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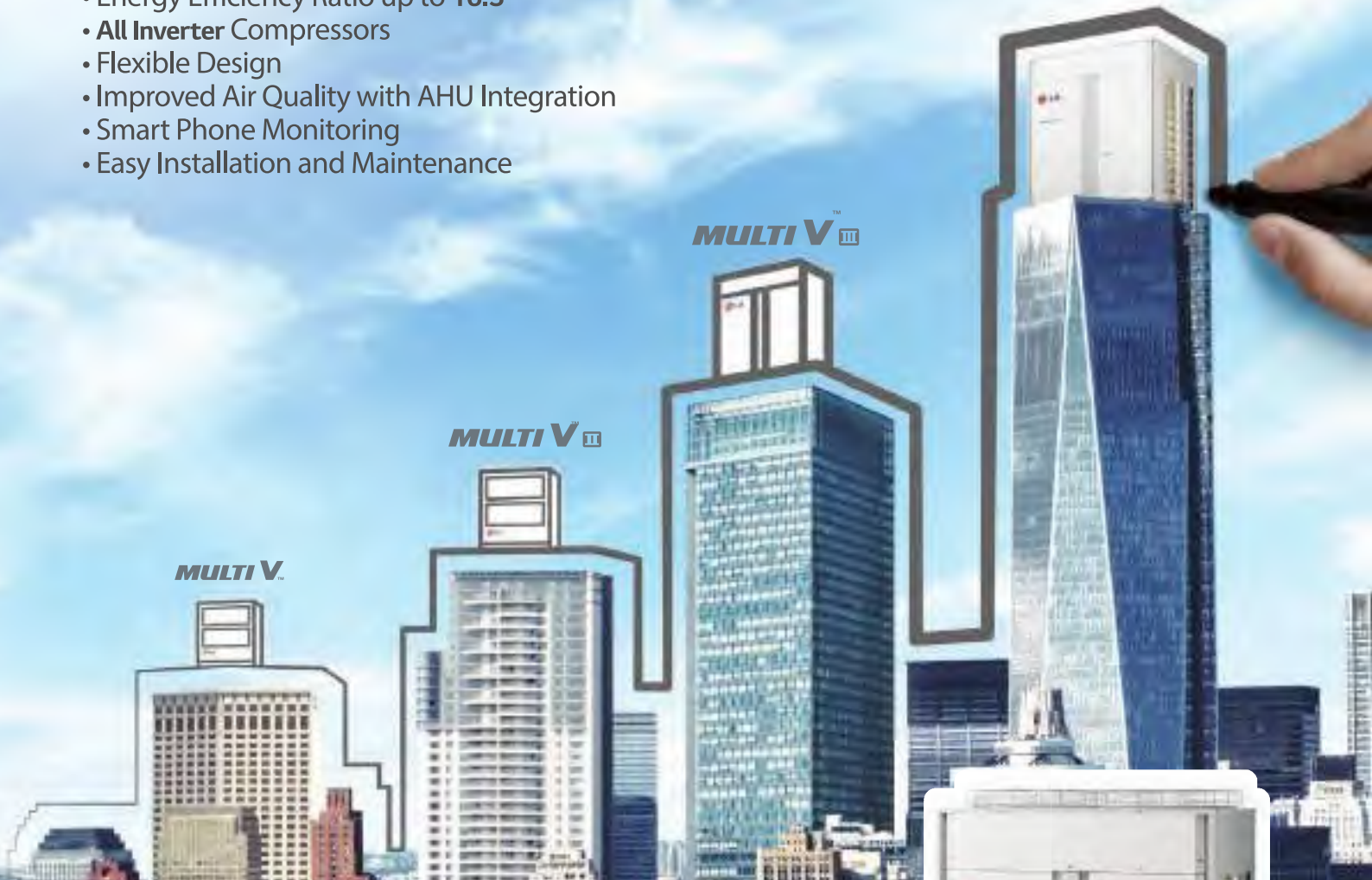
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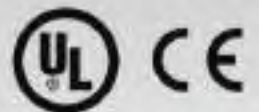
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EDITOR'S NOTE

IT WOULD APPEAR that the time of economic diversification is upon us in the Middle East.

The Saudi Arabian cabinet has recently approved sweeping economic reforms aimed at moving the Kingdom away from its reliance on oil, while the UAE and Qatar are also pursuing economic policies that will help them to reduce their dependence on hydrocarbon revenues.

With that in mind, this issue of *Technical Review Middle East* features articles on Qatar's approach to economic diversification (p14), opportunities within Saudi Arabia's power sector (p22), and investment in the region's road infrastructure (p28).

We also look ahead to construction showcase Project Qatar (p58), which returns to Doha Exhibition & Convention Centre this May, and we include the latest news from the glass (p36), cabling (p38) and printing (p42) industries.

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

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TECHNICAL REVIEW

النشرة التقنية - الشرق الأوسط

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Briefly

Saudi Aramco reaffirms commitment to al-Hasa

SAUDI ARAMCO PRESIDENT and CEO Amin H. Nasser has said that the al-Hasa region in the Eastern Province of Saudi Arabia can become a major centre for knowledge-based and innovation-driven sectors, as well as a hub for small to medium-size enterprises.

Speaking at the recently-held al-Hasa Investment Forum, Nasser said that Saudi Aramco was committed to playing a pivotal role in sustainable economic development and diversification throughout the Kingdom, including focused development in high potential regions such as al-Hasa.

"Al-Hasa is among the richest areas for oil and gas in the world, and we are proud that it is the home of Al Ghawar, the jewel of the Kingdom's oil fields and the largest conventional oil field in the world," Nasser remarked. "The company's plan for al-Hasa is by no means limited to this giant field, as we have ambitious plans to further develop oil and gas in the area."

Nasser said that the al-Hasa region holds vast industrial potential in manufacturing, agriculture and tourism.

Kuwait signs Eurofighter Typhoons contract

KUWAIT HAS SIGNED a contract with the Italian Government to procure 22 single-seat and six twin-seat Eurofighter Typhoons.

Kuwait joins fellow GCC states Saudi Arabia and Oman as customers of the combat aircraft.

Eurofighter CEO Volker Paltzo, said, "We are delighted to officially welcome the State of Kuwait as a new member of the Eurofighter family. The confirmation of this order is further testament of the growing interest in the Eurofighter Typhoon in the Gulf region. It will enable Kuwait to benefit from the critical mass being developed in the Gulf and the many advantages that it brings to an air force in terms of interoperability, training and in-service support."

The aircraft will be of Tranche 3 standard and equipped with the E-Scan radar. The Eurofighter Typhoon is currently in service at 22 operational units and globally the whole fleet has completed more than 330,000 flying hours.

Red Sea bridge back on construction agenda

SAUDI ARABIA'S KING Salman Abdul Aziz has announced a plan to build a bridge over the Red Sea between Egypt and the Kingdom with the aim of boosting trade exchange between the two countries.

Egyptian President Abdel Fattah al-Sisi said that the reinvigorated plan, which has been on the cards for many years, heralds a 'strategic partnership' between the two Arab countries. The bridge will be named after the Saudi Arabian king. In 2006, former Egyptian President Hosni Mubarak rejected a similar plan.

Egypt has signed development agreements with Saudi Arabia worth US\$590mn, according to Sahar Nasr, Egypt's international cooperation minister. The structure will accommodate road and rail traffic between an area near Egypt's Sharm el-Sheikh resort and Ras Humaid in Tabuk, northern Saudi Arabia, across Tiran Island.

The part of the bridge over the sea will measure between seven and 10 km and the structure's total length will span 50 km. The bridge will be built over seven years and could cost as much as US\$4bn.

According to reports in local media, officials have projected that the trade volume realised through the bridge could reach an estimated US\$200bn per year.



Over the waters of the Red Sea, the bridge will measure a distance of between seven and 10 km. (Photo: Igor Groshev)

GE to connect 7GW of power to reinforce Egypt national grid

GE HAS SIGNED a Protocol of Cooperation with the Egyptian Electricity Transmission Company (EETC) to provide four substations worth an estimated US\$250mn to reinforce Egypt's national grid.

The signing of the deal was witnessed by Egyptian President Abdel Fattah El Sisi and French President François Hollande and will see GE provide advanced grid solutions technologies to substations located in Mostathmereen, Beni Suef Industrial, Ismailia East and Temay Alemdeed.

The four substations will supply the equivalent electricity needs of more than 6.5mn homes to the Egyptian national grid and reinforce the network during periods of peak demand.

GE will also supply a digital data protection system, network management system and

telecommunication technologies to help connect the substations to the National Energy Control Center and improve the stability of the Egyptian network. According to GE, the installation of its Geographic Information Systems (GIS) will offer a number of solutions for Egypt's grid, such as smarter networks, condition-based maintenance and greater load control to prevent outages.

Egypt Minister of Electricity and Renewable Energy Dr. Mohamed Shaker said, "Egypt's generation capacity has significantly increased over the last two years, additionally we're moving towards a more diversified energy mix which drives us to find ways to boost the efficiency and stability of Egypt's national grid. Through GE's advanced technological solutions, we will be able to better manage and transmit power nationwide."

GE said that French components make up approximately 50 per cent of the total project scope, including the GIS technologies to be installed at the substations, which are manufactured and assembled in France.

The project is being executed in a consortium with Egyptian contractor Rowad Modern Engineering for the construction work of the substations, with the first phase including the Mostathmereen substation connected to the grid within six months. The remaining three substations will be completed by the end of 2017.



The deal was signed in the presence of the French and Egyptian Presidents.



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Briefly

NAPCO revenue surges in spite of low oil prices

DESPITE A CHALLENGING business environment for the aluminium extrusion industry, National Aluminium Products Company SAOG (NAPCO) has registered robust growth in local markets, as well as in its export markets, announcing it had earned revenues of OMR24.8mn (US\$64.4mn) in 2015, compared to OMR19.4mn (US\$50.4mn) in 2014.

The Omani company posted a net profit of OMR0.78mn (US\$2mn), marking an 11 per cent increase over the previous year's figures.

Robert Holtkamp, CEO of NAPCO, said, "The rock-bottom prices of crude oil have impacted the construction sector, which in turn has affected the aluminium extrusion industry.

"Nevertheless, we are optimistic about the government projects in the region, especially in infrastructure development and building construction, boosting our volume orders in Oman and the rest of the GCC in 2016.

"In the near-term, NAPCO is bullish about the growth opportunities in established and new markets by offering improved services and products," he added.

Siemens begins Egyptian engineers training

SIEMENS HAS BEGUN training 600 Egyptian engineers and technicians as part of its commitment to improve competencies for plants' operation and maintenance in the country. Working in collaboration with the Egyptian Ministry of Electricity and Renewable Energy, Siemens inducted the first trainee group of 50 white and blue-collar Egyptians in April 2016.

The trainees, primarily responsible for the operation of three of Siemens' gas-fired combined cycle power plants in Beni Suef, Burullus and New Capital, will undertake six months multiple vocational training in locations in Egypt and Germany.

Janina Kugel, member of the managing board of Siemens AG and CHRO, said, "The build-up of local knowledge resources will have a positive long-term ripple effect on Egypt's society, as those who have received the training will pass on their skills to the next generation."

Kuwait firm expands crane fleet with purchases



Kuwait's Integrated Logistics Co. has expanded its fleet with 24 new Grove all-terrain cranes.

KUWAIT'S INTEGRATED LOGISTICS Co. (Integrated) has expanded its fleet of cranes following the delivery of 24 new all-terrain cranes from Grove.

Integrated placed the order for 24 units with Manitowoc during a visit to the company's factory in Wilhelmshaven, Germany, last year.

The order includes 10 GMK4100L models, 10 GMK5130-2 models, two GMK6300Ls and two GMK6400s, with the majority of new purchases set to be sent to work on oil refineries in Kuwait.

Jassim Mustafa Boodai, chairman and managing director of Integrated, said, "We have achieved substantial growth in our company and as a result we're purchasing more Manitowoc cranes to capitalise on the growing work levels in the oil and gas market.

"By expanding our fleet and developing our relationship with Manitowoc, we've established Integrated as a rental market leader in Kuwait. We plan to continue adding more cranes and growing the company to keep up with the fast-changing market and to meet future demands."

Integrated, the largest crane rental company in Kuwait, has also supplied cranes to projects in Qatar and Saudi Arabia and the new units join the company's fleet of more than 600 cranes.

Waleed Raouf, regional sales manager at Manitowoc Cranes Middle East, remarked, "This sale is significant for Manitowoc because it cements our relationship with Integrated and further strengthens our market-leading position as the number one supplier of all-terrain cranes in Kuwait."

Empower CEO calls on region's real estate developers to adopt district cooling

DUBAI-BASED EMIRATES CENTRAL Cooling Systems Corporation (Empower) has urged real estate development companies to place district cooling at the top of their priority list when launching new projects for energy efficiency, cost effectiveness and the least environmental impact.



Empower CEO Ahmad Bin Shafar.

Empower CEO Ahmad Bin Shafar said that real estate development firms hold a major responsibility to disseminate district cooling use as their technical teams are "fully aware" of the direct benefits of district cooling to themselves, end-users, the economy and society as a whole.

Speaking at Cityscape Abu Dhabi, Bin Shafar said that district cooling technology helps to save operational and maintenance costs, while also preserving natural resources. The Empower CEO stated the time has come for real estate development companies to abandon conventional cooling services in favour of district cooling that is more environmentally friendly and less energy consuming than more traditional building cooling systems.

Empower currently provides district cooling services to a number of large-scale real estate developments throughout Dubai, including Jumeirah Group properties, Jumeirah Beach Residence, Dubai International Financial Centre and Palm Jumeirah, as well as a number of major retail developments in the emirate.



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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.technicalreviewmiddleeast.com

New Dubai tower to be higher than Burj Khalifa

THE BURJ KHALIFA developers have revealed plans to build a tower that surpasses the height of the tallest structure in the world.

Emaar Properties PJSC, the company that built the Burj Khalifa, revealed that the new tower would be bedecked with rotating balconies and elevated landscaping inspired by the mythical hanging gardens of Babylon.

The US\$1bn tower will be designed as a cable-supported spire containing garden observation decks with trees and other greenery.

www.technicalreview.me/construction



The tower, which will surpass the Burj Khalifa in height, is due to open in time for the 2020 Dubai World Expo. (Photo: Carsten)

Copper mill to be built at Oman freezone

OMAN'S SOHAR PORT and Freezone has signed a 35,000 sqm landlease agreement for a major new copper tube mill worth US\$46mn to be built in the freezone.

