www.freedoniagroup.com, also revealed that the largest market gains in both unit and value terms through to 2020 would be posted by room air conditioners, which currently account for the largest share of global HVAC equipment sales of any product.

World HVAC Market: 2010-2020

	Equipment Demand (US\$bn)			Annual Growth (per cent)	
	2010	2015	2020	2010 - 2015	2015 - 2020
Global Market	77.2	100.0	122.0	5.3	4.1
Middle East and Africa	4.1	5.9	7.8	7.4	5.7

LG chief says HVAC industry set for a buoyant growth throughout Middle East

THE MIDDLE EAST market for HVAC products and equipment is set to experience growth across a range of residential, commercial and industrial applications, according to a leading industry expert, due to growing trends such as smart cities and 'green buildings'.

LG Electronics president – Middle East and Africa, Kevin Cha, said that the HVAC industry across both the Middle East and Africa was witnessing "a prominent presence of products" in a number of industrial segments as ongoing development takes place in residential, commercial industrial and institutional projects.



LG Electronics has invested heavily in R&D activities in recent years. (Photo: LG Electronics)

"Companies are investing in R&D and designing new products that have better energy ratings and result in lower emissions and utility bills," said Cha. "With such a proactive approach by industry players including us, the HVAC industry looks set to experience robust growth in the coming years in response to increasing demand."

Cha cited investment plans already underway by large real estate groups and government agencies towards infrastructure development among the reasons for the increasing demand for HVAC products and equipment, noting that new shopping centres, hotels, hospitals and airports were adding to the demand for air-conditioned environments.

"LG's air conditioning business is already an integral part of the company's business and LG has invested in producing a wide range of solutions across both residential and commercial sectors for several decades now," Cha added.

"The company recently made large investments in its R&D department and constructed a new chiller manufacturing facility set to open in 2017."

Green Technology embedded products have also been gaining traction in response to the increased regulations for energy efficient products locally and globally.

Major HVAC regulations prevalent throughout the MEA region, such as LEED certification, Arab Energy Efficiency Building Regulations and the GCC Standardization Council, have all played a role in leading HVAC manufacturers to ensure their products comply with the latest conventions in energy efficiency.



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Yokogawa's latest product range aims to optimise operations

YOKOGAWA ELECTRIC CORPORATION has announced the global release of ROTAMASS Total Insight (TI), a new portfolio of four-wire Coriolis mass flowmeters and transmitters.

The new Coriolis mass flowmeter product platform has been developed based on a 'Total Insight' concept that aims to optimise operations and reduce maintenance costs throughout all phases of the product lifecycle.

According to Yokogawa, these new instruments will aid in demanding process control applications involving liquids with high viscosity, entrained gas and two-phase flows, offering accurate instruments whose utility extends beyond mass flow, inline density and temperature measurement.

The company said that these instruments have, over time, evolved into multi-functional devices that can measure concentrations and function as net oil computers (NOC), as well as measure heat transport.

Consisting of six new sensor product lines and two new transmitters that can be configured to suit the specific requirements of an application, the ROTAMASS TI product portfolio features a design concept that Yokogawa said would provide the user with a 'Total Insight' into a plant's operations.

Targeting a range of industrial processes throughout a selection of varying business sectors, including oil and natural gas, chemicals, pharmaceuticals and foods, each new sensor product line has each been designed for specific application requirements and process conditions, whether they are high pressure or high temperature applications, or highly challenging processes involving hygienic or cryogenic conditions.

The new general-purpose (Essential) and high-end (Ultimate) transmitters come with an AC/DC universal power supply and can be configured to handle a range of functions.

ROTAMASS series mass flowmeters have been produced and supplied by Yokogawa's German subsidiary Rota Yokogawa since 1993 and its managing director Andreas Dobratz commented, "Yokogawa's new Coriolis mass flowmeter portfolio, ROTAMASS TI, sets a new standard in the industry. ROTAMASS TI offers improved specifications under real conditions, supporting an increased number of applications. The holistic approach of the 'Total Insight' philosophy supports the customer throughout all of the stages of the product lifecycle, significantly improving operations and plant maintenance."

To assist customers using the new products, Yokogawa has developed a tool that helps them to select the optimal sensor and transmitter combination for specific applications, as well as offering an online expert guide and a built-in configuration wizard to ensure quick and error-free commissioning.

The manufacturer has also added a Process Guard function that can be used to select event patterns for the issuance of alarms, configure the triggering of data logging based on alarms or manually set points, and specify whether data is to be backed up to a microSD card for use in root cause analysis, while a post-implementation phase solution will facilitate preventive maintenance and advanced flexibility.

A Maintenance Manager function, which includes Yokogawa's Tube Health Check technology, monitors all key sensing elements while the flowmeter is in use, yielding data that can be used to minimise disruptions and reduce maintenance costs. All data can be stored on a microSD card and a new Feature On Demand (FOD) option is available that allows users to upgrade already installed flowmeters by adding new product functions such as the Tube Health Check and a concentration measurement function.



Yokogawa's ROTAMASS Total Insight range consists of four-wire Coriolis mass flowmeters and transmitters.

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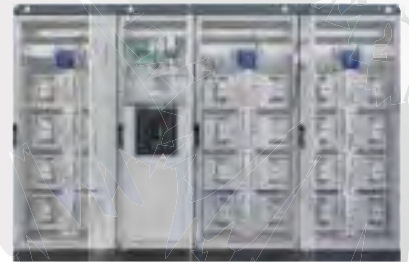
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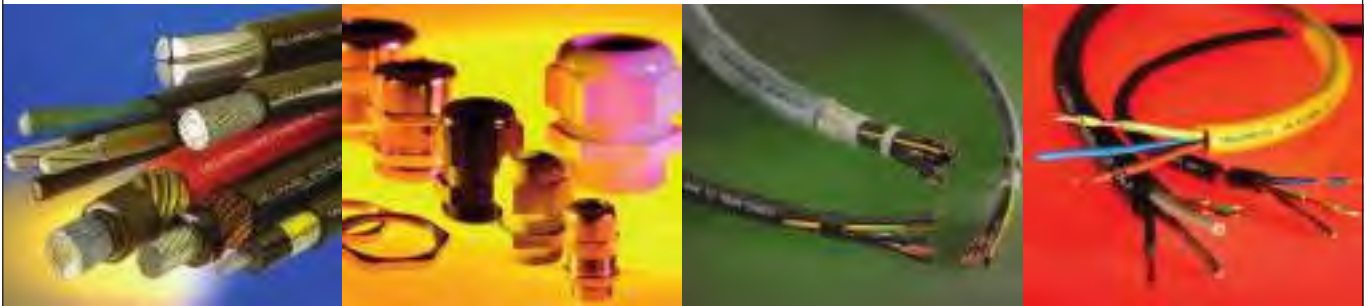
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Powering through unreliable supply

Eaton Middle East general manager Frank Ackland discusses the role of uninterruptible power supply (UPS) in safeguarding access to electricity.

THE IMPORTANCE OF safeguarding power supplies in the digital era cannot be overstated. In almost every aspect of industry and commerce, as well as day-to-day life, there is a critical dependency on having continuous access to information and communication technology (ICT) resources. This uninterrupted access can only be assured if those resources receive electrical power that is reliable and free from disturbances.

Originally, the supply network was designed to receive power from a relatively small number of large generating plants that had very predictable outputs. Now, the network is being asked to receive power from a large number of smaller energy sources with much less predictable outputs. Supply quality, therefore, is likely to be compromised, with voltage and frequency variations much more common than they were in the past.

This means that there is a greater need than ever for means of safeguarding the supply of power to key assets in order to ensure business continuity. In critical applications, this most often takes the

form of a UPS, a device that makes power available to loads even if the mains supply fails.

The UPS must ensure that, at any given time, the load receives clean and reliable power regardless of the condition of the mains power, and protect the load against problems in power quality, including long- and short-term supply interruptions, frequency and voltage variations, transient voltages and harmonic distortion.

With the growing dependence on critical IT applications on the one hand, and heightened environmental concerns and the increasing cost of power on the other, UPS manufacturers have been trying to achieve the right balance between resiliency and efficiency.

Recent innovations in technology allow UPS



Eaton Middle East general manager Frank Ackland. (Photo: Eaton)

manufacturers to combine the lowest total cost of ownership (TCO), achieved by providing market leading efficiency and excellent scalability features, with exceptional resiliency supported by innovative technology and design.

Two recent technological advances have led to a big leap in UPS devices. The first of these is the development of novel high-efficiency power converters based on the latest insulated-gate bipolar transistor (IGBT) technologies. This has enabled the overall efficiency of the latest UPSs to be raised to an exceptional 97 per cent when operating in double-conversion mode. The second development is a new energy saving technology based on powerful algorithms that allow the UPS to operate on a “double conversion on-demand” basis determined by the quality of incoming mains. In the best examples, the transition between energy saving mode and double conversion mode is seamless and extremely fast (less than two minutes), and is therefore invisible for the load.

Two recent technological advances have led to a big leap in UPS devices.

As a result of these developments, users can benefit from the unmatched security and quality of supply that only double-conversion UPSs can provide, while also enjoying reduced energy bills, which will ultimately provide big savings in TCO. A further benefit is that the high efficiency of such UPSs means that they generate less heat, so users also save on cooling costs. ■



Recent innovations in technology allow UPS manufacturers to deliver efficiency while providing savings on the TCO. (Photo:Eaton)

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Spotlight shines on Riyadh for Saudi Power

Energy industry showcase brings together exhibitors and visitors from around the region to promote power sector opportunities in Saudi Arabia.