Additionally, a further 30,000 sq m of land has been set aside to increase the plant's capacity to 30,000 tonnes in the future. Construction for the project will commence later this year, and the plant is due for start-up by mid-2018, with full production scheduled by October 2018.

www.technicalreview.me/manufacturing

Al-Futtaim supplies air outlets for Louvre Abu Dhabi



Exterior view of the Louvre Abu Dhabi. (Photo: Gabriel Jorby/Flickr)

AL-FUTTAIM ENGINEERING has supplied specialised Krantz air outlets for the Louvre Abu Dhabi project.

The Louvre Abu Dhabi is an iconic museum project conceived through an intergovernmental agreement between France and the United Arab Emirates.

Designed by Pritzker-prize winning architect Jean Nouvel, it will encompass 9,200 sq m of art galleries. Al-Futtaim Engineering has supplied specialised Krantz air outlets for the museum.

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Bahrain and Kuwait sign electricity deal

BAHRAIN HAS SIGNED a US\$940mn deal with Kuwait to develop electricity networks in the country.

Bahrain's finance minister Sheikh Ahmed bin Mohammed Al Khalifa signed the deal with the Kuwait Fund for Arab Economic Development director Abdulawahab Al Bader.

Al Bader was quoted as saying the agreement was part of a GCC support plan for Bahrain in the wake of low oil prices.

www.technicalreview.me/power-a-water

Design revealed for Lusail tram



A Citadis tram single unit measures 33 metres in length and can accommodate 207 passengers. (Photo: Alstom)

ALSTOM AND QATAR Rail have unveiled the design of the Citadis tram of Lusail, which will circulate on the four-line tramway network.

The design is inspired by dhows, the traditional boats of the area, and the front of the tram is shaped like the bow of a vessel.

The designers have taken inspiration from the local architecture for the interior design and have incorporated touches of yellow that recall the Lusail flower.

www.technicalreview.me/logistics

NI report identifies engineering trends

NATIONAL INSTRUMENTS (NI), a provider of platform-based systems for the engineering industry, has announced the release of *NI Trend Watch 2016*.

The report identifies a range of topics focused on the Internet of Things (IoT) and its effect on how we manage data from the consumerisation of software to prototyping 5G.

"As the world becomes more connected, the incredible amount of real-world data available today promises engineers and scientists great insight, but getting that insight can be a challenge," said Eric Starkloff, executive vice president of global sales and marketing at NI.

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25-26	MENASOL	DUBAI	www.csptoday.com

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Dubai meet highlights Mozambique's business potential

GOVERNMENT AND BUSINESS experts from Mozambique joined business practitioners from across Dubai and the wider region at an event designed to encourage and educate business on working in the southern African country. The Mozambique Club event, organised by the Future Energy Forum (FEF), took place in Dubai on 6 April 2016 with speakers using the occasion to highlight the potential for international businesses to work in Mozambique, providing technical know-how on forthcoming energy projects. The event also addressed some of the

challenges facing businesses looking to make their mark in the African country.

Speaking at the event, Dr Lourenço Sambo, director general of the Investment Promotion Centre (IPC) of Mozambique, explained how the IPC

works as a one-stop-shop to provide practical guidance for businesses looking to make the most of opportunities in Mozambique. "The energy sector will in the near future make a significant contribution to the development of Mozambique. For the next 10 years, Mozambique may place on the market more than 7,000MW of electricity, especially biomass. This is an opportunity for UAE-based companies to explore opportunities in Mozambique's energy sector."

Luís Franco E. Macamo, country director for 3Lysium Mozambique, noted, "Mozambique needs appropriate partnerships, to bring real value in terms of technology transfer, integration with global markets and the development of the country. This means creating an environment that is attractive to foreigners to live, visit and invest."

The GardaWorld-sponsored event follows other successful FEF-organised Clubs on Iraq and ahead of another FEF event covering Iran.



Held in Dubai in early April, the Mozambique Club saw lively discussions between business professionals with an interest in investing in Mozambique.

Energy leaders set for ICCI 2016

THE ENERGY INDUSTRY is preparing for ICCI 2016 – the 22nd International Energy and Environment Fair and Conference – which will take place at Istanbul Expo Center on 27-29 April with an expected 340 exhibitors in attendance.

At a time when energy policies have become one of the most determining factors of Turkish politics and economic matters, ICCI will aim to bring together industry stakeholders from both public and private sectors, as well as academics and investors.

According to the organisers of the power exhibition, Turkey's energy sector requires investment of approximately US\$130bn up until 2023.



ICCI will take place at Istanbul Expo Center on 27-29 April 2016.

The upcoming edition of the event will feature companies presenting products and services across a range of power sectors, including renewable energy, cogeneration, electric generation and trade, electric transmission systems, energy plants maintenance, repair and servicing, environment technologies, energy efficiency, logistics and IT.

Meanwhile, a new Solar Power Special Section at the event will aim to bring together representatives of the industry with investors. Alongside the exhibition, a conference featuring more than 250 speakers will take place, focusing on various matters including energy policies and regulations, energy efficiency and energy technologies.

Alexander Kühnel, general manager of Hannover Fairs Turkey Fuarçılı, said, "As the largest energy meeting bringing together a trade fair, conference and B2B events, ICCI is an important event that has made an ample contribution to the development of the energy industry in Turkey and globally, and that is growing together with the industry. The event is also playing a major role in developing collaboration in the area extending from Europe to the Middle East and North Africa."

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Marine data cables etc. etc.
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Real GDP growth in Qatar averaged 10.8 per cent from 2008 to 2014. (Photo: Robert Harding)



Dealing with market pressures

While its gas and oil reserves have helped it become one of the fastest growing economies in the region, Qatar is acting to diversify its economy and ensure the continuation of growth, in spite of lower oil and gas prices.

QATAR, THE WORLD'S leading exporter of liquefied natural gas (LNG), and a prominent global financial investor and donor, especially to countries in the Middle East and North Africa, has emerged during the last decade as a mini 'super-state'. Its tiny citizenry enjoys the highest GDP per capita, exceeding US\$100,000 at purchasing power parity (PPP) exchange rates. Qatar is well-placed to weather the regional slowdown thanks to macro-prudential policies,

shrewd investment planning and a strongly capitalised and liquid banking system.

The country has accumulated 'colossal' foreign assets as a result of optimal utilisations of natural resources. Proven gas and crude oil reserves total 188bn barrels of oil equivalent (boe), and Qatar Investment Authority (QIA) owns an estimated US\$250bn, according to the Sovereign Wealth Fund Institute. Unsurprisingly major ratings agencies acknowledge Qatar's solid risk profile with

a higher investment grade rating (Moody's Investor Services "Aa2" and Standard & Poor's "AA", with a stable outlook), on par with several industrialised economies and the highest in the Middle East.

"Qatar has significant strength in defending its fixed exchange parity with the dollar due to availability of reserves to cover the monetary base and current account payments over the next four years. The economy is sustainable in the long-term amidst short-term challenges,"

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“More needs to be done to boost private sector participation in the economy, the upgrading of skills, technology and productivity.”

H.E. Dr Saleh Al Nabit, minister of development planning and statistics

commented Standard & Poors in a report released in early 2016.

The government boasts capabilities to shield the domestic economy against oil price volatility. The International Monetary Fund (IMF) said, “Qatar has been one of the fastest-growing countries in the region and the near-term macroeconomic outlook remains strong. The decline in oil and natural gas prices will substantially reduce external and fiscal surpluses, but its impact on growth will be softened due to the availability of sizeable financial buffers and continued public investments.” Real GDP growth has averaged 10.8 per cent over 2008-14, mostly driven by a double-digit expansion of the non-hydrocarbon sector.

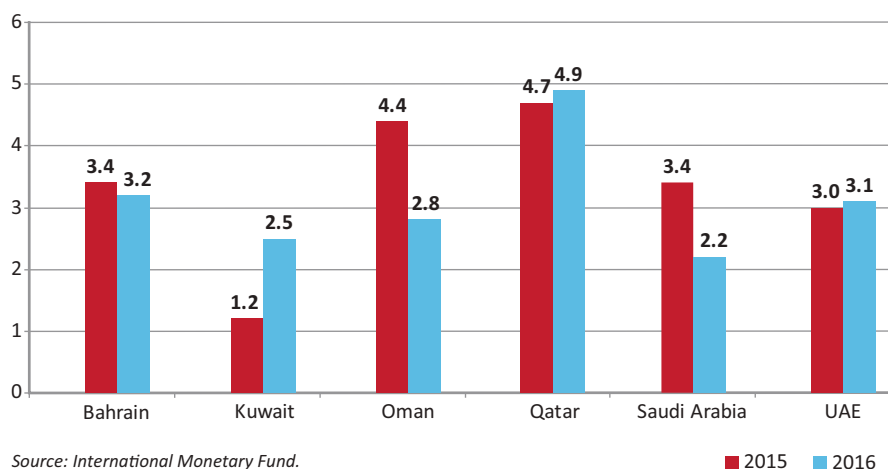
Fruits of diversification

The government’s shrewd diversification strategy over recent years has placed Qatar in a vibrant position compared to peer GCC countries, with arguably more than 60 per cent of GDP presently deriving from non-hydrocarbon related businesses.

Concurrently, the non-energy sector between 2008 and 2014 grew at 12.4 per cent per annum, fuelled by buoyant activity in construction, financial services, retail trade, manufacturing and communications. Large infrastructure projects, such as the new metro in Doha, road building, highways and the continuous expansion of the new Hamad International Airport, as well as urban regeneration – notably Musheireb in the centre of old Doha and Lusail to the north – have kept engineering, procurement and construction (EPC) companies busy.

A portfolio of ‘value-added’ downstream industries has flourished in the past decade. They include Qatar Petrochemical

Qatar's GDP growth is the highest in the GCC region (per cent)



Co; Qatar Chemical Co; Qatar Fertiliser Co; Qatar Vinyl Co; Qatar Steel Co; and Qatar National Cement Co; as well as two gas-to-liquids (GTL) plants – ‘Oryx GTL’ owned by Qatar Petrochemical (QP), South Africa’s Sasol and Chevron (USA); and ‘Pearl GTL’ – jointly owned by QP and Royal Dutch Shell. Qatar is now the world’s largest GTL exporter, producing more than 170,000 bpd of ultra-low sulphur diesels. Heavy

industries enjoy access to cheap unlimited feedstock, paying just US\$0.75-1 per million British thermal units (BTUs), well below global prices. While the utilisation of gas resources is crucial to the economy, Qatar’s future also lies in its ‘high-tech’ service-based economy and attracting more foreign direct investment into manufacturing and services.

Non-hydrocarbon growth should remain

Table: Key macro-financial indicators for Qatar (in US\$ million, unless otherwise indicated)

	2012	2013	2014	2015	2016	2017
DOMESTIC ECONOMY						
Nominal Gross Domestic Product (GDP)	190.3	203.2	210.0	191.3	197.0	218.4
o/w: Non-hydrocarbon sector (%) of GDP	43.0	45.6	50.5	62.4	67.3	67.4
Real GDP growth (%) *	6.0	4.6	4.0	4.7	4.9	5.6
Hydrocarbon /	1.3	0.1	-1.5	0.2	1.4	0.3
Non-hydrocarbon (%) *	10.0	10.6	10.6	9.5	8.4	8.3
Consumer Price Index (period average) *	1.9	3.1	3.0	1.6	2.3	2.9
Overall Fiscal Balance (%) of GDP ~	9.5	20.7	14.7	4.5	-1.5	
Total Govt Gross Debt (%) of GDP	36.0	32.3	31.7	30.0	27.8	
EXTERNAL SECTOR						
EXPORTS, FOB	133.0	136.9	128.8	85.2	77.3	84.2
o/w: Hydrocarbons (%) of total	94.6	94.0	92.0	91.3	89.5	90.0
IMPORTS, FOB	30.8	31.5	32.4	32.7	34.1	35.6
Merchandise Trade Balance	102.2	105.4	96.4	52.5	43.2	48.6
Current Account Surplus	62.0	62.4	54.8	9.7	-8.6	5.2
As % of GDP	32.6	30.7	26.1	5.1	-4.3	2.4
Foreign Exchange Reserves, net	32.8	41.8	42.9	43.4	43.5	46.2
In Months of Imports, FOB	6.7	7.9	7.8	7.1	6.1	7.6
Total External Debt (excluding banks)	161.4	164.3	167.8	164.7	171.8	168.4
Debt stock (%) of GDP	84.8	80.9	79.9	86.1	87.2	77.1
Exchange rates (riyal/U.S. dollars) #	3.64	3.64	3.64	3.64	3.64	3.64

* Annual per cent change (Qatar accounts for one-third of global LNG trade).

~ The oil-gas sector creates about 90 per cent of government revenues.

The peg to the US dollar is underpinned by Qatar’s large net foreign assets.

Land Area (sq km): 11,521. Population (2015): 2.36mn. GDP per capita (2014): US\$93,990.

Sovereign Credit Rating: Moody’s Investor Services (Aa2); Standard & Poor’s (AA).

Proved hydrocarbons reserves: Natural gas (24.5 trillion cubic metres), representing 13.1% of global total and third-largest after Iran and Russia. Crude oil (25.7bn barrels).

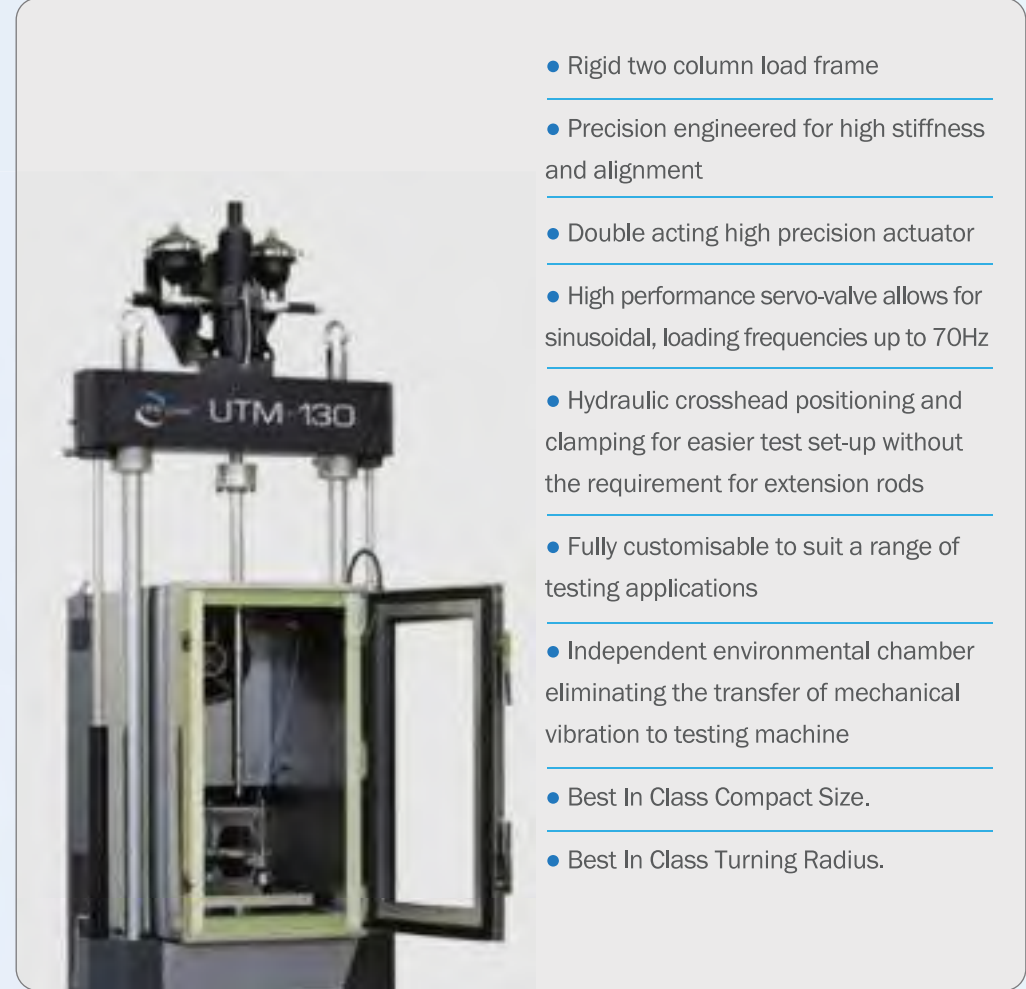
Sources: Qatari authorities, IMF estimates and BP.

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Qatar is poised to enter a new more diversified phase of growth. (Photo: dvrcaan)

buoyant, thanks to hefty infrastructure spending ahead of the 2022 FIFA World Cup, thus providing opportunities for small and medium-sized enterprises, such as hotels, retail, transport and medical services.

Prioritising capital spending

Projects worth some US\$200bn, equivalent to 104.5 per cent of GDP in 2015, have been planned over the next 10 years with US\$72bn of government projects already commissioned. This figure excludes the hydrocarbons sector, where annual investments are expected to average US\$3.4bn over 2015-17, according to Qatar National Bank. Despite still weak fuel prices, capital spending will continue to rise slightly – with the 2016 state budget focusing on long-term national development. Qatar has budgeted for revenues of QR156bn (US\$42.8bn) and expenditures of QR202.5bn (US\$55.6) during 2016. Large-scale spending totalling QR50.6bn (US\$13.9bn) has been allocated for a new Doha port, railways, several large roadways and the expansion of electricity, water and sewage networks, thereby coping with a steady rise in the country’s population.

Qatar has the means to continue implementing a mega investment programme, with a view to advancing economic diversification and preparing itself to host the 2022 FIFA World Cup – the first time the event has been held in the Middle East. Furthermore, the impact of market volatility in the near term is unlikely to be severe given sizeable financial buffers available to the government.

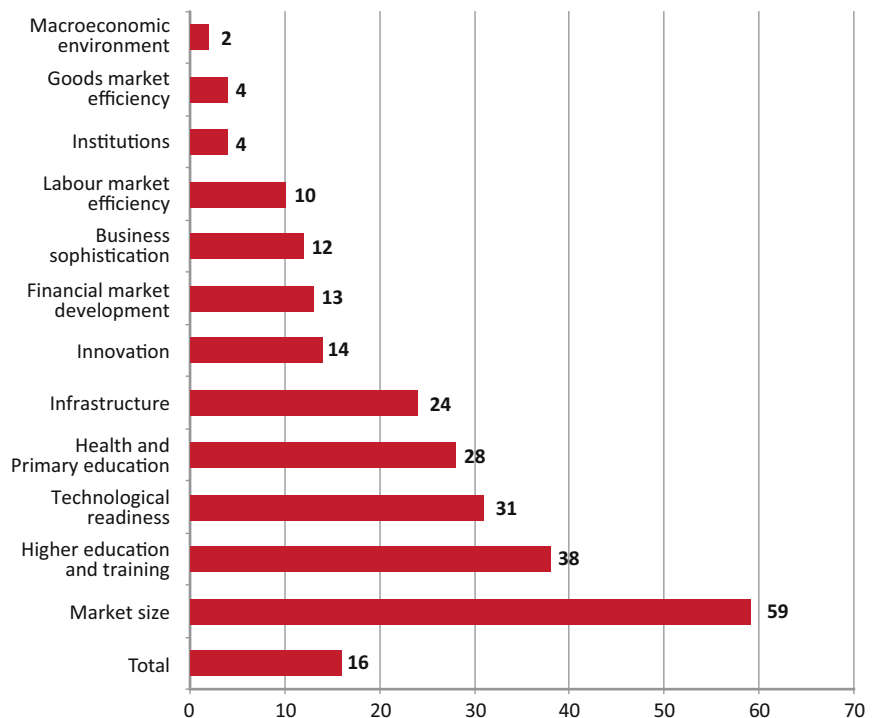
The Qatar Central Bank can inject

liquidity into the financial system through discount window and repo operations – thus raising new capital by issuing Treasury bills and Treasury bonds – and reallocating deposits of state-owned enterprises (SOEs), as well as dipping into annual returns and capital gains from the QIA’s huge offshore assets (including both direct and portfolio investments).

Liquidity-rich Qatar, however, is not immune to depleting external and fiscal balances. Based on IMF estimations, a permanent US\$10 fall in oil prices could reduce Qatar’s GDP level by 2.5 percentage points after five years, assuming that the authorities fully offset revenue losses with expenditure cuts.

More recently, the Ministry of Finance

Global Competitiveness Index Ranks by Category, 2014-15



Source: Global Competitiveness Report (2014-15).



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With the population forecast to grow by 10 per cent each year up to 2018, the demand for power generation and infrastructure is rising in Qatar. (Photo: Martin Lisner)

has established an approximately QR600bn (US\$164.8bn) 10-year spending cap on new capital projects with annual indicative targets. Some non-priority schemes, including petrochemicals projects (notably Al-Karaana and Al-Sejeel) are being shelved or deferred.

Benign prospects

PwC Qatar envisages the economy growing at 6.2 per cent a year between 2016 and 2019 (exceeding the regional average), underpinned by the following factors:

- Strong demographics – the population is forecast to surge by 10 per cent/year, reaching 2.5mn in 2018 due to the continuous influx of expatriate workers. This creates demands for power generation, water desalination and housing to cope with a growing population.
- A developed hydrocarbons industry, reflecting Qatar's pivotal role in the global energy market. Qatar has one of the lowest costs of production, estimated at US\$1.60 to US\$2.00 per million BTUs, and therefore remains a profitable LNG producer. It is strategically located to supply energy to major Asia markets (principally China, India, South Korea and Japan).
- Ongoing infrastructure spending and robust population growth should boost domestic consumption, while fuelling

non-oil growth and accelerating output diversification.

“We see the outlook for the coming years as moving to a more sustainable level of growth, tighter fiscal discipline and continued diversification of the economy,” said Stephen Anderson, managing partner at PwC Qatar.

“We see the outlook for the coming years as moving to a more sustainable level of growth, tighter fiscal discipline and continued diversification of the economy.”

Stephen Anderson, managing partner at PwC Qatar

Qatar ranks favourably on the World Bank's Doing Business indicators in the GCC region; however, there is scope for improvement relative to non-GCC peers. To create a thriving investable climate the IMF has advised the authorities to simplify business registration, improve enforcement of contracts and enhance the quality of educational curricula, while aligning it with labour market demands. Privatisation of SOEs would also promote private sector activity.

H.E. Dr Saleh Al Nabit, minister of development planning and statistics, explained, “This diversification of output and the broadening of the economic base are very welcome. However, to support the long-term deepening of the economic base, more needs to be done to boost private sector participation in the economy, the upgrading of skills, technology and productivity.”

In summary, beyond 2020, Qatar is poised to enter a new more diversified phase of growth in line with the ‘National Vision 2030’. This aims to transform Qatar into an industrialised, knowledge-based economy, capable of sustaining development and providing prosperity for present and future generations, based on the four main pillars of human, social, economic and environmental development. ■

Moin Siddiqi, economist

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Saudi Electricity Company's peak load rose by 10.2 per cent to 62,260MW in 2015 from 56,547MW in 2014. (Photo: LG Images)

Saudi Arabia powers on

The pace of activity and high level of investment in Saudi Arabia's power sector means huge opportunity for suppliers of electricity services and equipment.

AS DEMAND FOR electricity continues to rise in Saudi Arabia, so too does the market for quality electrical equipment, services and supplies.

The Kingdom's electricity and water minister said recently that the country expects peak electricity to hit 90,000MW in 2022. Saudi Arabia's current installed capacity is around 70,000MW. This means massive investment spending ahead.

Minister of Water and Electricity Abdullah al-Hussayen estimates that his country will need more than US\$130bn worth of new investment over the next 10 years to cope with the rise in demand. This will span all strands of the power industry, including generation, transmission and distribution, from base load production right through to renewables and generating sets.

Hussayen also said that the private sector would play a key part in the provision of any new capacity.

Infrastructure rollout

The rollout of new infrastructure has long been underway for state-owned Saudi Electricity Company (SEC), which said that

peak load hit its highest level ever in August 2015, driven by summer demand. SEC's peak load rose by 10.2 per cent to 62,260MW from 56,547MW a year earlier.

Given the scale of investment required, the utility is turning to private finance to bankroll larger developments. This includes the planned combined cycle power plant at Waad Al Shamal, which will have a total capacity of 1,390MW. SEC is reportedly looking to secure a loan of up to US\$1bn to help finance the plant.

The project also includes 50MW of solar energy, underlining the utility's determination to expand the contribution of renewables to the power generation mix. The solar energy component is expected to save the equivalent of four million barrels of oil equivalent over the course of the project, SEC hopes.

And, earlier this year, SEC signed a US\$1.4bn back-up credit facility with seven international banks. It follows a smaller deal with local banks, National Commercial Bank and Samba Financial Group, worth up to SAR2.5bn (US\$666mn), taking the company's total revolving facilities to around SAR7.75bn (US\$2bn).

Integrated strategy

As well as building new large-scale plant to boost generation, Saudi Arabia is also keen to exploit any potential for regional power pooling. While a regional grid already spans much of the GCC region, electricity trade volumes remain tiny, at least for now. Increased power trading in the Gulf is seen as a way for countries to meet the huge anticipated rise in energy demand without having to invest individually in vast swathes of new infrastructure.

There are also hopes of developing electricity links with non-GCC states, including Egypt, according to Hussayen, who said recently that contracts to build a grid to connect the two countries will be signed this year, with the project to be operating "at full capacity" before mid-2019. Again, this would entail substantial investment in new transmission infrastructure.

High demand

All of these options will be important as Saudi Arabia gets to grips with the challenge of providing power to more people, as the country's population rises, and in keeping up with high demand from industry. This

includes providing the required energy for major industrial projects, such as the Riyadh Metro and Haramain Railway lines.

SEC is to provide 700MW of electricity for the two rail projects, according to the utility's chief executive, Ziad bin Mohammed Al-Shiha. The Riyadh Metro will consume 400MW, while the Haramain Railway project will gulp 300MW. Industry giant Siemens is providing an electrification system, signalling and communications equipment and metro trains for the strategic transport projects.

Indeed, the Riyadh Metro is currently the world's largest subway project, with six lines and a total route length of 175 km. The city's population has doubled to five million since 1990. But there is evidence of the rush to build new electrification networks and capacity across the Kingdom, and in every province. In Najran for example, SEC has a number of projects underway or in the planning at a cost of SAR1.8bn (US\$480mn) to cope with population growth, rapid urbanisation and economic expansion. Current projects include the establishment of distribution networks, the electrification of villages, plus linking the central substation

and new substations at Sharafa and Khalidiya, East Najran airport and Thar, with the Najran network.

Given the level of activity, it means there is plenty of opportunity for businesses across a wide range of areas, from feeding into the national rollout programme through to control systems and training.

Naturally, it has drawn investment in related areas, including standards and certification expertise. Intertek recently unveiled a new Saudi base to test and certify low-voltage electrical products for the Gulf mark (G mark) scheme.

The G mark was developed by the Gulf Standards Organisation (GSO) to ensure quality and safety for electrical equipment and appliances sold in the region. As of 1 July 2016, it will be mandatory for all low-voltage electrical products entering the marketplace to bear a G mark.

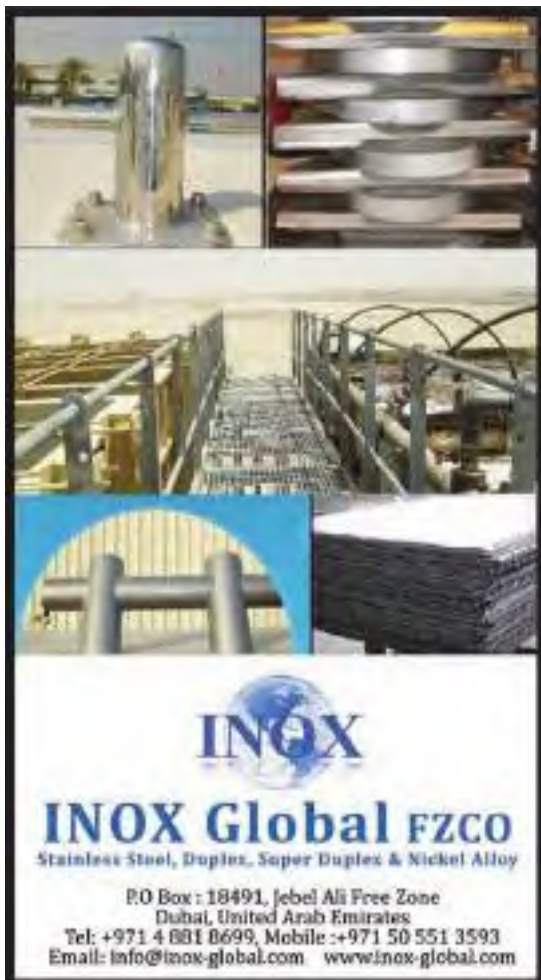
"With this designation, we can now more quickly and easily help customers access the Gulf region by providing the necessary services to obtain a G mark," said Bruce McGill, Intertek VP of global certification. The GSO and GCC had already granted the

designation to three Intertek locations in the Americas and three in Europe; these labs join other facilities in Shanghai, Hong Kong, and Singapore as approved bodies, allowing Intertek to deliver more localised services to clients seeking to enter the Gulf market.