The show welcomed 5,051 trade visitors from the Kingdom, which is an increase of 43 per cent over last year's event.



International companies meet with local business leaders to discuss opportunities within the Kingdom's power sector.

THIS YEAR'S SAUDI Power, held in Riyadh in May, attempted to raise the awareness levels of the Kingdom's energy users through the introduction of the latest power and energy products and services available to them. Saudi Power 2016 used its platform at Riyadh International Convention & Exhibition Center to highlight the Kingdom's electricity sector and saw discussions take place on potential solutions and strategic projects. A host of local and international companies were on hand to showcase their latest power solutions, services and supplies.

Taking place from 9-11 May 2016, the event was inaugurated by Dr. Saleh Bin Hussein Al Awaji, deputy minister for electricity, Ministry of Water and Electricity (MOWE), Saudi Arabia, and organised by Riyadh Exhibitions Company in collaboration with Informa. The show brought together more than 150 exhibitors from 22 countries and witnessed an increase of 43 per cent in visitor numbers, with more than 5,000 visitors in attendance.

Humoud Al-Ghubaini, senior vice president – communications and public relations, from event sponsors Saudi Electricity Company (SEC), remarked, "Sponsoring Saudi Power 2016 fell in line with SEC's efforts

"This show was the ideal platform to showcase the development of the local energy sector...and support the growth of local companies."

Humoud Al-Ghubaini, senior vice-president – communications and public relations, Saudi Electricity Company

to nationalise the electrical industries in the Kingdom. This show was the ideal platform to showcase the development of the local energy sector, explore the latest related techniques, study the projects within the power sector, and support the growth of local companies by reducing the consumption and waste of energy."

Held alongside Saudi Power was partner event Saudi Aircon, which is among the leading exhibitions in the Middle East for the HVACR industry. Showcasing the latest equipment, technology and innovative solutions for the heating, ventilation, air-conditioning and refrigeration industries, the co-located event aimed to provide solutions and services for the Kingdom's air conditioning market, believed to be the largest in the world and which is expected to surpass US\$2.5bn by 2019. The event was held at a time when Saudi Arabia has been experiencing rapidly growing demands for indoor cooling due to high population growth, rising affluence, a developing tourism industry and numerous mega projects currently under construction.

At Saudi Power, exhibitors and event organisers were keen to express their thoughts on the event, including Abdullah Alkhorayef, CEO of Alkhorayef Commercial Company, who remarked, "We have been participating in this exhibition to announce for the first time in Saudi Arabia that a medium-voltage Gulfpower diesel generator set has been assembled locally in cooperation with Cummins. We also showcased our most prominent services offered in the field of energy solutions for an audience of specialised professionals."

Meanwhile, Prince Saud Al-Abdullah Al-Faisal bin Abdulaziz, Chairman, said, "The Saudi Power exhibition is a dedicated platform for all specialised companies operating in this sector, attracting hundreds of local and international companies seeking to further position themselves in the Saudi Arabian market and showcase their latest products, services and technologies. The exhibition also provides an opportunity to close business deals, thus supporting the development of the power and HVAC sector in the Kingdom." ■

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Competition to highlight future energy leaders

Solar energy students get set to battle at Dubai solar power trade event as the region's nations aim to build on commitments made at COP21.

DUBAI SOLAR POWER event Intersolar Middle East has launched the 'Young Leaders' Innovation Challenge', which will take place at the event in September 2016. The contest will aim to encourage students throughout the Middle East and North Africa (MENA) region to contribute towards commitments made during the Paris Agreement at COP21 in December 2015.

Teams entering the competition, which will be held under the patronage of UAE Minister of Energy HE Eng. Suhail Mohamed Faraj Al Mazrouei, will attempt to demonstrate how a 25 per cent reduction in energy consumption can be achieved by retrofitting renewable energy technologies to a government building of their choice.

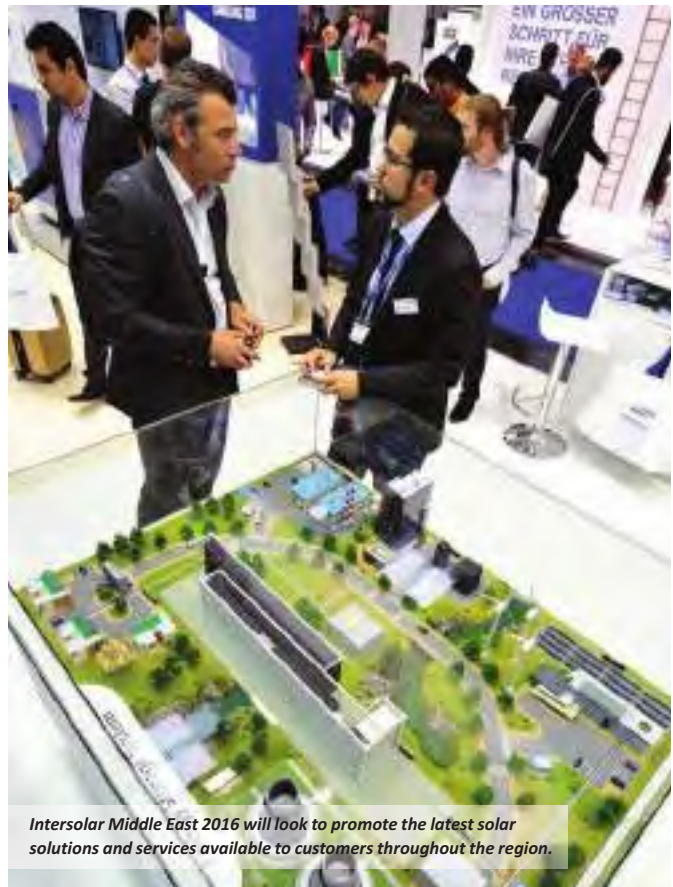
Triumphant competitors will win a trip to the German city of Munich with cash prizes await winning teams.

"The Young Leaders' Innovation Challenge is intended to create links between academic research and applied science at a time when the UAE seeks to make good on its goal of increasing its share of renewable energy to 24 per cent by 2021," said Middle East Solar Industry Association (MESIA) vice-president Hadi Tahboub.

"The physical environment and attitudes toward sustainability in the UAE make it an ideal hotbed for creating a world-class renewable energy sector, and we see great value in taking that message to the world through the Young Leaders' Innovation Challenge."

More than 13 universities have already signed up to the competition, including Masdar Institute, Khalifa University and Petroleum Institute from the UAE, Sultan Qaboos University from Oman and Saudi Arabia's King Abdullah University of Science and Technology, with teams being given a deadline of 31 July 2016 to submit their entries.

A panel of jury members, which will include representatives from MESIA, DWTC, Dubai Municipality, First Solar, Green Technologies, Masdar and the Clean Energy Business Council, will select the winning entries, with the winners presented with an opportunity to



Intersolar Middle East 2016 will look to promote the latest solar solutions and services available to customers throughout the region.

exhibit their projects and represent the Middle East at Intersolar Europe 2017 in Munich.

Solar sector showcase

Intersolar Middle East, which will take place from 19-21 September 2016 at Dubai World Trade Centre, is part of a world series of exhibitions that have been promoting innovation and opportunities within the solar industry for more than quarter of a century.

The 2016 Middle East edition will take place for the first time at Dubai World Trade Centre in conjunction with GulfSol, with the aim of increasing the share of solar power in global and local energy supplies.

Both the exhibition and conference will focus on photovoltaics (PV), PV production technologies, energy storage systems and solar thermal technologies, offering a platform for manufacturers, suppliers, distributors, service providers and partners. ■

"The physical environment and attitudes toward sustainability in the UAE make it an ideal hotbed for creating a world-class renewable energy sector."

MESIA vice-president Hadi Tahboub



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HIMOINSA targets Egyptian public institutions at OTRAC event in Sharm el-Sheikh

MORE THAN 200 visitors, including representatives of Egyptian bodies such as the National Organisation for Potable Water and the National Electricity Company, were in attendance during the “OTRAC MANEUVER D4YS” event held in Sharm el-Sheikh, on the Egyptian Red Sea coast. The event was organised by OTRAC Heavy Equipment, HIMOINSA’s official distributor in Egypt, where the company demonstrated the HDW-120 T5 and the HYW-20 T5 generator sets.

The HYW-20 T5 is fitted with a Yanmar engine and features an integrated ATS, monitoring and remote control. Its 1,000 litre tank allows it to run for up to 14 days without interruption, and a special kit can be added that extends the maintenance periods to up to 1,000 hours.

Also showcased at the event was the APOLO Start AS4006 lighting tower, which is able to withstand temperatures of up to 45°C. The lighting tower can operate for up to 70 hours non-stop and more than seven nights without refuelling. Its four lightbulbs

have a 1,000W output, offering a total of 384,000 lumens and can light up to 32,000 square metres. The mast is nine metres high and folds manually and horizontally for optimal and easy transport, while its four lightbulbs fold vertically, allowing up to 18 units to be stacked in a 40’ container.

HIMOINSA regional sales manager Imen Sahbi said, “HIMOINSA has been working in the Egyptian market for more than 15 years. Our relationship with OTRAC began in 2012 and it has become an important partner for HIMOINSA in Egypt. We have many important projects in this country, primarily within the water treatment sector, where we work with organisations such as the Egyptian National Organisation for Potable Water.”

HIMOINSA’s power solutions have been used by Egyptian institutions in previous years, with the company having worked with the country’s Ministry of Defence, as well as supplying 12 HDW-525 T5 generator sets to provide energy during construction work on the second phase of the Suez Canal.