Despite the frenetic pace of activity, Saudi Arabia's power rental market remains strong. Research group 6Wresearch forecasts annual growth of 12.6 per cent through the years 2015-21 for gensets, citing demand in the construction and manufacturing industries, and the oil and gas sector, as well as the need to provide power to off-grid areas.

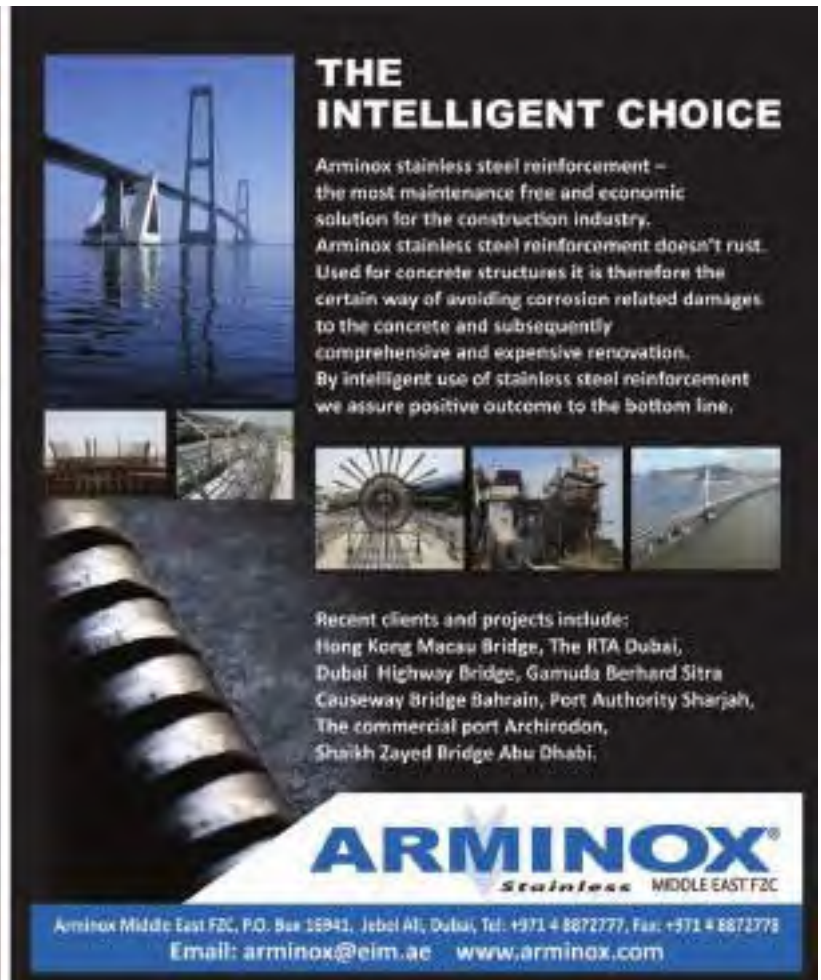
Whilst diesel generators have accounted for the main share in the power rentals market in the past, due to availability and inexpensive fuel, the consultancy says there could be more of a shift to hybrid and gas-powered generators. This will, in part, be driven by government initiatives towards reducing carbon emissions.

Again, this is another crucial factor driving Saudi's energy policy, which will see a greater role for renewables even with the massive roll-out of new thermal-based base load plant. ■



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No longer a pipe dream

Marketed by Metito, the Biopipe Global AG invention helps treat wastewater inside a PVC pipe and is the first-of-a-kind in the world.

SWISS COMPANY BIOPIPE Global AG has launched the world's first biological wastewater treatment pipe. With the signing of an exclusive license agreement with Metito, provider of total intelligent water management solutions, the pipe system will soon be available in Asia and Africa markets.

The brains behind the invention are two young entrepreneurs — Enes Kutluca and Enver Misirli, co-CEOs of Biopipe Global AG.

According to Enes, the patented green system is inspired by nature and uses a simple process to treat wastewater inside a pipe. Wastewater passes through high quality filtration stage to complete the treatment, after which the treated water can be used directly for organic farming, irrigation, underground aquifer injection or can be safely discharged into lakes, rivers or the sea. It can alternatively be stored in a clean water tank for later usage. Moreover, unlike other traditional wastewater systems, Biopipe produces no sludge, no odour, no sound and no waste, making it one of the most eco-friendly wastewater treatment processes in the world.

Support from an industry leader

Fady Juez, Metito managing director, said, "Metito has been in the wastewater treatment industry for 55 years. We treat water for human consumption and industry use. In recent years, for us it has been recycle, recycle and recycle. We are now looking at how to find renewable water resources to support this. There has been a growth in industry, populations and standards of living, while the availability of new resources has been stagnant. For us, treating the waste and then recycling is important.

"Historically, treating water was meant to be in a tank where you put in the bacteria and then clean water. Now we have a pipe that treats water on the go without producing sludge. Sludge is a major problem in big cities with brimming populations like in Asia and Africa, which makes treatment an additional cost for the utility or the operators. Also in that part of the globe — Asia and Africa — affordability and cost-effectiveness are crucial."

Juez explained that when they first came across the Biopipe technology, it was an immediate yes for them as they are always on the lookout for sustainable, cost-effective and environmentally-friendly solutions.

"Biopipe is a great example of how environmental problems can be solved in an economical and feasible way."



The patented Biopipe system uses a simple process to treat wastewater inside a pipe lined with live bacteria. (Photo: Biopipe)

"We are working with Biopipe to give them the strength, knowledge and technology of Metito to expand into countries, sectors and government bodies. Together we can achieve great things," Juez remarked.

Talking about how Biopipe functions, Kutluca revealed, "Biopipe is a great example of how we can solve environmental problems in an economical and feasible way. Imagine a system that produces no sludge and no added chemicals, and just treats 100 per cent wastewater biologically. The pipes are made of PVC material that makes the system durable and low maintenance. The length of the pipe can be increased by adding nodes to suit individual requirements or utility. Another advantage is that we can control the system from remote locations and mobile phones. The Biopipe can be installed in the backyard or on the rooftop of a residential house, as well as in a utility facility."

How it works

All you need is a circulation pump and the Biopipe. Once the tank is full, water circulates inside the pipe (lined with live bacteria) connected to the tank and the treatment starts. It takes up to two to four hours for the water to be treated completely. After this, the clean water is pumped to a separate water tank. A discharge pump is linked to a UV filter for last disinfection and then it is released into the drinking water system.

Misirli, who is also the brain behind Biopipe, noted, "This novel idea struck me five years ago. Wastewater treatment is not a big spend in Dubai, but in Asia and Africa, its an added cost to the government. A lot of money is spent to treat wastewater and operating such plants. Moreover, a lot of countries do not have treatment plants. So I came up with the idea to create a system

where each house could treat its own water. This way they would save a lot of costs and not depend on utilities. I also travelled to understand what system would work. Biopipe system is based on how wastewater is treated in a river. Wastewater is flushed into the river and the bacteria on the stone surface cleans that water. This process produces no sludge. We noticed that this treatment is horizontal and not vertical. Therefore, I wanted to invent a system that copied this method and thus, created Biopipe. It is simple to use and the building materials for the pipe are found everywhere. Shipping too is easy and hassle-free.”

“The Biopipe can be installed in the backyard or on the rooftop of a residential house as well as in a utility facility.”

On the marketing agreement with Metito, Kutluca continued to say that Biopipe Global AG is happy to partner with Metito on licensing and sales agreement. “We are happier as we can now expand technology to Asia and Africa with Metito. We already have many inquiries in Qatar, Dubai and Turkey, as well as other countries.

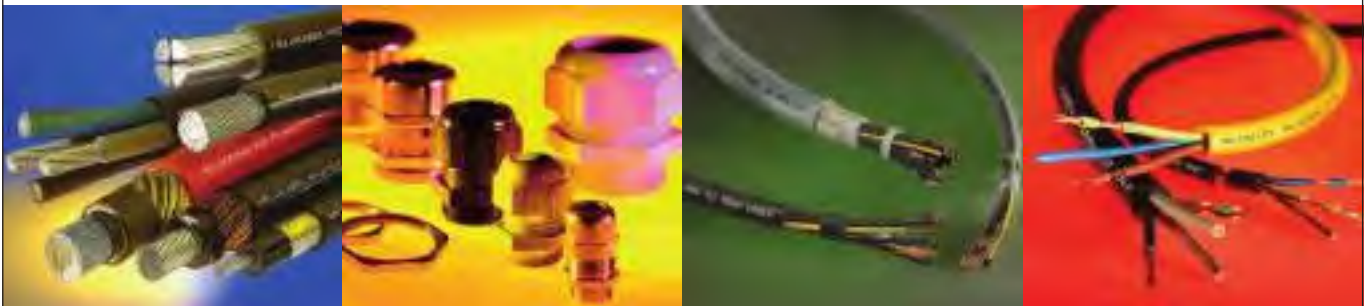


(From left to right) Biopipe co-CEOs Enver Misirli and Enes Kutluca with Metito managing directors Fady Juez and Rami Ghandour at the launch event in Dubai. (Photo: Metito)

This agreement is a big step for us. As we don't have the experience to market the product now, Metito is helping us in this respect. It knows the market and without Metito we would not be able to achieve this.”

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New dry-runners from Kaeser

KAESER HAS INTRODUCED its latest range of dry-running rotary screw compressors, the CSG-2 series.

The range, available with drive powers ranging from 37 to 90 kW, features two-stage machines that provide free air deliveries from 5.4 to 13.1 m³/min for pressures between 4 and 10 bar (g).

Together with the existing DSG-2 and FSG-2 series, Kaeser's dry-runner range now covers free air deliveries ranges from 5.4 to 50.0 m³/min, and 3.2 to 50.8 m³/min for variable speed machines.

The machines provide ultra-efficient compressed air production at all times and are ideal for applications where dry-compression is required. Users can choose between air- and water-cooled versions and also have the option of SFC variable speed control for applications with fluctuating air demand.

At the heart of these units lie a two-stage compressor airend, while the rotors are equipped with Ultra Coat, which is resistant to temperatures up to 300°C.

The highly abrasion-proof coating ensures the sealing and protection performance remains virtually unchanged for many years, while the efficiency of the CSG-2 systems is enhanced by the new PC-based Sigma Control 2 internal controller.



The new CSG-2 series from Kaeser is available with drive powers ranging from 37 to 90 kW.

A precision electronic pressure sensor keeps switching differential to a minimum, saving on energy usage.

The Sigma Control 2 also offers advantages via greater flexibility through its numerous interfaces and innovative plug-in communication modules and an easier connection to energy-saving master control systems, computer networks or remote diagnostics and monitoring systems such as Kaeser's Teleservice facility.

The large display located on the control panel also simplifies on-site communication with the system, while an SD card slot speeds up data-reading and update processes. Furthermore, the addition of an RFID reader ensures service continuity, increases security and significantly raises service quality.

All CSG-2 compressors are powered by IE3 premium efficiency motors and standard equipment includes PT 100 sensors for measurement and monitoring of the motor winding temperature.

According to Kaeser, the CSG-2 series follows in the company's tradition of super-quiet performance.

Doosan enhances small portable compressor range

THE PORTABLE COMPRESSOR range from Doosan Portable Power is one of the most comprehensive for the Middle East and Africa market and includes a strong selection of small Stage IIIA/Tier 3 models, including the 7/20 and the high ambient 7/26E HA, 7/31E HA, 7/41 HA and 7/53 HA models, with free air deliveries from 2.0-5.0 m³/min (70-177 cfm) and a rated operating pressure of 7 bar (100 psi).

According to Doosan, these small compressors are aimed at a wide range of applications in plant hire, construction and general industry, including standard pressure applications such as powering breakers and tools in road repair, demolition and refurbishment.

The compressors are built to withstand the rigours of everyday applications in tough conditions and can be equipped with a 'bundled base' option for environmental safety, providing a fully

contained base to ensure that all operating fluids (fuel, oil and water) stay within the compressor.

The 7/26E HA, 7/31E HA, 7/41 HA and 7/53 HA models offer a number of options, including an integral 6 kVA generator, which increases compressor flexibility by supplying electrical output in addition to compressed air. As a result, electric tools or other electrical equipment such as lights and fusion welding systems can be run in parallel with pneumatic equipment.

The new 7/53 HA portable compressor is the latest addition to the range, replacing the previous 7/51 HA model. The 7/53 HA compressor has been redesigned by Doosan and remains in the Stage IIIA category, avoiding the need to transition to meet Stage IIIB regulations and ensuring it is ideal for use in the Middle East market. It supplies 5.0 m³/min (177 cfm) of compressed air and



The 7/53 HA is the latest addition to Doosan Portable Power's portable compressor range.

is powered by the 4-cylinder mechanical turbo-charged Yanmar liquid-cooled 4TNV84T-BMDP engine producing 36 kW (49 HP) of power at 2,600 rpm.

The 7/53 HA compressor offers a reduced size, with a length of 3389 mm in the fixed height, running gear version and a min/max height of 3,520/3,770 mm with adjustable height running gear. The 7/53 HA model also has a width of 1,432 mm, a height of 1301 mm and additional new features include integral forklift slots and increased fuel autonomy.



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Major road building schemes are underway throughout the Middle East.
(Photo: dnoevore/Fotolia)

The road to increased connectivity

While ambitious rail and metro schemes may have stolen the headlines, road and highway developments are also playing a critical role in upgrading the Middle East's land transportation infrastructure.

A **HOST OF ROAD** building schemes are underway in the region, driven by factors such as population growth, and urbanisation, often as part of integrated infrastructure developments. Easing road congestion, improving traffic flow and enhancing connectivity will play a key role in achieving long-term objectives such as economic diversification, the attraction of investment and regional development.

The decline in oil prices has, however, resulted in budget constraints. "We have seen project suspensions, delays, de-scoping of infrastructure plans and payment slow-downs, along with low-price contract awards," comments Gary Adams, MEA president of Parsons, which has contributed to some of the major road programmes in the GCC. "However, the GCC countries are still going ahead with road projects that are

vital for their development."

Investment in road projects in Saudi Arabia has been driven primarily by modernisation and expansion, with an emphasis in interchange enhancements, Adams comments. The development of industrial clusters in non-urban regions is spurring the construction of new roads, while Makkah has attracted increased government spending to develop and upgrade its infrastructure.

In Qatar, around US\$20bn is due to be invested in roads over the next five to seven years, according to the Qatar Investment Fund (QIF). Public works authority Ashgal's Expressway programme is well advanced, and will provide vital transportation links across Qatar connecting key cities, towns and villages with national freeways and urban arterial routes, improving connectivity across Doha and wider Qatar. It

will deliver more than 900 km of new roads and an array of underpasses, flyovers and multi-level interchanges to enable free-flowing traffic and improved journey times. Examples include the New Orbital Highway and Truck Road which will connect the south of Qatar to the north, the Lusail Expressway, which will provide a vital connection into Doha's fast-growing Lusail City Development area currently under construction; and the East West Corridor, which will create strategic links with the south of the city, connecting the new Orbital Highway and Truck Road to the New Hamad International Airport. These projects also include major infrastructure improvements such as storm water drainage networks, communications networks, street lighting, and intelligent traffic systems (ITS).

Dubai's Roads and Transport Authority

(RTA) is progressing a number of projects as part of its masterplan to upgrade the network of roads, bridges, crossings and tunnels to accommodate increased traffic and improve mobility throughout Dubai, as the emirate gears up to host Dubai Expo 2020. These include the major Shindagha Corridor improvement project consisting of a new bridge that will connect Bur Dubai to Deira; a new 12-lane expressway; multiple major interchanges; and local roadway improvements throughout the historic district of Dubai. At a federal level, the UAE's ministry of public works is attaching priority to easing traffic between the emirates and is planning seven new roads in Sharjah, Ras Al Khaimah and Fujairah.

Kuwait has just embarked on a five-year road development programme, while Bahrain's road network is benefiting from a significant injection of GCC funds.

Elsewhere, Jordan's ministry of public works is looking to float a tender for the implementation of the US\$170mn desert highway rehabilitation project, funded by the Saudi Fund For Development (SFD), which entails a complete rebuilding of the

220 km road running from the Queen Alia International Airport intersection to Maan Governorate, and is the main road linking the capital to the southern region, particularly Aqaba Port.

“The GCC countries are still going ahead with road projects that are vital for their development.”

Dr. Abdullah bin Mohammed Belhaif Al Nuaimi, the UAE's minister of public works, highlighted the importance of developing Arab land transportation in driving economic growth and enhancing communication among Arab states at a recent conference in Dubai. The minister called for strengthening co-operation and

joint Arab co-ordination, and an intensification of efforts for attracting investment in the transport sector.

In Oman, the government is currently working on completing the US\$3.9bn Batinah Expressway, which will run to the UAE border as an extension of the Muscat Expressway. A 680 km long road linking Oman and Saudi Arabia was recently completed, linking the two countries by land for the first time and cutting the journey time between them by more than 500 km. And plans have been announced to build a bridge over the Red Sea between Egypt and the Kingdom with the aim of boosting trade as well as facilitating tourism from Saudi Arabia and the Gulf into Egypt.

Road development schemes will present a wide range of business opportunities. Adams notes in particular the growing demand for smart technologies. “Deloitte reckons the number of new smart city developments in the GCC will double within the next two or three years.” Smart developments will require increased investments in ITS (Intelligent Transport Systems), he points out. ■

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Highway to the Internet

Daimler Trucks is bringing trucking into the digital age by premiering three autonomously driving trucks, connected by WiFi, travelling together in a platoon.

The worldwide transport of goods is a prerequisite for economic growth.

TRUCK MANUFACTURER DAIMLER Trucks recently presented three driving trucks operated on the autobahn with authorisation for public traffic as a so-called platoon. Based on the 'Daimler Trucks highway pilot system' for autonomously driving heavy trucks, the three trucks link up to form an aerodynamically sound, fully-automated platoon. The company has named this advanced system development 'Highway Pilot Connect'.

The completely connected truck systems can potentially initiate a change in transport which would make traffic more effective and efficient, especially for drivers, haulers and vehicle manufacturers. The combination can reduce fuel consumption by up to seven per cent and the road space requirement on motorways by almost half – while improving traffic safety at the same time.

Daimler AG board member responsible for Daimler trucks and buses, Dr Wolfgang Bernhard explains, "We are connecting the truck with the Internet – making it the main data node of the logistics network. It connects all those involved in goods – drivers, schedulers, fleet operators, workshops, manufacturers and insurance companies or authorities. They receive information in real time which was previously unavailable – about the condition of the tractor unit and semitrailer, traffic and weather conditions, the parking availability at motorway service stations, rest areas and much more."

He goes on to add, "All those involved in the logistical process can use this real-time data for their needs. With flash updates over the air or automated transfer of inbound time for trucks heading to the service point maintenance time can be reduced significantly. In this way we are considerably improving the performance of goods transport as a whole."

All members of such a platoon continue to be autonomously driving trucks and given their combination of liner and lateral guidance, are also expected to be able to react to unexpected situations by disengaging from the platoon and continue autonomously without any intervention.

Such a system is also expected to be able to lessen carbon dioxide emissions up to seven per cent by reducing aerodynamic drag (vehicles in a platoon require only 15m distance between them) while efficiently using road space.

The worldwide transport of goods is a prerequisite for economic growth. Networking trucks can prove to be a promising prospect for the entire good transport sector by making way for a faster and more environment-friendly system. ■

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“My focus is a united Danfoss”

As the company’s new regional president, Turkey, Middle East & Africa (TMA), Levent Taskin spoke exclusively with *Technical Review Middle East* about his plans for the company.

MAKER OF COMPONENTS for other manufacturers of complete systems, such as OEMs and contractors, Danfoss caters to four growth sectors – infrastructure, energy, climate, and food and beverage. Levent Taskin, who was previously the regional manager of Danfoss Turkey, where he was instrumental in increasing the company’s growth by 40 per cent in two years (the highest across the organisation), spoke to *Technical Review* in his new role.

Technical Review Middle East (TRME): Today is your first day at Danfoss in your new role. What are your plans and what experience do you bring with you?

Levent Taskin (LT): I am a mechanical engineer by training with more than 25 years experience in the HVAC industry. Two years ago, I joined Danfoss Turkey as the regional manager looking after Turkey, Iran, Pakistan and Azerbaijan operations. In my two years there, I focused on how to improve our services to our customers. That is also my focus for the TMA in the future. We are looking to set up a general customer service centre to service clients 24/7, something that needs more attention at the moment. Secondly, we are looking to reorganise the after-sales services. We have eliminated some of the non-performing dealers and put in place some rules, standards and an audit control system. We have already established our Turkey operation on the above mentioned criteria.

TRME: How are you looking to do this?

LT: We are looking to provide more training to our stakeholders. For this reason, we have started e-learning facilities in the whole region, and more than 3,000 e-lessons are being provided for customers, engineers and students. It’s about the technology from an industry perspective and we talk about valves, compressors and motors from a generic perspective. We give them the practical knowledge and the initiative has been quite successful since it began in 2011. Globally, we have 40,000 active users.

We are a world leader in the field of energy-efficient technologies that enable our customers, and society as a whole, to get more from less.



Levent Taskin recently joined the Dubai office as the new regional head. (Photo: Danfoss)

This year, we are looking at how to extend this facility to 67 universities in TMA. This will be a part of the CSR activity we want to carry out in the region.

We also see some gaps in our customer sales service, and this is where we need firm leadership. We want to establish a one-stop shop for customers. Danfoss has innumerable products and works across three main areas — heating, cooling and conditioning. We have different dealerships. Sometimes we can lose energy and synergy. Some products can be sidelined. We need to act as a company rather than as different divisions. We are also moving to implement the same software programme across all divisions, with the same language and the same parameters whether it be South Africa, Turkey or Dubai. We have 200 employees in TMA region.

TRME: What do you think are the biggest opportunities and challenges in Turkey, the Middle East and Africa?

LT: In Africa, hot weather and lack of storage facilities is driving food waste of up to 35 per cent, and still 800mn people in the region go hungry every day. This is where Danfoss is looking to make a difference. In the GCC, more than 90 per cent of the food consumed is imported, and this calls for a huge infrastructure in cold storage. In Turkey and Iran, there is an increasing trend in the food processing industry, whereas in other parts of the region there is a growing positive trend in food storage demand, which

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pushes the cold chain infrastructure in the region. In terms of energy, one of the greatest challenges is the power shortage gap in most of the Middle East. The governments in many parts of the region have subsidised energy, but with current oil prices, the sustainability looks bleak. This is encouraging a growing demand for energy efficient solutions. Also, the Middle East region has experienced tremendous infrastructure growth. While there may be a slowdown in executing projects in the current market scenario, we believe Danfoss has a stronghold on existing projects where we will continue to add value. The oil price is going to be a challenge in Middle East and Africa markets, and Turkey's instability is challenging the general development of the country, where construction is supported by government.

TRME: Can you speak about Danfoss' role in the HVAC industry in the MENA region?

LT: With more than 10,000 components, including compressors, valves, sensors and heat exchangers, Danfoss Cooling provides its customers with innovative, energy-saving and precise control solutions. The business segment supplies components and solutions to air-conditioning systems in many different buildings like hotels, airports, shopping malls, train stations and other buildings that need energy-efficient and comfortable air conditioning.

In MENA, Danfoss sells its products via original equipment manufacturers (OEMs), wholesalers, contractors and installers, and in food retail, the segment also sells service-oriented solutions

directly to the end-users. The segment offers solutions to typical air conditioning applications like chillers and rooftop air-conditioning systems in commercial and residential buildings. Danfoss Cooling also targets the food and beverage industry, supermarkets with total store solutions, and makes cold storage and cold room solutions for the industrial refrigeration market.

The Africa and Middle East region is the most diversified region in Danfoss. Despite the volatile business climate in parts of the region, Africa and the Middle East also offer promising potential, with growing populations, increasing urbanisation, fast-growing economies and a focus on more efficient energy systems in the oil-producing countries. One of the countries in this region with strong growth potential is Turkey: cold winters and hot summers create a demand for heating and cooling technologies.

TRME: What are the energy-efficient solutions and sustainable HVAC equipment that Danfoss provides?

LT: No matter what we produce, the goal is to optimise performance, increase efficiency and minimise waste. Energy that we don't use doesn't pollute and doesn't cost money.

Danfoss Cooling has a very strong market position due to broad product solutions and a global presence. The segment addresses the global need for safe, reliable and energy-efficient refrigeration and air conditioning. Danfoss identified growth areas, namely infrastructure, food, climate, and energy, which also drive demand for Danfoss Cooling solutions. Leveraging its cooling application expertise, the segment continuously develops new solutions to introduce new technologies, e.g. within connectivity, new refrigerants, the game-changing Turbocor oil-free compressor technology and the segment's innovative heat exchanger technology.

TRME: In terms of HSE, what does Danfoss bring to the fore?

LT: In November 2015, Danfoss launched Climate Strategy 2030, which builds on what the company has already achieved since the first climate strategy was launched in 2008. Danfoss' energy intensity measured as energy consumption per mDKK net sales has been reduced by 29 per cent since 2007. The new strategy requires Danfoss to reduce energy intensity by 50 per cent before 2030 and use half as much energy to keep the business running. Danfoss' global energy-saving project includes the 21 largest factories and will reduce the energy used to supply buildings with heating, cooling and lighting by 35 per cent. The project will, when implementation is completed in 2017, reduce total energy consumption in the factories by more than 16 per cent, and reduce energy costs significantly. More than 160 local projects have been initiated, and the project will be realised with a simple payback time of less than three years.

"Safety First!" is the group's systematic approach to a safe workplace. The focus at Danfoss is on having clear, aligned procedures and standards to ensure a safe working environment and avoid accidents.

TRME: Can you give a brief on Danfoss' market share in the Middle East and Turkey?

LT: In the global manufacturing industry, global reach, size and scale matter. Therefore, we must be a significant player in the markets where we operate, and it is a key element in Danfoss' business model that our business segments hold leading positions as either number one or two in their industries. We do have a high market share in most of the business we operate. ■



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Glass industry set for regional progress

Vast reserves of raw materials and an accessible geographic location for exports means opportunities galore for the Middle East's glass manufacturing industry.

THE GCC COUNTRIES are witnessing an evolution phase, driven by an increase in government investments in the construction sector. The sector is projected to grow at a healthy rate due to numerous factors such as favourable macroeconomics, higher government allocation, positive demographics, and rising tourism activities across the region, according to an IMF report.

Arabian German for Exhibition & Publishing, organisers of upcoming Glass & Aluminium Saudi Arabia, have revealed that the total project value of projects awarded to date in Saudi Arabia stand at US\$724,309mn, followed by the UAE at US\$672,959mn. Kuwait and Qatar also have a significant share of projects in the region.

The growth is primarily likely to be led by residential development and mixed use projects apart from infrastructure projects fuelled by the large demand supply gap in the residential segment and the large disposable incomes of the predominantly native and largely urbanising young population.

The construction glass market is primarily driven by intense demand from building construction industry. Rising construction structures are expected to boost the construction glass market. Furthermore, emerging untapped industries are likely to offer new opportunities to the construction glass market.

The market is segmented on the basis of type into low-e glass and special glass. Based on chemical composition, the construction glass market is segmented into soda-lime, potash-lime and potash-lead. Based on manufacturing process, the construction glass market is further classified into float process and rolled/sheet process.

The construction glass market is primarily driven by intense demand from building construction industry.

Furthermore, residential, commercial and retail are key application segments of the construction glass market.

The Middle East is currently enjoying an unprecedented surge in hollow glassmaking. Business is expected to increase even further with the opening of trade borders between Iran and the West.

The UAE's location is unbeatable in terms of reaching businesses in the growing and dynamic nations of the GCC, India and Africa. The region is home to several hollow glass manufacturing plants in the UAE, Saudi Arabia, Oman and Kuwait, as well as India, Egypt and Pakistan. Of the four container glass manufacturing plants located within the UAE itself, two (those owned by Saverglass and Rak Ghani Glass) have become operational in the past five years. This demonstrates not only the region's growing demand for hollow glass, but also that of its surrounding countries, as a high proportion of the UAE's production is destined for export.