*The lighting tower showcased at the event.
(Photo: HIMOINSA)*



TAMGO wins major Saudi Arabian telecoms genset contract



FG Wilson has had a presence in Saudi Arabia since the 1970s. (Photo: FG Wilson)

FG WILSON’S SAUDI Arabian dealer TAMGO has won an award to supply and install 370 generator sets for a major telecoms service provider in the Kingdom.

The order, TAMGO’s largest contract in its history, will consist of the delivery of a mixture of 33 and 50 kVA units and will replace existing units supplied by other manufacturers.

The generating set will operate under extreme site conditions and will be required to operate in an ambient temperatures up to 55°C and regular sand storms. They will supply power to cellular towers spread throughout Saudi Arabia and will be installed on-site by the end of Q3 2016.

Islam Fathy, engineering products division manager at TAMGO, commented, “We have been working closely with the customer for a while leading up to the signing of the order, which included visits for the client to FG Wilson’s UK facility, and we’re delighted to have been selected as supplier for this project.

“It really underlines the quality of FG Wilson generator sets and also TAMGO’s commitment to supporting them in tough environmental conditions,” he added.

TAMGO has been the exclusive FG Wilson dealer in Saudi Arabia since 1995 and has installed more than 8,000 generator sets since that time, with a combined electric power output of 1.5GW.

Established in 1991, TAMGO has grown into one of Saudi Arabia’s

longest-standing and established industrial machinery providers, supplying products ranging from portable power and stationary compressors to construction machinery and welding machines.

Meanwhile, in 2016, FG Wilson has been celebrating 50 years within the power industry and has had a presence in the Saudi Arabian market since the early 1970s. Some of its earliest projects in the Kingdom were for large generator sets for standby power in hospitals and self-contained mini power stations for prime power.

Worldwide, FG Wilson’s products are supported by its global network of around 300 dealers, who offer full aftermarket and warranty support. Its dealers are trained on all aspects of the generator package and supported by the FG Wilson central technical helpdesk, technical libraries, on line systems and a parts distribution centre, which ships three million parts a year and carries 11,500 product line parts.

SDMO unveils new rental engine models at German construction exhibition

OCCUPYING TWO STANDS at Bauma, one inside the exhibition halls and another in the outdoor arena, SDMO used its presence at the show, held in Munich in April 2016, to introduce visitors to the latest products in the company's Portable, Rental Compact, Rental Power and Contenergy ranges.

At Bauma 2016, SDMO demonstrated the diversity of its power product offering, with previews of the R22C3 and R44C3 KDI models from the Rental Compact range, the R1400 from the Contenergy range and the RL4500-5 lighting tower. Equipped with Kohler Diesel Engine Stage 3A engines, the R22C3 and R44C3 were on show and, along with the R33C3, represent the latest additions to SDMO's Rental Compact range.

Discussing these new products, SDMO communication department manager Philippe Forest remarked, "Our aim has been to continue integrating Kohler Direct Injection (KDI) engines into our compact generators, because they require less maintenance.



The 22 kVA trailer-mounted model presented by SDMO at Bauma 2016.

"The rental companies we sell these products to tend to use these gensets a lot and that means they want something with a lot of ability. Of course, they want to pay less to use it, so they want products with lower consumption and where the periods between maintenance are longer, and these really are the advantages of these engines.

"These machines have been designed for the rental market, for the people that may not be experts on using gensets. They're very easy to use and check, such as in cases where the oil level is low, for example. Their compactness and the fact they have low consumption levels makes them very attractive to rental companies and their customers."

While the machines have been configured for the strict regulations of the European genset market, Forest said that following the initial launch of the new models in January 2017, SDMO would shortly follow with the launch of non-certified engine versions for markets in the Middle East and Africa.

Also on show for SDMO at Bauma 2016 was the R1400, which has the capacity to generate 1.4MW and is situated inside a 20-foot CSC container. Designed to meet the often gruelling demands of the construction and rental markets, the genset has been equipped with a Mitsubishi engine and can be configured for 50 or 60 Hz operation.

"It is a simple engine without too many electronics and it's easy to maintain – even if the fuel used to power it is not of a high quality," Forest remarked. "This unit is simple to use and has been adapted to suit the needs of the market."



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Innovative gap filler for electronic applications

MUNICH-BASED CHEMICAL COMPANY WACKER has launched a new heat-conducting silicone gap filler material, SEMICOSIL 961 TC, for the electronics industry.

The new product is a highly filled, two-part silicone rubber that cures at room temperature through a platinum-catalysed addition reaction to form a soft silicone elastomer with a tacky surface. The cured rubber achieves a thermal conductivity of 2W/mK and, at the same time, is electrically insulating.

Before it cures, SEMICOSIL 961 TC is a non-sag material. However, its viscosity decreases with increased shearing, for example during mixing and metering. The shear-thinning property of the material is adjusted so that the silicone rubber can easily be fed by machine. This feature allows processors to achieve a high metering rate and very high dosing accuracy.

SEMICOSIL 961 TC ensures optimum heat transfer from the electrical circuit to a heat sink. The gap filler is first applied to the heat sink and the circuit board is then pressed on or fitted by means of a vacuum process. During compression, a continuous film is formed that conforms to the surfaces of the two joining parts. This minimises surface irregularities and tolerances and maximises the contact area, promoting heat transfer. The film cures to form a silicone layer between the joining parts. Its soft consistency ensures a tight fit even during frequent temperature changes and vibrations.

The new silicone gap filler can be used over a wide temperature range. Its properties remain unchanged between -45 and +180°C.



According to the manufacturer, this silicone rubber is an ideal interface material for thermally connecting electronic circuits, ensuring effective heat management. (Image Source: Wacker Chemie AG)

High thermal and thermal-shock resistance and the ability to absorb vibrations are important for applications in automotive electronics and electromobility, for example.

SEMICOSIL 961 TC was showcased at the Power Conversion and Intelligent Motion electronics tradeshow (PCIM) Europe held in Nuremberg, Germany, from May 10 to 12.

Powering Riyadh Metro project

ROOTS GROUP ARABIA has delivered 80 Chicago Pneumatic CPSG stationary generators to the BACS consortium working on Riyadh Metro, scheduled for completion in 2018.

The Riyadh Metro project – one of the world's largest metro systems – comprises the construction of an automatic driverless public transport system featuring 87 stations, located across six lines totalling more than 170 km in length, more than 73.4 km of which will be underground. BACS is using the 80 gensets to help construct Lines 1 and 2 of the metro, where they are powering a large variety of applications including road and

tunnel lighting, site office electrification, electric power tools and water coolers.

Roots Group Arabia, an official distributor of Chicago Pneumatic generators in Saudi Arabia, won an order of US\$975,000 in June 2015 from BACS to acquire a total of 80 Chicago Pneumatic CPSG stationary generators. The order included 20 CPSG185 (185 KW/235 KVA) models, 30 CPSG40 (40 KW/ 50 KVA) models, and another 30 CPSG18 (18 KW/ 22.5 KVA) models.

Securing a reliable power supply with high levels of safety was of paramount importance for the main project and this called for generators that could run

continuously for between 24 and 36 hours with limited idle time and able to withstand the high ambient temperatures experienced in the Middle East.

The CPSG generators have been built to operate in both high temperature and high humidity conditions and come equipped with tough canopies featuring ultraviolet (UV) panes that protect the engine and control panel – even against the sandstorms occasionally witnessed in Saudi Arabia.

Roots Group Arabia deputy general manager Ashraf Hemaidah said, "The Riyadh Metro is a very time-sensitive project. One of the key requirements of the client was to keep all the equipment running safely to prevent any delays and cut downtime costs.

"With our comprehensive package of support services the customer did not need to worry about any possible disruptions and delays. The technical characteristics of the generators also made it easier to meet local health, safety, and environment requirements," he added.

Along with the machine order, Roots Group has also secured the service contract, which includes providing a one-year unlimited running hour warranty and other service provisions.



The generators have been designed to withstand the harsh climatic conditions of Saudi Arabia. (Photo: Chicago Pneumatic)



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Transformer testing made easy

IN RESPONSE TO the growing demand for compact test systems capable of performing a wide range of tests, Megger has developed TRAX, a new range of multifunctional transformer and substation test systems.

The new system, TRAX220, weighs just 32kg and according to the manufacturers, is the lightest test system of its type.

Despite its compact construction, the system is capable of performing

numerous test functions, for example, the measurement of winding resistance including demagnetisation of the transformer core, tap-changer continuity and timing, turns ratio, excitation current, short-circuit impedance, tan delta, capacitance, CT and VT testing, as well as circuit breaker timing and motion analysis.

Apart from full manual control for measurements, the system also comes with dedicated apps for guided testing. Each app implements a specific test function and automatically configures the instrument for the test. This app-based approach is aimed at providing ease of use and eliminating the need for extensive user training.



The test system supports the generation and measurement of a wide range of currents and voltages. (Photo: Megger)

Powering Ahead



With high quality innovative products

Apar Industries Ltd., a Rs. 5000 crores diversified manufacturing company, is a leader in the fields of Power Transmission Conductors, Petroleum Specialties and Power and Telecommunications Cables. The company which has a presence in over 100 countries is the 4th largest manufacturer of Transformer Oils and in the top 5 producers of Aluminium and Alloy conductors in the world.

The POWEROIL product range of lubricants also include Turbine oils for the power industry. The company has also been at the forefront of developing and marketing high performance conductors which includes AL 59, AL-59 / TW, TACSR, ASCC, ACSS / TW, GZTACSR / GTACSR, STACIR / AW, ACCC etc. and is the largest exporter of these POWERLINE conductors from India.