With the opening of trade agreements between Iran and the West, the glass industry is set to benefit from increased exposure to the Iranian market. Iran's hollow glass industry is now preparing for investment from foreign companies looking to take advantage of Iran's well established glass industry, as well as its vast reserves of raw materials.

Keeping this in mind, Glassman Middle East, to be held on 10-11 May 2016, will bring together all major sectors of the hollow, container and tableware glass industry. Leading global suppliers, technology experts and glassmakers are expected to attend the event. Also, the Saudi Arabia's construction sector looks set to expand by 7.8 per cent between 2015 and 2019. The sector's sustained growth is supported by government policies, an expanding population and economic prosperity. Saudi Arabia currently boasts by far the largest construction sector in the MENA region and one of the most rapidly growing globally. These expansions leads to the growth of the window and door market substantially as well as the flat glass usage.

To create better avenues for businesses in Saudi Arabia and for international ventures in the Kingdom, from 1-4 May 2016, Glass & Aluminum Saudi Arabia Exhibition will be held at Riyadh International Exhibition Centre with more than 110 exhibitors. ■

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“WIRE AND CABLE is the fundamental element and skeleton of every developed and developing economy” say Al Fajer, the organisers of the biennial Wire & Cable Arabia trade exhibition in Dubai. Construction, defence, engineering, telecommunications and informatics, power supplies and transportation/signalling developments are all affected by advances within this major industry, which has now reached its mature stage (i.e. innovating and producing successfully for export) here in the Gulf.

Operators like Riyadh Cables Group of Companies (RCGC) and Ducab are now among the world leaders in an activity without which no complicated infrastructure could possibly be completed today.

As the many selected events listed below show, most international cable manufacturers are now highly specialised; the modern energy/telecoms/broadcast sectors having developed from older rope and wire securing products that are still extensively used in both lifting and mining equipment. RCGC (formerly Saudi Modern Company for Cables, established in 1984) for example, has specialist divisions operating in the power transmission and telecommunications sectors, transforming a variety of advanced construction materials such as antimony and fibre optics, as well as the traditional copper, steel and aluminium used in electricity distribution.

High-strength tensile products (i.e. wire ropes) are still important, but the main

focus of the industry throughout MENA is now in electrical and fibre-optic products of all varieties – materials designed for efficient transmission of energy, telecoms and broadcast data. Nearly all of these have to cope with the fundamentally inconvenient fact that any current-carrying conductor produces an electromagnetic field, and will pick up distorting energy from other conductors around it. Secure shielding is, therefore, essential, and many of the technical developments being advanced within the international industry today are associated with reducing such disruption, such as introducing new insulation materials and application processes, and coaxial design.

Fire resistance is another built-in requirement these days, and capable installers pride themselves on the design of cable runs that improve all of these characteristics by means of shorter and replaceable segments, appropriate materials, and conveniently secure jointing techniques.

The main types they deal with include precision coaxial materials (as sometimes used in cable TV distribution), submersibles, both metallic and non-metallic sheathed types, ribbon informatics, and various hybrid optical types. Specifying precisely which type of cable should go where, with what transmission capacity and under what local installation conditions, is what a professional cable installer's work is all about. Heavily dependent on design considerations, this is now an important

sub-division within the wider spectrum of construction specialisms.

Broadly-based Wire & Cable Arabia (next edition 2017, date unknown as yet) is the main all-purpose local cable-trade exhibition, matched in the telecoms and broadcast sector by Cabsat (March 2017); both events will be taking place in the UAE.

Various forms (and new applications) of cabling technology can be seen at general-purpose power events such as Middle East Electricity (14-16 February 2017, also in Dubai). More specialised events include the second edition of W&C Arabia, next year.

In date order, other related exhibitions being held further afield include W&C Guangzhou in China (Canton, 6-8 June 2016), Wire China (26-29 October, Shanghai), and the International C&W Production Exhibition, held as part of Korea Metal Week (19-22 October).

Next year, Cabex is being held in Moscow in March, along with Wire Russia in May, and Wire SE Asia from 19-21 September (Bangkok). The really big international events forthcoming will be Milwaukee's Electrical Wire Processing Technology Expo (May 2017), along with and always including general cabling Wire (Dusseldorf, April 2018 – despite its concise title probably the largest international wire and cable gathering anywhere).

More specialised still and along the lines of Cabsat in Dubai (normally held in March) will be the next Broadcast India trade show which will take place in Mumbai from 20-21 October this year. ■

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From a great distance

Thomas Hensler, product manager RelaySimTest at Omicron, discusses the automated testing of distributed protection systems via the Internet.

USING CMC TESTING devices with Test Universe software is an established method for testing distributed protection systems. However, as soon as more than two distributed protection devices are involved, the test can quickly become complex.

Omicron joined forces with Austrian power utility Illwerke AG to perform an initial field test of RelaySimTest – its new software specifically developed for convenient testing of distributed protection systems.

Illwerke AG operates multiple hydro power plants in Vorarlberg, Austria. Scheduled generator maintenance work made it possible to perform thorough testing of the three-terminal circuit of a 220 kV overhead line between two hydropower plants and a substation.

A Siemens 7SD523 line differential protection relay is installed on each of the three ends. A distance protection, which only trips

with a certain delay time, is parameterised for faults beyond the primary protection area. CMC testing devices were connected to all three relays.

Underground satellite signals

One of the protection relays was located in the eighth underground level below rock, meaning that it would have been impossible to synchronise the CMCs via GPS using any receivers currently available. Thanks to the newly developed CMGPS 588, however, it was also possible to use the IEEE 1588 Precision Time Protocol (PTP) by laying an 80 m network cable down to the underground testing device. With this setup a connection to the GPS satellites was successfully established just a short time after connecting the testing device.

No calculator required

A major challenge when testing protection systems with more than two ends lies in the mathematics involved. The test quantities to be used have to be calculated for each end, and then transferred to the testing software without any errors.

RelaySimTest (*figure 1*) performs all the calculations necessary for the test automatically. During these calculations, currents and voltages for all ends are created directly as transient signals in the software for time-synchronised injection.

Cut off from the outside world

When the test location is as remote as the protection relay in the eighth underground level of the Rodundwerk II plant (*figure 2*), communication between test engineers is another issue that needs to be addressed. Unfortunately, mobile phones were only of limited use for communication between the three testing teams in this case.

The protection system proved to be fully functional and the generator could be reconnected to the grid.



Figure 1: RelaySimTest during testing at Illwerke AG. Even considerably more complex networks are easy to model using the integrated editor.

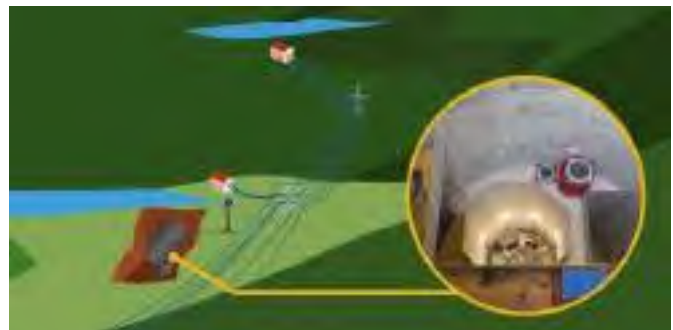


Figure 2: A GPS signal is used to synchronise distributed testing systems. In the Rodundwerk II plant, this synchronisation signal has to be laid 80 m down into the rock.

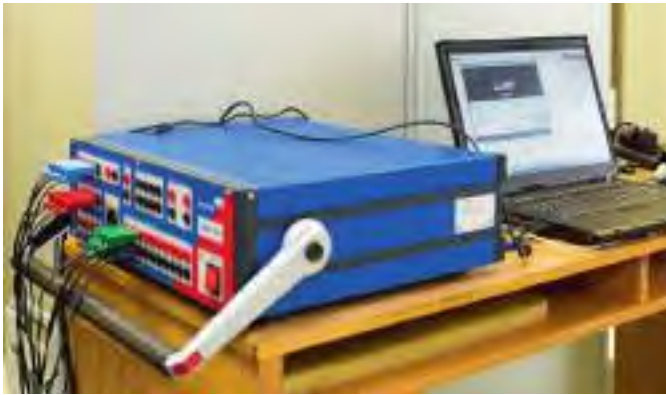


Figure 3: The remote testing equipment is connected via the Internet.



Figure 4: Just one PC is used to control all three protection ends and assess the results.

This is where RelaySimTest really shines: The previously mentioned transient signals for the synchronised test are calculated at a central location, forwarded to the remote ends (figure 3), and then automatically started. The teams at the remote locations no longer have to interact in the testing process itself.

In other words, RelaySimTest coordinates the entire testing procedure from just one PC (figure 4).

A major challenge when testing protection systems with more than two ends lies in the mathematics involved.

Internet-based testing equipment

All that RelaySimTest requires in order to perform this coordination is an Internet connection. The remote units are then added as cloud devices.

In addition to GPS (figure 5), an outdoor UMTS connection was established at the Rodundwerk II plant in this specific case. With this UMTS connection and an additional 80 m network cable the testing device was granted access via a router to the Internet, and thereby to the other testing devices.

The subsequent testing procedure was convenient and easy to perform. In an initial test, which simulated simultaneous

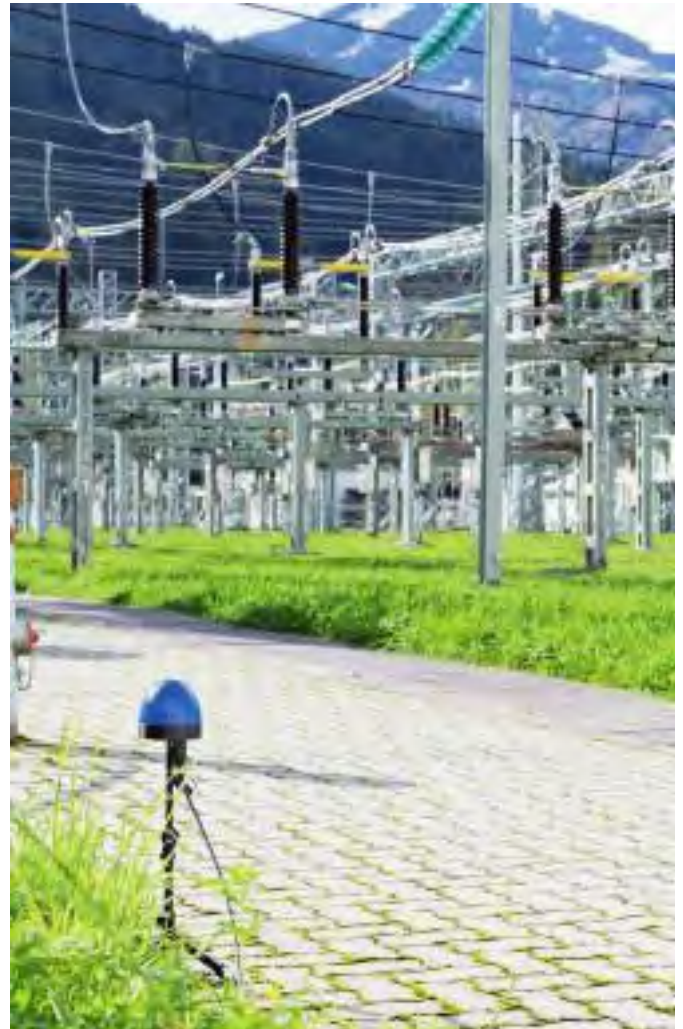


Figure 5: Via extension cables the GPS signal can also be ensured in secluded places.

switching of various load conditions, the differential protection did not trip, indicating that the time-synchronised infeed was both precise and stable.

Familiar procedures

In terms of handling, the test with distributed injections was no different than a local test. It was possible to model as many test cases as desired and then execute these immediately.

For example, the relay tripped instantaneously in the case of faults on the three-terminal line.

Entire series of shots with varying parameters, such as fault location or fault type, can be created quickly, as well as executed automatically.

Here, the first shot often supplies data that can be used as the basis for making spontaneous changes.

Successful conclusion

The protection system used by Illwerke AG proved to be fully functional, and the generator could be reconnected to the grid once the maintenance work was complete.

Since the whole process was so easy, there was also enough time to perform numerous additional tests – both internal and external faults were successfully simulated with more than 70 shots in a single day. ■

Functional printing to steal the show

Aiming to bring functionality to products, functional printing is gathering increasing attention worldwide as new usages surface in a variety of industries.



Printing has efficiently replaced some expensive and highly energy-consuming processes utilised in previous years. (Photo: ulldellebre/Fotolia)

THE INTERNATIONAL TRADE fair for print and cross-media solutions, 'drupa 2016', to be held from 31 May – 10 June in Düsseldorf, Germany, will feature a host of technologies in the graphic and industrial print as well as media and multi-channel industry. Among these, functional printing is being eagerly awaited. Referred to as the “next wave in high-volume electronic production”, functional printing is quickly gathering attention and is being invested in by major companies across the world.

3D printing (printing technology used to build three-dimensional objects) falls under the blanket of functional printing, although all 3D printing cannot be categorised under it. It has been referred to by different titles, such as additive manufacturing or solid free-form fabrication. Applications include lenicular lenses, sensors, QR and bar codes and even solar cells. The latest projects to be highlighted at the event under functional printing include their impact on smart tags, smart sensors, flexible and washable conductive inks used in the textile industry, and the overall employment of various print technologies for 'Internet of Things'.

The reason for its growing popularity is its ever-increasing applicability in the market. The manufacturing process of components of pretty much any new gadget involves steps in functional printing. Initial applications have pushed the boundaries of functional printing.

Printed circuit boards (PCB) and flexible antennas combining FM, TV, mobile, GPS in one antenna and used in automotive, gave rise to car radar systems for adaptive cruise control. Near field communication (NFC) and RFID antennas are standard features in electric devices, and the integration of printing in the manufacturing process

The field is still in its nascent stage and has a wide, unexplored world of possibilities in application.

constantly improves their cost-efficiency. Even smartphones, for instance, contain capacitive switches, batteries, touch panels and screens – making all of which is facilitated now by a printing process that efficiently replaces the expensive and highly energy-consuming processes utilised earlier. One of the recent Audi TT brochures reportedly included printed controls which, after aligning with the smartphone on the right spot, turned the page into a controllable experience of the new model's cockpit display.