Apar also offers a comprehensive range of Power and Telecommunications Cables under the UNICAB brand name.

Apar is a technology driven customer focused company with the ability to deliver innovative quality products and services that match the exacting customer needs with cost effectiveness and timely deliveries. The company continues to enjoy the trust of major Power Generation, Transmission and Distribution companies, OEMS & Utilities world over.



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German chimney solutions for the Middle East

JEREMIAS, AN INTERNATIONAL manufacturer of flue and chimney systems for exhaust of gases and ventilation, offers a range of chimney solutions for the Middle Eastern market.

The German company, which recently launched its subsidiary in the Middle East, specialises in pre-fabricated and freestanding stainless steel chimney systems are offering its Middle East clients an all-in-one package with a large selection of products, technical support for projects, chimney sizing software, test-capable chimney static calculations and certifications.

The group offers a wide range of German-engineered stainless steel flue and chimney systems for various kinds of applications such as boilers, generators, kitchen extracts, laundry exhausts and ventilation towers.

The company's exhaust, chimney and special ventilation systems offer a wide variety of components for industrial use. Among these are generator and turbine exhausts, cogeneration/CHP-incinerator exhausts, industrial process exhausts, engine exhausts, dry oven exhaust, micro-



Jeremias offers a wide range of stainless steel flue and chimney systems for the Middle East market. (Photo: Jeremias)

cogeneration, chimney relining systems, fan assisted systems, freestanding chimneys, mast supported chimneys, ventilation towers for underground facilities, fire rated kitchen extract, collective shared kitchen extract, mechanical controlled ventilation systems and chemical ventilation.

Through its Dubai office, this technology has been made available to customers

throughout the Middle East along with a local service package incorporating site visits and inspections, design and specifications, chimney sizing and calculation, on-site installation, reports on existing flue conditions, technical advice and recommendations, complete supply including fixing elements, commissioning and maintenance.

Dealing with low power quality

ITALIAN MANUFACTURER, ICAR, provides a range of power quality solutions aimed at reducing the threats posed by low power quality.

Power quality is gaining increasing attention in the electric power industry, especially in Middle Eastern countries where the demand for electricity is growing fast.

Low power quality can affect businesses in many ways, including power failures, breakdowns or malfunctions of machines, overheating of machines such as transformers and motors leading to the shortening of life expectancy, damage to sensitive equipment like computers and production line control systems, electronic communication interference, increased distribution system losses and luminosity flickering.

Interruption of production due to these impacts of low power quality entails high costs due to production loss and the associated waste. According to market research, for the industrial sector, the estimated costs due to poor power quality represent four per cent of the turnover, while for the service sector, it is 0.15 per cent

ICAR provides a full range of power quality solutions including power factor correction capacitors and banks, and active harmonic filters, aimed at reducing the threats posed by low power quality. The solutions vary depending on



ICAR's ACTIVEmatic FA30 active harmonic filter is designed to provide robust protection against harmonic pollution. (Photo: ICAR)

the cause of low power quality. Among the main causes of poor power quality in low voltage are excessive reactive power and harmonic pollution, which causes additional stress on the networks and systems, causing them to operate less efficiently.

Excessive reactive power is regulated by a power factor correction system, which not only avoids any penalties due to excessive reactive energy, but also reduces the "unnecessary" electrical current that flows into the lines and power components, yielding substantial benefits, such as reducing voltage drops along the lines and leakages due to the Joule effect. ICAR produces industrial LV polypropylene and bi-metallised paper power factor correction capacitors and systems.

Harmonic pollution is caused by large amounts of non-linear consumption from inverters, soft starters, rectifiers, power electronics and others sources. Such devices deform the electrical current causing disturbances and problems to the system. This pollution can cause problems within power systems ranging from the false operation of protection devices to the physical damage of power system components and loads. Active harmonic filters are a solution to harmonic pollution. ICAR has developed active harmonic filters to combine a high level of efficiency with flexibility of installation.

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Electrical Equipment and Materials Buyers' Guide

2016

The Middle East's annual where-to-buy guide

Section One: Listings by category

Section Two: Suppliers of electrical equipment and materials, page 53

Section Three: Contact details of Middle East agents & subsidiaries listed by country, page 66

Section One: Listings by category

AC Alternators

Mecc Alte UK Limited

AC Drives

CG

Control Techniques, business unit of Emerson Industrial Automation

Lloyd Dynamowerke GmbH

Accumulators

Saft SA

Air Compressors

FAMCO (Al-Futtaim Auto & Machinery Co. LLC)

Gardner Denver FZE

Kaeser Kompressoren FZE

Samsung Techwin

Air Conditioning / Chillers / Heat Exchangers

Aggreko Middle East Ltd.

Bosch Industrial

Eksen Teknik Sunger San. ve Tic. Ltd. Sti.

LG Electronics Gulf FZE

Luvata Söderköping AB

Rittal Middle East FZE

UL

Air Curtains & Filters

Panasonic Marketing Middle East and Africa FZE

Ammeters

KFB Holding Group

Asbestos, GRP, Fibre Glass

Huegli Tech AG Ltd.

Auto Recloser

KFB Holding Group

Tripp Lite

Automation Systems

ASCO Numatics, business unit of Emerson Industrial Automation

Emerson Industrial Automation

HIMA Middle East FZE

KFB Holding Group

Phoenix Contact Middle East FZ LLC

Batteries

ASCO Numatics, business unit of Emerson Industrial Automation

Dale Power Solutions

KFB Holding Group

Saft SA

Silicon Power Systems

Battery Lighting

Saft SA

Biomass Systems

Jeremias Middle East

Boiler Plant/Instrumentation

Bosch Industrial

HIMA Middle East FZE

Jeremias Middle East

Megger Ltd.

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Bosch Industrial

Jeremias Middle East

Bus Bar Systems

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Imequadri Duestelle S.p.A.

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UL

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HellermannTyton GmbH

HELUKABEL Middle East DWC LLC

KFB Holding Group

UL

Cable Fault Locator

BAUR GmbH

Prime Meiden Ltd.

Cable Handling Equipment

Eland Cables

HellermannTyton GmbH

HELUKABEL Middle East DWC LLC

Cable Jointing & Termination

Eland Cables

First Forever Co. Ltd.

HellermannTyton GmbH

HELUKABEL Middle East DWC LLC

KFB Holding Group

Megger Ltd.

Mosdorfer GmbH

Novoflex Marketing Pvt. Ltd.

Power Testing Ltd.

Shawcor

Yamuna Cable Accessories

Pvt. Ltd.

Cable Labeling

Brady Middle East

HellermannTyton GmbH

Cable Laying Equipment

HellermannTyton GmbH

Cable Protection & Support

HellermannTyton GmbH

HELUKABEL Middle East DWC LLC

Novoflex Marketing Pvt. Ltd.

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Cable Testing Equipment

BAUR GmbH

Eland Cables

Phenix Technologies Inc.

Tripp Lite

Udeyraj Electricals Pvt. Ltd.

Zahid Tractors

Cable Tiles / Protections

Novoflex Marketing Pvt. Ltd.

Cable Trays

Eland Cables

Electric House Est.

Galva Coat for Galvanizing & Light Poles

HellermannTyton GmbH

KFB Holding Group

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Eland Cables

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KFB Holding Group

Nuhas Oman LLC

Pollmann Elektrotechnik GmbH

Shawcor

Tecnalia

Yamuna Cable Accessories

Pvt. Ltd.

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ORTEA S.p.A.

Powertech Switchgear Industries

FZE

UL

Capacitors

ICAR S.p.A.

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Udeyraj Electricals Pvt. Ltd.

Cathodic Protection

Zahid Tractors

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Samsung Techwin

SDMO Industries

Coiled Tubing

DHYBRID Power Systems

Communication Equipment

Deep Sea Electronics PLC

Components

Bin Ham Eletrical Equipment

Trading LLC

Metal Deploye Resistor

Compressor and Turbine Blades

Samsung Techwin

Compressors

DHYBRID Power Systems

Kaeser Kompressoren FZE

MAN Diesel & Turbo SE

Samsung Techwin

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John Deere Power Systems

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Nuhas Oman LLC

Oriental Copper Co. Ltd.

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KFB Holding Group

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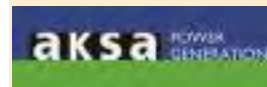
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COELMO Spa

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Web: www.coelmo.it
E-mail: sales@coelmo.it

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Agents:

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E-mail: sales@cressall.com

Cressall Resistors manufacture high power resistors, neutral earthing resistors (NERS), portable load units, bespoke LV and HV load banks, dummy loads and dynamic braking resistors as well as resistors for use in high voltage filters such as HVDC, SVC and MSC Systems.

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Web: www.middleeast.cummins.com
E-mail: cummins.middleeast@cummins.com

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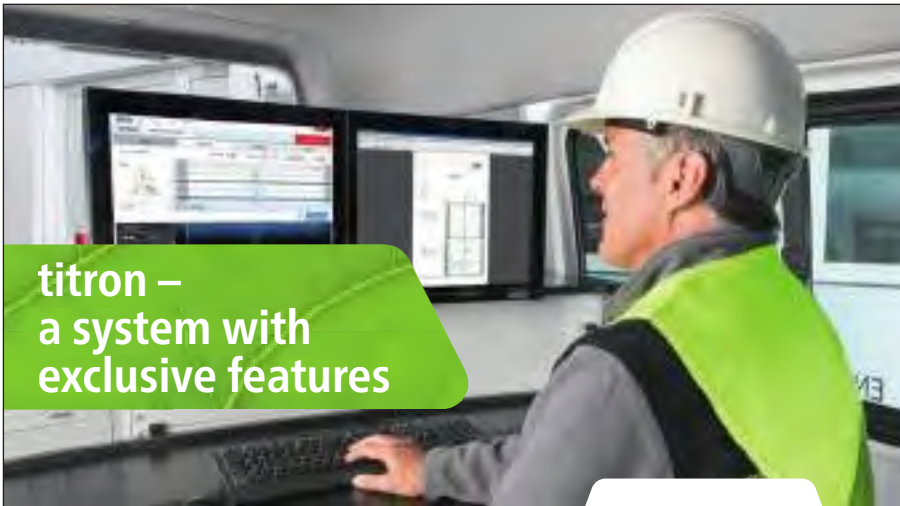
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Indian Electrical and Electronics Manufacturers Association (IEEMA)

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**JCB Power Products**

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**Jeremias Middle East**

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Oman - General Engineering Services Est.
Saudi Arabia - Electrical Work & Maintenance (John Deere)

Turkey - AKSA Servis Ve Yedek Parca AS (John Deere)
United Arab Emirates - GENAVCO
Yemen - Abu Alrejal Trading Corporation

Jubaili Bros

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Web: www.JubailiBros.com
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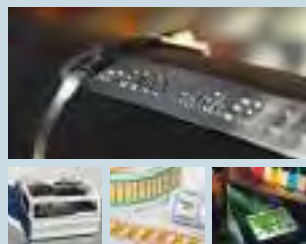
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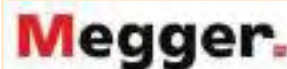
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Motortech GmbH

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Phenix Technologies is a manufacturer and global supplier of ultramodern high voltage, high current, high power test systems and components for testing cables, circuit

breakers, generators, GIS/switchgear, insulation materials, motors, reclosers, transformers, utility worker's rubber goods/protective gear including mobile field test sets, plus 40 years' experience, and ISO9001 quality certification.

Agents:

United Arab Emirates - ARABCAL

Phoenix Contact Middle East FZ LLC

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Phoenix Contact, founded in 1923, is a leading manufacturer of electrical connection, electronics interface and industrial automation technology with headquarters in Germany. Our worldwide distribution is effected via a global network of 50 own subsidiaries and approximately 30 representations in Europe and Overseas. For agents and suppliers please check our website for more details:
www.phoenixcontact.ae/channel_partners

Plumettaz SA

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Pollmann Elektrotechnik GmbH

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Pollmann Elektrotechnik is specialised in busbars for low-voltage switchboards. Furthermore we produce main terminals, connectors, earthing material and fixing devices. We are able to manufacture within our product range nearly every special type according to our customers' needs and their various applications. Pollmann Elektrotechnik is DIN EN ISO 9001:2008 certified.

Power Testing Ltd.

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Founded in 1966, PTL specialize in LV and MV commercial industry, offering solutions to testing, maintenance, installation and reactive works.

It is our aim to offer our excellent service to new clients in the UAE and Middle East assisting in their economic growth and ensuring safety of supplies.

Powersource Projects Ltd.

PowerPro House
Capital Park Industrial Estate
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Tel: +44 1428 684980
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Web: www.power-source-pro.co.uk
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UK manufactured diesel generating sets and associated products with expert, in house parts department giving full product support and genuine parts from renowned global

manufacturers such as Perkins, Stamford (Newage), Meccalte, Deep Sea, FG Wilson and more. Please visit www.power-source-pro.co.uk to find out more.

**Powertech Switchgear Industries FZE**

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Powertech Switchgear Industries FZE is a panel builder for ABB ArTu-K Systems and authorized value provider for ABB VFDs in UAE. Our panels are fully type tested by ASTA/LOVAG and have ADDC and AADC approvals up to 3200A and SEWA approval up to 2500A. We also fulfill DEWA, FEWA and KAHRAMAA regulations.

Agents:

United Arab Emirates - Powertech Electrical
Distribution Boards Manufacturing LLC

**PR Middle East FZE**

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Pramac develops and manufactures a wide range of power generation equipment from 1 kVA to 3.360 kVA with Perkins, Volvo, MTU, Deutz, Cummins, Doosan, FPT, Iveco and Yanmar Engines and materials handling equipment. Pramac uses its global network to supply these products to markets throughout the world.

Precision Wires India Ltd.

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Precision Wires India Ltd. is the largest manufacturers of enamelled copper wire in South Asia with a capacity of 35000 MTs p.a. We manufacture round wires in the range of 0.080 mm – 5.00 mm, PCCC in the range of 5 sq mm to 65 sq mm and continuously transposed conductor from 5 strands to 43 strands.

Prime Meiden Ltd.

Prime Tower, 287-288
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Fax: +91 124 4871698/99
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Prime Meiden Ltd. (PML) is one of the leading players in the field of power transformer having the most modern and state-of-the-art factory for supply of EHV power transformer up to 765 kV located in special economic zone (SEZ), Naidupeta; district Nellore, Seemandra the Southern State of India, spread over 100 acres of land.

Rittal Middle East FZE

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Founded in 1999, Rittal Middle East FZE - a subsidiary of Rittal GmbH & Co. KG. Composing an active team with over 30 professionals addressing the Middle East market, with headquarters based in Herbon, Germany. Rittal Middle East is one of the recognized innovative suppliers for the industrial and electrical sectors as well as a key player in the networking infrastructure & datacentre arena. A perfectly coordinated platform with a vast product range covering industrial/electrical enclosures, system climate control and power distribution suitable for oil & gas, energy, industries, construction etc. Ri4Power Form 2-4: New structured solution for reliable low-voltage switchgear system compatible with international players (breakers), type tested to 5500A as per the worldwide standard, IEC60439-1 and IEC61439-1/2.

Rollo Power Solutions

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Rollo Power Solutions are a one stop shop for parts - supplying genuine OEM parts for all makes and models of engines and generators, including engine components, filters, oils, coolants, batteries and other essential maintenance parts. Many lines are available for immediate dispatch and all come with standard OEM warranty.

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Rotork PLC

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Rotork is the world's leading manufacturer of electric, pneumatic & hydraulic valve actuators and control systems, valve gearboxes, valve accessories and precision control instruments supported by the Rotork worldwide service network.

Agents:

United Arab Emirates - Rotork Middle East FZE

Rove Electric

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SICES S.r.l. is an Italian company with more than 35 years of experience in the field of

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SAB, Standard Aggregatebau Evers GmbH & Co. KG

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Reputable German manufacturer of diesel-driven generating sets from 50 to 8000 kVA in stationary, transportable or mobile executions for standby, peak load or base load applications world-wide. Main competencies are planning, designing, manufacturing, installation and servicing of global plant constructions under consideration of individual customer and project requirements.

Saft SA

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SAFT manufactures nickel-based stationary battery systems to provide reliable power. From original pocket plate to our new lithium-ion batteries, we provide low maintenance and effective energy storage to assure security of supply and total autonomy in several applications.

Agents:

Iran - Dooman Co. Ltd.
Saudi Arabia - Dar Al Fursan Trading Est.
United Arab Emirates - Al Hamra

Sakr Power Systems S.A.L

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Agents:

United Arab Emirates - Sakr Power Generation FZE

Samsung Techwin

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Samsung Techwin is specialized in designing and manufacturing of integrally geared air and gas compressors which are being operated around the world for plant air, process air and gas applications.

Agents:

United Arab Emirates - Samsung Techwin
Dubai Office

Scania CV AB

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Bahrain - National Establishment of Technical & Trade Services (NETS)
Iraq - Qanadeel Al Rafidain Auto Trading Company Ltd.
Kuwait - ICTCO Industrial Construction & Trading Co. WLL
Oman - SATA LLC
Qatar - Arabian Agencies Company (ARACO) LLC
Saudi Arabia - General Contracting Company - Olayan
Saudi Arabia - Mohammed A Al-Faddaghi & Partners
United Arab Emirates - Al Shirawi Enterprises LLC (Scania)
United Arab Emirates - Bin Brook Motors & Equipment LLC

SDMO Industries

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SDMO Industries is one of the world's leading generating sets manufacturers. A wide range of standard products from 1 kVA to several megawatts through an efficient engineering department meets non-standard requirements. Present in over 150 countries through a dense network, SDMO Industries devotes its energy to supporting you in the successful completion of each of your projects worldwide.

Agents:

United Arab Emirates - SDMO Middle East

Segula Ltd.

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Segula offers LED lighting replacement for classical bulb shapes, flood & street lights, T8 for commercial, government and private energy saving goals.

Agents:

Saudi Arabia - Lifelight Co.

Sergi France

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Sergi France was created in 1955 to design and manufacture of oil-filled transformer fire extinguishing systems. Since then, the company has specialised in the transformer fire protection business by developing the Transformer Protector (TP). During a transformer short circuit, the TP is activated within milliseconds by the first dynamic pressure peak of the shock wave, before static pressure increases thus avoiding transformer explosions.

Agents:

Iran - UBUN Best Parts Engineering Company Ltd.
Oman - National Factory for Security and Safety Equipment LLC
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**SES SMART Energy Solutions FZCO**

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SES is leading power provider serving temporary and medium term energy needs across the Middle East, Africa and South East Asia region. SES offers fast tract turnkey power rental solutions to help our customers maximise on productivity and profitability, while minimizing on downtime and resources with highest safety standards.