Functional printing partners with anti-counterfeiting technologies and delivers combinations of inks, coatings and substrates to create invisible markers. Security print is one of the most efficient and cost-attractive protections against imitation, supposedly also offering fingerprint recognition surfaces now.

The field is still in its nascent stage, however, and has a wide, unexplored world of possibilities in application, therefore creating plenty of room for market players and creative development dimensions for printers, manufacturers and product designers. ■

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Middle East Electricity returns to Dubai with education high on the agenda

MIDDLE EAST ELECTRICITY returned to Dubai World Trade Centre in March for another year of deals, networking and product launches. The 41st edition of the show – a leading highlights of Dubai's packed trade exhibition calendar – saw close to 1,500 companies from 64 countries exhibiting, with His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice-President and Prime Minister and Ruler of Dubai, visiting the exhibition this year to review developments in the electricity and solar energy sector, especially with regard to clean energy.

According to Informa Exhibitions, organisers of the annual power industry showcase, the Ruler of Dubai welcomed the fact that many countries from across the world, including the UAE, are moving towards producing clean energy to protect the environment from pollution, preserve human health, and reduce the high costs of conventional electricity, especially in countries like the UAE, where establishing efficient solar power stations is possible. He also commended the giant solar

station projects being implemented in this vital sector, particularly in Abu Dhabi and Dubai, which are expected to increase the amount of electricity being generated in the country over the next few years.

Co-located exhibition and conference, Solar Middle East, also returned this year presenting the very best in innovative technologies and equipment within the solar power sector.

With an estimated US\$416bn required to meet the growing requirements of power consumption in the MENA region during the 2016-2020 period, according to a study by Arab Petroleum Investment Corporation (Apicorp), opportunities were aplenty at Dubai World Trade Centre this year – a fact confirmed by yet another packed exhibition floor throughout the trade show.

As usual, a raft of product launches took place, including FPT Industrial, who launched two new G-Drives at the event, extending its range of power generation solutions to now support applications from 31 kW to 582 kW. The new Cursor 16 provides up to 582 kW and enlarges the

company's portfolio at the top end of its power range, while the S8000 aims to satisfy lower power requirements with an output of up to 36 kW.

Ducab used the trade show platform to announce the launch of its 2016 PowerOverFire campaign with the Ducab Truck in partnership with UAE Civil Defence. Ducab ran a number of seminars throughout the event to educate the industry on the most up to date regulations and industry approved cabling.

Originally launched in 2013, Ducab's PowerOverFire mobile roadshow travels throughout the UAE, distributing information to the general public, dealers and retailers in the electrical product supply chain.

Elsewhere, the British Approvals Service for Cables (BASEC) spoke to local cable manufacturers about the forthcoming Construction Products Regulation (CPR) marking for fire performance cable supplied to European markets with which they will have to comply when it is implemented in July 2016 before becoming mandatory next year.

DEHN opens subsidiary in the Middle East

DEHN HAS ESTABLISHED a subsidiary in the Middle East in Dubai. The company, who exhibited at MEE 2016 in Dubai in March, said it hoped its investment in the new subsidiary would help its local customers market its products in order to develop customised protection solutions and promote internationally-recognised quality standards in the field of lightning protection, surge protection and safety equipment throughout the Middle East.

DEHN said its increased presence in the Middle East would help it get closer to its customers and would also simplify order processing. The new subsidiary in Dubai plans to offer training courses for customers in the Middle East and will ensure it will be able to reach its contact partner during local working hours. DEHN will have an increased presence throughout the region, offering protection solutions to a broader customer base.

Technical Review spoke to Dehn Middle East the day after the company established its GCC subsidiary.

DEHN + SÖHNE GmbH + Co.KG managing director Helmut Pusch said, "We've seen that the Middle East is a business area with a lot of potential that has not been served in the right way in the past. Bassam Zahabi, managing director of DEHN Middle East FZE, was already serving the region as best he could, but with limited resources. We are now closer to our customers here and we now hope to grow throughout the whole region."

With a warehouse in Jebel Ali Free Zone measuring 630 sqm, the company's Dubai hub will cover markets throughout the GCC.

Bassam Zahabi said "We now have six to seven people who will support the market, and our main objective is to provide market education, market support and customer satisfaction."



DEHN's product portfolio includes surge protection for power supply and information technology systems, lightning protection, earthing solutions and safety equipment.

DEHN + SÖHNE GmbH + Co.KG managing partner Dr Philipp Dehn, added, "We have had some decent sales here in the GCC, but there is a clear business case to continue our expansion here and without going into numbers, we are aiming to triple our numbers here within the next five years.

"We are running our own warehouse and we're going to stock our own products here. We're going to bring a specific product portfolio to the GCC countries."

DEHN will now work on customised protection solutions together with its local partners. The new subsidiary will aim to strengthen cooperation with current distributors, to help them expand their business in the Middle East.

Cummins launches new range of STAMFORD alternators at Middle East Electricity

LEADING GLOBAL MANUFACTURER of alternators, Cummins Generator Technologies, revealed a new range of STAMFORD alternators targeted at the 7.5 to 62.5 kVA power range during MEE 2016. The alternators will enable Cummins Generator Technologies to bring to market the most compact and lightweight industrial alternators of its kind, primarily aimed at the global standby market.

Designed for enhanced usability, the STAMFORD S0 and S1 alternators draw on the company's 100 years' of experience of developing and manufacturing high-performance and efficient power generation technology. The range delivers proven reliability of more than 20,000 hours.

Scott Strudwick, director – global sales and marketing at Cummins Generator Technologies, said, "We recognise that reliability is a priority for the standby market, alongside the delivery of a product which is both compact and lightweight.



Cummins launched the new STAMFORD S0 and S1 alternators at MEE 2016.

"We have, therefore, worked with our customers to develop a technological solution that will support their long-term business growth. Our rigorous research and development process has enabled us to deliver a product range which is durable, reliable and easy to assemble," he noted.

"We wanted to address the lower end of the power range and we took a 'clean sheet of paper' approach to the design.

"It's a very competitive market and we wanted to address some key customer issues such as making sure it's easy to install.

"In our tests, for example, the new product proved to be 20 per cent quicker to couple to an engine, which is incredibly important on a high-volume product like these new alternators, where every minute you spend coupling up and engine to an alternator is money," Strudwick added.

Lucy Electric introduces best-in-class units and switches at MEE 2016

LUCY ELECTRIC, AN expert in secondary power distribution, showcased its new range of product portfolio at Middle East Electricity 2016.

Awarded the 'Best Stand Design over 90 sqm' at MEE 2016, global sales director Carl Sellick said, "On our stand we featured latest generation Gemini 3 remote terminal units, which provide customers with a highly flexible platform for advanced feeder automation, plus our best-in-class ring main units and switches for overhead line equipment.

"One of the major highlights of our stand was the demonstration of our new GridKey range, which represents an exciting development for us in 2016, and extends our range into low voltage (LV) monitoring," he added.

GridKey is a world leading, LV continuous monitoring system, which measures, communicates and stores real-time data and translates this into actionable information, through a suite of analysis tools. Using the information, utilities can plan to maximise their assets, diagnose and solve problems more quickly, and reduce capital and operational costs.

Speaking about the factors leading to the growth of automated solutions for electrical distribution systems, Lucy Electric has maintained that across the Middle East region it witnessing rising demand for electricity for both business and domestic use as a result of population growth, urbanisation and sustained economic development.

However, alongside the growth in the connectivity of renewable sources, it is presenting distribution network operators with a number of challenges. Sellick noted that establishing a stable, reliable and high-performance electrical distribution network would prove to be vital if utilities are to meet growing residential and business needs, while powering new industrial developments.

"As a result we are seeing an increasing number of companies investing in automation and smart grid projects to help realise efficiencies across the network, improve network capacity and quality of supply and help future proof the infrastructure."

According to the sales director, there is great potential for high volumes of photovoltaic solar energy generation in the region, which could really push the role of renewables, but currently there is not a financially viable energy storage system, which is needed for this to be a primary source of generation. At present, battery storage at the scale required is very expensive, so what is needed is a

technology that will enable cost effective and scalable energy storage – this would really help to unlock the drive towards greater renewable power generation.

Revealing plans about current and upcoming projects Lucy Electric is involved in the Middle East region, Sellick said that the company was anticipating continued growth across the MENA region, particularly in infrastructure investment and automation projects. This presents many opportunities for Lucy Electric to grow its business and continue developing and implementing automation solutions to help its customers address the changing needs of the market. "We have strong growth ambitions for our business across the Middle East and Sub-Saharan Africa, which sits alongside our global growth and investment plans," he said.

Taking back rich experience from MEE 2016, the executive added, "We have been attending MEE for more than 15 years as it presents the perfect opportunity to showcase our products, services and leading expertise to one of our key growth markets, and as with previous years, MEE 2016 was a fantastic experience.

"Our two-tiered stand enabled the Lucy Electric team to speak directly with our customers, existing and new, to discuss some of the challenges they are currently facing, while also having the space to demonstrate some of our best-in-class products, services and solutions. We were pleased to welcome visitors outside of the Middle East from as far away as Australia and Uruguay to our stand."



Global sales director Carl Sellick at MEE 2016 in Dubai. (Photo: Lucy Electric)

Inmesol showcases many genset ranges, strengthens base at Middle East Electricity

FROM 1-3 MARCH, Inmesol participated at the region's largest power show — Middle East Electricity — displaying its four gensets from different product lines and equipped with a variety of engines.

The rental product line consisted of 66kVA LTP genset, model IIR-066, soundproof, equipped with FPT-IVECO engine; the standby product line was an open genset, model AK-22, equipped with 22kVA LTP Kohler engine; the industrial product line was a soundproof

genset equipped with 22kVA Perkins engine, with automatic without ATS panel, model IP-022; and the soundproof range included 110kVA LTP genset equipped with Volvo engine, automatic panel without ATS, model IV-165.

Inmesol also specialises in parallel gensets. This system has been specifically designed for a hospital located in the Dominican Republic, an area where the existing mains experience energy demand peaks exceeding their capacity. There are two 900kVA LTP sound

proof gensets, model IT-865, equipped with an MTU Diesel engine, at 60 HZ.

Each genset has a panel integrated into the chassis for island synchronisation with the DSE 8610 control module to synchronise both sets with each other, along with a shared external ATS panel for the sets and the mains, which enables the synchronous operation of both gensets with the mains. The DSE 8660 control module and two 2500A motorised thermomagnetic circuit breakers are the components of this ATS panel.



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The rental product genset equipped with FPT-IVECO engine, model IIR-066. (Photo: Inmesol)

The sets can operate in two different ways with this system —

- **As a backup:** In the event of mains failure, both sets will start simultaneously, synchronise, and take on the load. Depending on the load required by the facility at any given time, both sets will continue supplying power, or one will stop and the other will take on the full load until consumption is above a specific (programmable) threshold, at which point the second set will start again, synchronise with the first set.
- **To support excess energy demand:** For this configuration, the gensets will start simultaneously, synchronising with each other and with the mains, to start supplying power along with the mains when the facility's energy demand is higher than the supply available through the mains.

Speaking about the genset industry, Jalil Azdem, export area manager, Middle East and Asia Pacific, said the construction and mining sectors in Africa are fuelling Inmesol's growth in the two regions. Inmesol caters to gensets with a power range from 50 to 250kVA, and its biggest markets in the region include Saudi Arabia, Qatar, UAE, Oman, Kuwait, Jordan, Iran and Bahrain.



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Pramac introduces GRW series for rental business

TO MEET THE ever-increasing demand of rental companies, power generation expert Pramac has developed a new range of mobile diesel generators – the GRW series.

The GRW series is designed to work in a wide variety of applications where temporary power supply is needed. It is the ideal solution for rental companies, due to its versatility, high efficiency and high structural resistance. The GRW rely on last generation components, offering a wide range of supplements to meet applications ranging from events to the oil and gas industry.

The company says that the series has a low environmental impact due to low noise emissions, and a fully bundled base frame able to retain 110 per cent liquids, complete with leak detection sensor. The generating sets are long lasting and long running due to 1000+H tested salt spray resistant canopy and large metal fuel tank (at least 20/24h autonomy depending on genset model) with internal baffles.

The series also features wide access doors, fork lift pockets, large and user-friendly control panel and canopy panels with cutting edge washable soundproofing material – all for ease of use and maintenance.

Protection of the genset is of utmost priority. The GRW series models feature fully waterproof air inlet openings, and synchronous brushless alternators with reinforced insulation for tropical environment and tropical cooling system.

This new product guarantees high degrees of protection, low noise emissions and easy access for service and maintenance. With a power range from 20 to 560kVA, they are provided with EU Stage 3A engines and top class brushless alternators.



The GRW series gensets are easy to use and guarantee high degrees of protection, low noise emissions and easy access for maintenance. (Photo: Pramac)

Pramac is a solutions provider for every kind of power supply demand – from portable to industrial power supply, whether for stand by or prime power applications. Pramac not only designs, manufactures and installs a complete range of portable and stationary generators from one to 3,360kVA as standard production, but also provides tailored solutions that can be adapted to every specific requirement.

Ducab's PowerOverFire campaign aims to promote fire safety measures in GCC

DUCAB, THE UAE-BASED manufacturer of high-quality cables and cabling products, announced the launch of the PowerOverFire campaign for 2016 with the Ducab Truck, in partnership with Dubai Civil Defence, at Middle East Electricity 2016.

The aim of the campaign is to educate the industry, both locally and internationally, on the most up-to-date regulations and industry approved cabling.

Ashish Chaturvedy, marketing manager at Ducab, spoke with *Technical Review* about this initiative.

“The idea is to address the market from a leadership perspective rather than to push for our products. So there is a corporate social responsibility element involved around the campaign in that we are trying

to leave a safety message in the viewers’ subconscious mind. Therefore, when they are next in their buying cycle, and it is largely meant for people in the electrical business, they think of Ducab. Meanwhile, we are also promoting fire performance cables FlamBICC, in particular.”

Chaturvedy reiterated that the campaign also focuses at trying to reach those who may not be buying for another three to 12 months. However, whenever they are ready for their next purchase of fire performance cables, emergency systems, lighting systems or elevator shafts, which all relate to emergency and rescue in case of a fire, they are likely to be predisposed towards Ducab.