Agents:

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Oman - SES SMART Energy Solutions
Qatar - SES SMART Energy Solutions
Saudi Arabia - SES SMART Energy Solutions
Yemen - SES SMART Energy Solutions

Shawcor

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Silicon Power Systems

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Specialist Services

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Specialist Services is a global supplier of modular buildings and packaging solutions for people and equipment in Oil & Gas and Utility industries. Our electrical power skids ranges from basic off the shelf design for sound attenuation containers to full EPIC transformer and switchgear packages including VSD/VFD shelter, Gensets etc.

Super Impex

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ISO, UL approved exporter of electrical accessories, earthing and lightning protection, cable glands accessories, flexible conduit and fittings, cable lugs, bimetallic lugs, grounding rods, cable accessories, panel board and switchgear accessories, overhead line accessories, bimetallic lugs, cable terminals, pole mounted cutout, fuses, pvc conduit fittings

Tecnalia

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Tecnalia Research & Innovation is the largest private Research & Testing Institute in Spain and among the top 5 in Europe. Our activity is focused on R&D projects, technical consultancy and third-party testing and certification for different sectors such as Energy, Construction, Industry and Automotive. Worldwide recognized test reports.

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Teksan, a registered supplier for top ENR companies, is a leading engineering company that manufactures power solutions such as diesel, natural-biogas gensets, lighting towers, portable gensets, cogeneration-trigeneration and hybrid power systems for Telco, heavy construction and infrastructure projects, industrial plants, retail chains, banks, hospitals, residences in more than 120 countries.

Thomas & Betts / A member of the ABB Group

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At Thomas & Betts, our focus is on improving your business performance by providing practical, reliable electrical products and services that solve everyday problems in the areas of wire & cable management, cable protection, power connection & control and safety technology.

Tripp Lite

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Over 90 years of manufacturing excellence. Tripp Lite is a leading manufacturer of products that power, connect and protect computers and other electronics. Founded in 1922, it is best known for its uninterruptible power supply (UPS) systems and ISOBAR® Surge Suppressors (with over 18 million sold).

Agents:

United Arab Emirates - Tripp Lite Middle East

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We are manufacturers cum exporters of testing equipments like hipots, oil BDV, TTR meters, primary current injectors, relay testers, IR testers, contact resistance testers, CTPT testers, tan delta testers etc.

UL

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UL is a premier global independent safety science company that has championed progress for 120 years. Its more than 10,000 professionals are guided by the UL mission to promote safe working and living environments for all people. UL uses research and standards to continually advance and meet ever-evolving safety needs. We partner with businesses, manufacturers, trade associations and international regulatory authorities to bring solutions to a more complex global supply chain. For more information about our certification, testing, inspection, advisory and education services, visit www.UL.com

**Valdinox**

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VALDINOX is among the most experienced basket cable trays manufacturers in Europe, and a worldwide-recognised manufacturer for the EASYCONNECT basket cable trays system, patented in 2013. EASYCONNECT is the unique integrated self-connecting system that has proven to be the most reliable, resistant and versatile ever, saving time and money, and extending lifespan of cable installations.

**Visa S.p.A.**

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Visa S.p.A. is one of the world's leading gensets supplier, based in Italy, designing and manufacturing diesel gensets, from 9 to 3000 kVA, in standard or customized versions for a large variety of applications to meet customers precise requirements (telecommunications, constructions, industry, etc.). It is present in over 80 countries

through a global network to support in the successful completion of projects through an efficient engineering department, guaranteeing a highly operational flexibility and qualitative standard for which it has become a leader in the market for more than 50 years.

**Volvo Penta**

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Volvo Penta, with approximately 4,000 dealers in over 130 countries, is a world-leading and global manufacturer of engines and complete power systems for boats, vessels and industrial applications. The engine program comprises diesel and gasoline engines with power outputs of between 10 and 900 hp. Volvo Penta is part of the Volvo Group, one of the world's leading manufacturers of heavy trucks, buses and construction equipment. For dealer information, please visit the Dealer Locator at www.volvopenta.com

WAGO Middle East FZC

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WAGO is a family owned company headquartered in Minden, Germany that has been operating in the market independently for three generations and has become an international trend setting provider of electrical connection and automation technology. WAGO is the world leader in spring clamp technology having a workforce of 5600 around the globe.

Wahah Electric Supply Co. of Saudi Arabia Ltd.

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We are a world class manufacturer of Diesel and Gas engines branded Deutz, Weichai, Baudouin & MAN used for Automotive, Industrial and Marine applications. We also produce Generator Sets rated from 10kW to 12000kW. Our products are supported with

spare parts and warranty by Global Weichai Service network.

Agents:

Bahrain - National Establishment of Technical & Trade Services (1)
Saudi Arabia - Advance Machinery EST.
United Arab Emirates - SunPower Gen FZCO

Whitelegg Machines Ltd.

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**Yamuna Cable Accessories Pvt. Ltd.**

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Established in 1973, Yamuna Cable Accessories Pvt. Ltd. (YCAPL) is a leading designing/manufacturing/supplier for Power Cable jointing accessories and associated power distribution goods, through its 4 global plants and channel partners through 35 countries under "Densons" brand.

Offering complete range in Resin Cast, Heat Shrink, Cold Shrink and Pre Moulded power cable jointing accessories upto 66 kV and Plug in and Elbow/Straight/T connectors for GIS and RMU's application. All products are qualified and type tested under qualifying standards in NABL approved labs such as CESI, CPRI, KEMA, etc. The companies strong R&D wing in house manufacturing of all key inputs, and strict qualification compliance inputs ensures high quality materials and solutions, batch on batch, year on year.

Zahid Tractors

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Established in 1976 by Sheik Ali A. Tamimi and the General Electric Company, Saudi Electric Supply Company (SESCO) is the premier distributor in the Middle East for electrical supplies. SESCO offers a full range of electrical, industrial, mechanical, valve, instrumentation and automation products from many of the world's leading manufacturers.

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BAHRAIN**Abbas Bilkeek & Son**

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Electrical Machines Industries

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ارتفعت ذروة أحمال الشركة السعودية للكهرباء بنسبة ١٠,٢ في المائة عام ٢٠١٥

وهونج كونج وسنغافورة بوصفها جهات معتمدة، مما يسمح لشركة إنترتك بتوفير المزيد من الخدمات المحلية للعملاء الساعين لدخول السوق الخليجية. وبالرغم من أن الأنشطة تجري بوتيرة سريعة للغاية، فإن سوق تأجير الطاقة في المملكة العربية السعودية تظل قوية. وتتوقع مجموعة الأبحاث 6Wresearch أن يبلغ حجم النمو السنوي ٦, ١٢ في المائة خلال الفترة من ٢٠١٥ وحتى ٢٠٢١ للمولدات الكهربائية، كما تشير إلى حجم الطلب في مجالات الإنشاء والتصنيع، وقطاع النفط والغاز، إلى جانب الحاجة لتزويد المناطق الخارجة عن نطاق الشبكة بالكهرباء. وبينما كان يتم الاعتماد على مولدات الديزل لتوفير الحصة الأكبر من الكهرباء لسوق تأجير الطاقة فيما مضى بسبب وفرة الوقود وانخفاض أسعاره، فقد أوضح المكتب الاستشاري أنه ربما يتم التحول إلى استخدام المولدات الهجينة والتي تعمل بالغاز. وسوف تشارك الحكومة في تحقيق ذلك عبر إطلاق مبادرات لتقليل انبعاثات الكربون. هذا هو عامل آخر محوري ذو تأثير على سياسة الطاقة السعودية، والتي ستشهد تعاضداً لدور مصادر الطاقة المتجددة حتى مع التعميم واسع النطاق لمولدات الأحمال الأساسية الجديدة القائمة على الطاقة الحرارية.

وهي تتنوع بين المساهمة في برنامج التعميم القومي وأنظمة التحكم والتدريب. وبطبيعة الحال أدى ذلك إلى جذب الاستثمارات في المناطق ذات الصلة، وتشمل خبرات في مجال المعايير القياسية والمصادقة. وقد أزاحت شركة إنترتك مؤخرًا الستار عن قاعدة سعودية جديدة لاختبار والتصديق على المنتجات الكهربائية منخفضة الجهد ضمن خطة شارة المطابقة الخليجية. وكانت هيئة التقييس لدول مجلس التعاون الخليجي قد طورت شارة المطابقة الخليجية لضمان جودة وسلامة المعدات والأجهزة الكهربائية المباعة في المنطقة. وبدءاً من أول يوليو/تموز، سيكون لزاماً على جميع المنتجات الكهربائية منخفضة الجهد، والتي تُطرح في الأسواق، أن تحمل شارة المطابقة الخليجية.

وقد صرح بروس ماكجيل، نائب رئيس شركة إنترتك المسؤولة عن منح الشهادات الدولية بقوله: «يمكننا الآن بهذا التعيين أن نساعد العملاء بسرعة وسهولة أكبر على الوصول إلى منطقة الخليج عبر تقديم الخدمات اللازمة للحصول على شارة المطابقة الخليجية». وكانت هيئة التقييس ومجلس التعاون الخليجي قد حولاً ثلاثة مواقع لشركة إنترتك في الأمريكتين وثلاثة في أوروبا لتعيين الشارة. وتنضم هذه المختبرات لمرافق أخرى في شنغهاي

ويطلب ذلك أيضاً ضخ استثمارات ضخمة في البنية التحتية الجديدة لنقل الطاقة.

زيادة الطلب

كافة هذه الخيارات تكتسب أهمية كبيرة مع مواجهة المملكة العربية السعودية لتحديات توفير الكهرباء لعدد أكبر من الناس مع تزايد عدد السكان، وللتماشي مع زيادة الطلب عليها من قبل قطاع الصناعة. ويشمل ذلك توفير الطاقة المطلوبة للمشروعات الصناعية الكبرى، مثل مترو الرياض وقطار الحرمين. ومن المزمع أن توفر الشركة السعودية للكهرباء ٧٠٠ ميجاواط من الكهرباء لمشروع سكك حديدية، حسب قول الرئيس التنفيذي للشركة زياد بن محمد الشبيحة. ومن المقرر أن يستهلك مترو الرياض ٤٠٠ ميجاواط، بينما يستهلك قطار الحرمين ٣٠٠ ميجاواط. علماً بأن شركة سيمنز، عملاق الصناعة، سوف توفر نظام التشغيل الكهربائي بدون سائقين وأجهزة إرسال الإشارات والاتصالات وقطارات المترو لمشاريع النقل الاستراتيجية.

ولاشك أن مترو الرياض يعتبر بالفعل أحد أكبر مشاريع مترو الأنفاق في العالم. فهو يضم ستة خطوط ويبلغ الطول الإجمالي لمساره ١٧٥ كيلومتراً. حقيقة أن تعداد السكان قد تضاعف في المدينة ليبلغ خمسة ملايين نسمة منذ العام ١٩٩٠، لكن هناك شواهد أخرى على الإسراع في إنشاء شبكات التشغيل الكهربائي الجديدة في مختلف أنحاء المملكة وفي كل منطقة. ففي نجران، على سبيل المثال، بدأت الشركة السعودية للكهرباء إنشاء عدد من المشاريع وهناك مشاريع أخرى قيد التخطيط بتكلفة تبلغ ١,٨ مليار ريال سعودي (٤٨٠ مليون دولار) لمواكبة الزيادة السكانية والتوسع الحضري والاقتصادي السريع. ومن بين المشاريع الحالية تأسيس شبكات توزيع وتزويد القرى بالكهرباء، إلى جانب الربط بين المحطة الفرعية المركزية والمحطات الفرعية الجديدة في الشرفة والخالدية، وشرق مطار نجران وثار، مع شبكة نجران.

ومع مستوى النشاط الحالي، يتوفر الكثير من الفرص للشركات في مجموعة كبيرة من المناطق.

السعودية تدعم قطاع الكهرباء

إزاء تزايد الطلب على الكهرباء في المملكة العربية السعودية، وكذلك على الأجهزة والخدمات والمستلزمات الكهربائية عالية الجودة، قال وزير المياه والكهرباء السعودي مؤخرًا إن الدولة تتوقع أن يتجاوز أقصى استهلاك للطاقة حاجز الـ ٩٠ ألف ميغاواط في عام ٢٠٢٢. علما بأن السعة الحالية للمملكة تبلغ ما يقرب من ٧٠ ألف ميغاواط، وهو ما يعني زيادة كبيرة مقبلة في الإنفاق على الاستثمارات.

ريال سعودي (٢ مليار دولار أمريكي).

الاستراتيجية المتكاملة

وإلى جانب إنشاء محطة كبيرة واسعة النطاق لتعزيز توليد الطاقة، تحرص المملكة العربية السعودية أيضا على استغلال أية إمكانيات لتجميع الطاقة والربط بين الشبكات على المستوى الإقليمي. وهناك شبكة إقليمية تمتد لتشمل الكثير من مناطق دول مجلس التعاون الخليجي، غير أن حجم تجارة الكهرباء لا يزال ضئيلاً، على الأقل في وقتنا هذا. ويُتظر إلى زيادة تداول الطاقة تجارياً في منطقة الخليج باعتبارها وسيلة للدول لتلبية الزيادة الكبيرة المتوقعة في الطلب على الطاقة دون الحاجة لضخ استثمارات فردية في مساحات شاسعة بالبنية التحتية الجديدة. وينعقد الأمل أيضاً على تطوير الروابط الكهربائية مع الدول الأخرى خارج مجلس التعاون الخليجي، وتشمل مصر، حسبما ذكر الحصين الذي صرّح مؤخرًا بأنه سيتم توقيع عقود لبناء شبكة تربط الدولتين هذا العام، على أن يعمل المشروع بطاقته الكاملة قبل منتصف عام ٢٠١٩.

يتجه المرفق نحو التمويل الخاص لتمويل مشاريع أكبر حجماً. ويشمل ذلك المحطة متنوعة الدورات لتوليد الطاقة الكهربائية والمخطط لإنشائها في وعد الشمال، والتي تبلغ قدرتها الإجمالية ١٣٩٠ ميغاواط. وذكرت التقارير أن الشركة السعودية للكهرباء تسعى للحصول على قرض يبلغ مليار دولار لتمويل المحطة. كما يشمل المشروع أيضاً توليد ٥٠ ميغاواط من الطاقة الشمسية، مما يؤكد على سعي المرفق لزيادة الاعتماد على الطاقة المتجددة ضمن مصادر توليد الطاقة العديدة. وتأمل الشركة السعودية للكهرباء أن توفر الطاقة الشمسية ما يعادل أربعة ملايين برميل نفط خلال هذا المشروع. وقد وقعت الشركة، في مطلع هذا العام، اتفاقية للحصول على تسهيلات احتياطية ائتمانية بقيمة ١,٤ مليار دولار أمريكي مع سبعة بنوك دولية. وكانت الشركة قد وقعت اتفاقاً مماثلاً بقيمة أقل مع البنوك المحلية، البنك الأهلي التجاري ومجموعة «سامبا» المالية، بقيمة ٢,٥ مليار ريال سعودي (٦٦٦ مليون دولار)، لتبلغ القيمة الإجمالية للتسهيلات الائتمانية الدوارة حوالي ٧,٧٥ مليار

يتوقع وزير المياه والكهرباء، عبد الله الحصين، احتياج الدولة لأكثر من ١٣٠ مليار دولار لضخ استثمارات جديدة خلال السنوات العشر المقبلة، وذلك لمواجهة زيادة الطلب. وسوف يغطي ذلك كافة أوجه صناعة الطاقة، وتشمل توليد الكهرباء ونقلها وتوزيعها، من إنتاج الأحمال الأساسية حتى الطاقة المتجددة، ووحدات توليد الكهرباء. وذكر الحصين أيضاً أن القطاع الخاص سيلعب دوراً أساسياً في توفير أية حمولات جديدة.

تعميم البنية التحتية

يجري الإعداد لتعميم البنية التحتية الجديدة منذ مدة طويلة من جانب الشركة السعودية للكهرباء، المملوكة للدولة، والتي صرحت ببلوغ الأحمال أعلى مستوياتها في أغسطس/آب ٢٠١٥ بفعل زيادة الطلب صيفاً. وقد ارتفعت ذروة الأحمال، بحسب الشركة السعودية للكهرباء، بنسبة ١٠,٢ في المائة لتصبح ٦٢,٢٦٠ ميغاواط بعد أن كانت ٥٦,٥٤٧ في العام المنصرم. ومع الأخذ في الاعتبار نطاق الاستثمارات المطلوب،

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معرض تعليقه على التقرير وعلى دخول شركته سوق تكنولوجيا الطائرات بدون طيار: «نجري مناقشات حالياً مع كبرى الشركات من عدد كبير من القطاعات حول إمكانية استخدامها للطائرات بدون طيار من أجل تحسين عمليات الأعمال. وتقدر القيمة السوقية لتكنولوجيا الطائرات بدون طيار المستخدمة في التطبيقات التجارية بأكثر من ١٢٧ مليار دولار، وهي تشهد تحولاً من كونها عنصراً مبتكراً إلى أداة لا غنى عنها لإجراء العمل».

يهدف للتركيز على استخدام تكنولوجيا الطائرات بدون طيار، وتحليل البيانات في الأعمال. وسوف يوفر المركز، الذي يوجد مقره في بولندا، تحليل بيانات الطائرات بدون طيار، والبيانات الجغرافية المكانية لمساعدة العملاء في مختلف أنحاء أوروبا. وتعد بولندا أولى دول العالم التي تستخدم إطار كاملاً لعمل قانوني ينظم الاستخدام التجاري للطائرات بدون طيار. وقال ميكال مازور، رئيس برايس ووترهاوس كوبرز والشريك فيها في

مفكرة رجال الأعمال

يوليو/تموز:

١١ - ١٢ القمة الإيرانية لصناعات المعادن والتعدين طهران

سبتمبر/أيلول:

٣ - ١ معرض اسطنبول للمياه اسطنبول
١٩ - ٢١ معرض ومؤتمر إنترسولار دبي

أكتوبر/تشرين الأول:

٤ - ٦ معرض تكنولوجيا المياه والطاقة والبيئة - ويتكس دبي
٤ - ٦ معرض دبي للطاقة الشمسية دبي
٩ - ١٣ مؤتمر الطاقة الدولي اسطنبول

نوفمبر/تشرين الثاني:

٢٠ - ٢٤ المعرض والمؤتمر الدولي العاشر للكيمياء ودورها في الصناعة - كيمندكس المنامة
٢١ - ٢٣ معرض ومؤتمر المياه والكهرباء وتوليد الطاقة الدمام
٢١ - ٢٣ المعرض السعودي للطباعة والتغليف والبلاستيك والصناعات البترولية الدمام

كاتربيلر تّدشن مركز تدريب إقليمي في دبي

الذي سيتلقونه في المركز الجديد في دبي على تعزيز مهاراتهم وخبراتهم المتعلقة بالمنتج، إلى جانب أحدث تكنولوجيا دعم المنتجات، حسبما أضافت مصادر الشركة.

وعلق نايجل لويس، نائب الرئيس المسؤول عن قسم التوزيع في أوروبا وأفريقيا والشرق الأوسط بأن «مركز تدريبنا في دبي هو جزء أساسي من خططنا للشرق الأوسط وأفريقيا، وسوف يضمن أن كاتربيلر ووكلاءنا يمكن الاعتماد عليهم لتوفير الدعم غير المسبوق لعملائنا. إنها منطقة مهمة بالنسبة لكاتربيلر ونتوقع أن يشهد عملاؤنا نمواً هائلاً ومتواصلاً، كما سنحقق نحن النمو لتوفير هذا الدعم».

يجدر بالذكر أن المركز سيضم أيضاً مختبراً لتحليل عينات النفط المقررة للمساعدة في تلبية وقت إنهاء المهام الحرج المطلوب لتحليل عينات الطوارئ وتقليل وقت التعمّل لمنتجات كاتربيلر في المنطقة.

افتتحت شركة كاتربيلر مركز تدريب إقليمياً لمنطقة الشرق الأوسط وأفريقيا في دولة الإمارات العربية المتحدة. وسوف يوفر هذا المركز التدريب الفني والتدريب على مبيعات الآلات وأنظمة الطاقة لوكلاء كاتربيلر وعملائها في منطقة الشرق الأوسط وشمال أفريقيا، حسب مصادر الشركة. ويوجد المركز في مركز توزيع قطع غيار منتجات كاتربيلر لمنطقة الشرق الأوسط ومكتب المبيعات والتسويق الإقليمي في جبل علي، ومن المتوقع أن يبدأ عمله في الربع الرابع من ٢٠١٦. وباستثمارات تزيد على ٧ ملايين دولار أمريكي، من المقرر أن يُوظف المركز، البالغة مساحته ١٧٠٠ متر مربع، حوالي ٤٠ شخصاً، أغلبهم من الموظفين الفنيين المحترفين الذين سيتم اختيارهم في الأساس من المنطقة.

علماً بأن أكثر من ٧ آلاف فني من كاتربيلر في منطقة الشرق وشمال أفريقيا يحظى بعلاقات مباشرة مع العملاء. وسوف يساعدهم التدريب،



إبراهيم محمد الجناحي، نائب المدير العام التنفيذي للشؤون التجارية للمنطقة الحرة بجبل علي (يسار) مع ديموند تشان، نائب رئيس قسم توزيع كاتربيلر في آسيا الباسيفيك وأفريقيا والشرق الأوسط

«الربيعة والنصار» و «كابارول» تفتتحان صالة عرض في الرياض



رائد الربيعة ومارتن روزوخا في حفل افتتاح صالة العرض الجديدة

دشنت مجموعة الربيعة والنصار وشركة كابارول الألمانية صالة العرض الرئيسية في مدينة الرياض، وذلك في إطار الشراكة الاستراتيجية بين الشركتين. وشهد الحفل، إلى جانب ممثلي الشركتين، لفيثاً من رجال الأعمال وكبار الضيوف والعلماء والمهتمين بالمجال ممن يعولون على هذه الشراكة بالنهوض بهذا القطاع، وحظي الافتتاح بتغطية إعلامية متميزة.

وألقى المهندس رائد الربيعة، مدير عام مجموعة الربيعة والنصار، كلمة تناول فيها الشراكة الاستراتيجية بين الشركتين، مؤكداً على مسيرتهما الناجحة التي تحفز على مزيد من التطوير والذي سيتوج بإقامة مصنع لتصنيع دهانات كابارول في المملكة العربية السعودية، وذلك لنقل المعرفة والتقنية إليها. وأشار الربيعة في كلمته إلى المكانة الكبيرة التي تحتلها كابارول في أسواق الدهانات العالمية، مما يجعل دخولها الأسواق السعودية إضافة حقيقية لهذه الصناعة، متمنياً أن تتحقق، بفعل هذه الشراكة، جميع الأهداف التي خطت لها المجموعة. كذلك أكد مارتن روزوخا، مدير منطقة الشرق الأوسط وآسيا-كابارول، على أن هذا الافتتاح سيكون الخطوة الأولى لانطلاقه يخطط لها أن تكون متميزة في المملكة. وأشاد بالشراكة مع مجموعة الربيعة والنصار، والتي تعكس الوجه المشرق للمملكة. ولفت روزوخا إلى المكانة التي أصبحت المملكة تحتلها عالمياً بوصفها واحدة من أكبر الاقتصادات العالمية، إضافة إلى تنامي سوق الإنشاءات فيها مما يجعلها محط نظر شركات الدهانات والإنشاءات بشكل عام.

ويتوقع أن تكون صالة العرض الجديدة نقطة جذب للمهتمين والعاملين في المجال لما تتمتع به مجموعة الربيعة والنصار من ثقل وسمعة طيبة في سوق

الإنشاءات والمقاولات، وأيضاً للبريق الذي يميز اسم كابارول الألمانية كواحدة من أشهر شركات الدهانات العالمية. وتأتي هذه الخطوة في إطار الدور الهام الذي تلعبه مجموعة الربيعة والنصار في مجال الإنشاءات بوصفها إحدى أكبر شركات مقاولات الطرق والجسور. علماً بأن شركة كابارول، منذ بزوغ نجمها قبل أكثر من مائة وعشرين عاماً، تخطو بثقة في عوالم الدهانات والعزل الحراري حتى غدت ثالث أكبر الشركات الأوروبية في هذا المجال. ويعزى نجاح هذه الشركة خارج الأسواق الألمانية، بل والأوروبية، ودخولها مناطق آسيا والشرق الأوسط، إلى العلاقات القوية والفهم العميق لاحتياجات كل منطقة، وتكنولوجيات البحث المتطورة وتقنيات التصنيع التي يعاد توفيقها ومعايرتها حسب احتياجات المنطقة.

السوق العالمية لتكنولوجيا الطائرات بدون طيار تُقدَّر بـ ١٢٧ مليار دولار

كشفت دراسة أجرتها برايس ووترهاوس كوبرز أو PWC عن أن حجم السوق العالمية الناشئة لخدمات الأعمال التي تستخدم الطائرات بدون طيار تُقدَّر بأكثر من ١٢٧ مليار دولار. ووفقاً للدراسة، من المقرر أن يكون للتطبيقات التجارية للطائرات بدون طيار تأثيراً هائلاً على عمليات الشركات في عدد كبير من قطاعات الصناعة التي تتنوع بين الزراعة وصناعة الأفلام. ومع انخفاض تكلفة هذه التكنولوجيا واتساع نطاق تطبيقاتها، يكون من المتوقع أن يتم استبدال نسبة كبيرة من خدمات وموظفي الأعمال الحاليين بالحلول المدعومة بالطائرات بدون طيار في المستقبل القريب.

وفقاً لمؤسسة «Clarity from Above»، وتقرير برايس ووترهاوس كوبرز، فإن المجال الذي يحظى بأفضل الفرص عند استخدام تطبيقات الطائرات بدون طيار هو تطوير البنية التحتية، بقيمة سوق متاحة إجمالية تبلغ ٤٥,٢ مليار دولار. ويأتي ذلك قطاعات الزراعة والنقل والأمن والإعلام.

وقد أسست برايس ووترهاوس كوبرز مؤخرًا مركز تميز عالمياً باسم Drone Powered Solutions (الحلول العاملة بطائرات بدون طيار)، وهو



من المنتظر أن تشهد صناعة البنية التحتية المزيد من استخدام الطائرات بدون طيار

المحتويات

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- كابارول تدشن صالة عرض في الرياض ٤
- السوق العالمية لتكنولوجيا الطائرات بدون طيار تقدر بـ ١٢٧ مليار دولار ٤
- كاتربيلر تدشن مركز تدريب إقليمياً في دبي ٥

تحليلات

- فرص استثمارات الطاقة في السعودية ٧



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ADVERTISER INDEX

Company	Page
Aggreko (Middle East) Ltd	31
Aksa Jenerator Sanayi AS	3
Ansaldo Energia S.p.A.	45
BAUR GmbH	56
COELMO Spa	27
CompAir	26
Deep Sea Electronics Plc	47
DMG World Media Dubai Ltd (Intersolar 2016)	71
ElectroMech FZE	49
FG Wilson Engineering Ltd	11
Galva Coat for Galvanizing & Lighting Poles	58
Hellermann Tyton GmbH	59
Helukabel GmbH	33
Himoinsa, S.L.	7
IGEL Electric GmbH	52
IIR Exhibitions	32
Inmarco FZC	30
Inmesol SL	35
International Trade Solutions (FZE)	39
JCB Power Products Ltd	21
Jeremias Middle East	57
John Deere Power Systems	13
Kaeser Kompressoren FZE	75
Kirloskar Oil Engines Ltd.	9
LG Electronics Gulf FZE	2
Lovato Electric S.p.A.	44
Lucy Middle East FZE	37
Man Diesel & Turbo	23
Mecc Alte UK Ltd	43
Megger Limited	15
Mohammad Al-Ojaimi Contracting Est.	19
National Instruments India	41
Omicron Electronics Middle East	51
Ortea S.p.A.	33
Powertech Switchgear Industries FZE	29
Ranco Group	25
Rchemie international FZC	44
SES Smart Energy Solutions FZCO	29
Sullivan-Palatek, Inc.	17
Teksan Generator Electric Sanayi ve Ticaret AS	61
Volvo Penta, AB (VPEN)	5

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