For the campaign, Ducab created a 40-

foot container with a classroom setting and showed a number of technical videos on general fire testing. There were Ducab cables on show as well as other manufacturers’ cables. The message was to reach out to certified cable companies and to beware of cheap products. There were also touchscreen kiosks giving general information on on how to safeguard houses and installations.

Chaturvedy noted, “It’s all about safeguarding your family. I need to be sure, while at my workplace, that the wires and cables attached to household appliances back home, where my child is, are safe.”

He added that, from the logistics point of view, the truck can be parked in places where visitors are not necessarily from an electrical background but may need more awareness about fire safety. It is all about making the community safe, he stressed.

“We have messages onboard from DEWA, EMSA, Dubai Customs and others to promote fire safe measures in the UAE.”

The campaign truck is set to travel to Sharjah, Abu Dhabi and Fujairah in the next three months, thereafter covering other Middle East countries such as Oman, Qatar, Bahrain and Kuwait.



Representatives from Dubai Civil Defence and Ducab were present during the launch of the initiative at MEE 2016. (Photo: Ducab)

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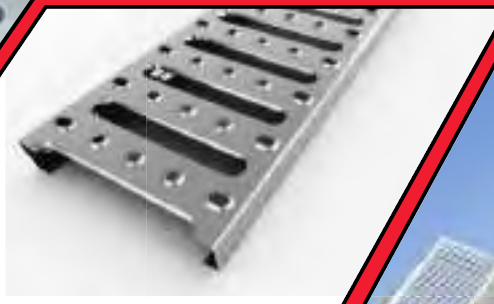
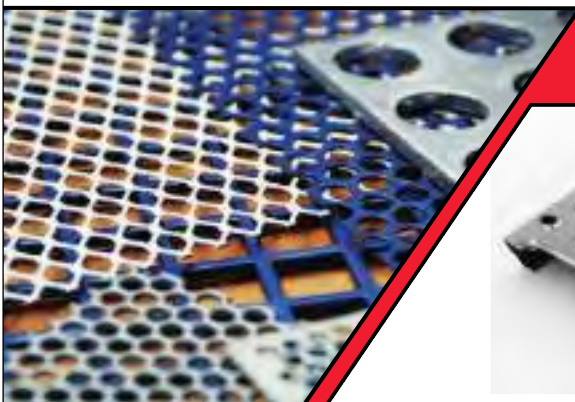
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MESC to launch region's first locally-made signalling cables

SAUDI ARABIA-BASED Middle East Specialized Cables (MESC), the leading instrumentation and special cables manufacturer in the Middle East, was at Middle East Electricity 2016 in Dubai where it was showcasing its special cables for utilities and the transportation sector, as well as fire-resistant cables.

According to CEO Eng. Aiman I Al-Masri, MESC will soon be launching signalling cables for the transportation industry. There are no manufacturers in the Middle East for such types of cables, he reiterated.

"With the current scenario in the market, no one can deny that there is a slight slowdown and I think all cable manufacturers, including MESC, are looking to diversify and find opportunities in the current scenario. It is not too hard focussing on speciality cables that distinguishes you as one-of-a-kind," he said.

Talking about the biggest markets that include Saudi Arabia, Kuwait and the UAE, Al-Masri notes that with the niche products that company is looking to expand its



MESC's facility in Riyadh spans more than 600,000 sqm. (Photo: MESC)

product range in the near future, which includes acquiring international clientele.

The CEO also revealed that MESC has a strong R&D backbone. "We dedicate a good amount of income into R&D. Since our inception, we have specialised in our own products and we would like to continue that. That is why we continue to invest in the R&D and we treat it as a business line."

With regards to expansion plans, Al-Masri revealed that with current environment where MESC expects competition to grow, all manufacturers, and not just cable manufacturers will seek additional cost-

saving and increases in efficiency so that they are also fit for such an environment. "We are, therefore, not looking at expansions now. There are some positive signs like the power and utility segment where the big demand is. Another sector that we see growing into is transportation."

The company is currently involved in lot of communications and transport sector, besides oil and gas. In Kuwait, MESC deals with a number of project and deliveries – specially related to refineries.

"With the competition around us, especially in Saudi Arabia, the UAE and Jordan, we are always geared towards satisfying our customers. We are looking for more efficiency and more customer-specific requirements that will give our clients' applications a competitive edge. As I always stress that we consider this scenario as a challenge to build a whole new business in the region, this is an opportunity for us to improve processes. And of course, we will continue to spend more time into on R&D to see what more we can do," Al-Masri noted.



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Middle East & Africa set to offer boost to Panasonic's eco solutions range

PANASONIC'S GLOBAL ECO solutions business is targeting 20 per cent growth over the next two years, a large part of which is expected from Middle East & Africa (MEA), according to a company official. The target was revealed at Middle East Electricity this year where the Japanese company was exhibiting its range of energy, lighting and indoor air quality solutions

In terms of its business activities, wiring devices and fans continue to be Panasonic's foundations, but new and challenging arenas in MEA are forecasted to be solar EPC and professional LED fixtures.

"Panasonic's acquisition of Turkey-based electrical materials producer Viko in 2014 has also been a part of this strategy. We are already the market leader of the electrical switch and socket business in Asia and have targeted to become number one in the world by 2018, which will mark the 100th anniversary of Panasonic's foundation," said Tatsuya Kumazawa, Panasonic Marketing Middle East & Africa (PMMAF) director of the eco solutions division.

Further penetration into the market will be the focus of creating new businesses by developing competitive products for each market. Future plans include leveraging free trade agreement (FTA) and establishing local production sites.

While indoor air quality solutions look at keeping the innovation momentum running by introducing products using the latest technologies, Panasonic's eco solutions division will target the MEA market by introducing a whole range of water pumps – in line with local governments' strategy of improving water distribution systems. Another area of extreme importance, according to Panasonic, is solar panels. Many MEA countries namely the UAE, Egypt, Morocco, Jordan and Saudi Arabia, have made forays into large-scale solar power programmes, Kumazawa noted.

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HIMOINSA powers through 'difficult' times and eyes opportunities in Iran

HIMOINSA DISPLAYED ITS ranges of specialised gas and diesel gensets for Middle East and the Africa markets at Middle East Electricity in Dubai.

The gas-powered gensets with built-in LPG tanks for the rental market are namely HRGP 25 T5, HRGP 40 T5 and HRGP 60 T5, offering power ratings of 25, 40 and 60 KVA continuous power.

According to HIMOINSA, this new version incorporates rental LPG storage necessary to ensure no requirement of refuelling for 24 hours. It has an added possibility of connecting an external reservoir to increase its autonomy as much as desired.

The manufacturer also introduced generator sets with 1,000-hour service interval and 1,000 L fuel tank. The gensets with Yanmar engines can now include a special kit that allows for longer maintenance intervals up to 1,000 hours.

Speaking with *Technical Review Middle East* about the company's progress in the Middle East region, HIMOINSA Middle East general manager Keith Webb said, "The market is neither negative nor positive. I would say that most clients are cautious about spending their money on products and projects. Budgets are carefully managed.

"But with Iran coming on-stream and international banks facilitating exports there, it will be a good revenue boost. We already have some presence in that country."

However, talking about other markets in the region, Webb specifically mentioned that HIMOINSA is seeing a slowdown in Saudi Arabia. He owes it to the construction sector there. "We need to make distinction in how we sell power to construction companies. Power is important and we all need it. Where we

see a huge demand now is the rental market for construction sector. We can safely say that we are still making sales there."

Noting Webb's concern, Guillermo Elum, sales and marketing director, HIMOINSA, said that even when the company is feeling the heat because of oil prices as governments are delaying some of the projects and lesser budgets, the genset industry is less affected by the slowdown in economy. "Power means security, power means working. Companies are not only looking at their CAPEX but also their OPEX. If you control cost now, you won't pay the price later."

Regarding MEE, Webb said that for HIMOINSA, the event was great as it had seen quality, as well as important exhibitors and visitors at the show. "Quality, and not quantity, matters," he noted.

The company also recently participated at bauma in Germany, where it showcased generating sets and lighting towers – the first to be powered by LPG cylinders by HIMOINSA for the construction industry.



HIMOINSA Middle East
general manager Keith Webb.

BAUR demonstrates cable diagnostic prowess at MEE

AUSTRIAN CABLE TESTING and measurement technology company BAUR GmbH was at MEE 2016 showcasing its expertise and experience to visitors and fellow exhibitors.

Speaking to *Technical Review*, BAUR GmbH international sales manager Gerhard Reimann said, "We have been in the Gulf region for many years and our main customers here are the utilities throughout the region.

"These big utilities are the main users of our products, because they need to make sure that their cable networks are in a healthy condition. If there are faults, they need to find and rectify them quickly, and for this they can use our technology and services."

The company's big sellers in the Middle East region, said Reimann, include its diagnostic test vans, as well as the cable fault finding and VFL cable testing equipment.

"The latest thing we have been doing for cable diagnostics is a

preventive diagnostics to see what you have to expect from the cable network and how you can react quickly to any unexpected faults. This is done by loss-factor measurements and partial discharge measurements," Reimann explained.

The company has worked with large utilities, such as DEWA in Dubai, and the Middle East accounts for approximately 20 per cent of its total global business.

"All of our products are used on site and environmental conditions in this region can prove to be very challenging," Reimann continued. "Your equipment must be really robust and must be designed to withstand these tough conditions. You also have to provide training and after-sales assistance."

With each contract signed with its customers, BAUR offers training that can last for up to several weeks, which is typically divided into two types of training – basic operational training, which

take place at the company's facilities in Austria, and on-site practical training out in the field on its customers' sites.

"The GCC countries are, of course, a core focus for us, but we're also working in the North African region, and worldwide we're sending our products to more than 100 countries," Reimann noted.

Earlier this year, BAUR expanded the range of equipment available for its new, fully-automatic cable test van, 'titron'. The new equipment helps to provide quick cable diagnostics, as well as improved and non-destructive location of cable faults.

With the partial discharge measurement and dissipation factor measurement (tan δ), titron now offers various cable diagnostics options. All testing and diagnostics functions can now be effectively be managed via the central software of the cable test van. With the new "Remote App"



Testing and diagnostic functions of the titron test van can be remotely controlled via a new "Remote App" available for Android and iOS smartphones, which displays fault location and information via BAUR GeoBase Map technology.

for Android and iOS smartphones, important functions of titron can be remotely controlled, with the app displaying the map section of the BAUR GeoBase Map required for the fault location and information on the cable.

SDMO to complete project for Dubai offshore platform

ENGINEERING SOLUTIONS PROVIDER SDMO, who exhibited at Middle East Electricity, is set to complete the installation of a diesel generator package for Dubai Petroleum Establishment's (DPE) offshore Rashid C EPC project, part of the three-phase Jalilah and Rashid re-development initiated in 2012.

The second phase of this project includes a new 12-slot wellhead platform, 'Rashid C', which will be connected to the existing Fateh field complex. The Rashid field lies approximately 75 km offshore Dubai, while the Fateh complex lies approximately 95 km offshore.

Technip Abu Dhabi, which was tasked with the engineering, procurement, installation and commissioning scope for both the Rashid C platform and its associated pipelines, appointed SDMO for the design, supply and certification of the diesel generator package.

SDMO's scope of work has consisted of the design and the supply of two diesel



The generator package is designed to withstand the harsh offshore environment.

generator (DG) packages (100KVA PRP tag name: DEG 650 A/B) and the certification of the completed packages on the platform by a DPE-approved certifying authority.

Each generator package is encased in a single non-pressurised, non-air conditioned acoustic enclosure. The DG set package is totally enclosed in an insulated weatherproof enclosure in SS316 material; dampers are gas tight and fire resistant. The enclosure panels are complete with weatherproof seals and insulation material with rear backing of SS316 perforated sheets and painted as per specification.

Complete access is available to all equipment for inspection, maintenance and removal for repair. Removable side panels are provided as well as hinged doors on either side of the enclosure. Panel skins are unpainted SS316L, with a minimum thickness of 2.5mm. The enclosures are provided with lifting pad eyes and are capable of withstanding wind loading.

Fire and gas detectors have been installed inside the enclosure by SDMO and outside the package skid by Technip, protecting the entire package. The DG package will undergo trip/shutdown in the case of any fire or gas detected.

The DG set is entirely self-sufficient, suitable for black start operation without any external power supply or utilities, as it will be the main source of power to the platform. The generator control panel (GCP) is supplied by SDMO and installed in the Local Control Room (LCR). The interconnecting cabling has been carried out by Technip, based on SDMO's recommendations.

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Industry booming in Lebanese city thanks to support from Aggreko

THE POPULATION OF Zahle, the capital of Lebanon's Bekaa region and the country's fourth largest city, has seen a boost to its economy over the past year thanks to support from Aggreko, the world leader in modular, mobile power and temperature control solutions.

Last year, Aggreko reached an agreement with Electricite de Zahle (EDZ) to supply 45MW of power in the city for two years. A growing number of investors have now established factories in the city, which has resulted in new jobs being created, and with more people moving to the area for work, the housing industry has also benefited.

Previously, the 60,000 households in Zahle and neighbouring villages would receive as little as six hours of electricity per day as well as intermittent water. By providing power around the clock from Aggreko plant, EDZ with its well-developed distribution networks has given local residents reliable electricity. Street lighting is also now provided every night offering additional safety to residents, and as all pumping stations receive 24 hour power, water shortages are also now a thing of the past.

Aggreko general manager Bill Kearns said, "It has been 42 years since Zahle last had reliable, round the clock power and Aggreko is delighted to be the first company to provide 24/7 power to EDZ for its concession. Our tier 3 engines offer low emissions and once they arrived in the country we were able to deliver power within 22 days.

"It has been particularly pleasing to hear the benefits our power generation has brought to Zahle and the surrounding area. We are also committed to leaving a lasting legacy to the region as part of the



In 2015, Aggreko reached an agreement with Electricite de Zahle (EDZ) to supply 45MW for two years to the city of Zahle.

project and we are developing local talent, with 12 of our own engineers working to train 13 local Lebanese crew."

EDZ CEO Assad Nakad said, "My dream to provide Zahle and the neighbourhood villages with clean and continuous power has come true by partnering with Aggreko. This allows EDZ to provide not only power to the people, but has enabled us to have an integrated economic circle, which is fundamental. Power generated by Aggreko and supplied by EDZ, allows for factories to operate uninterruptedly and alleviate unemployment in the region. It also stops the younger generation migrating to other larger cities of Lebanon and so retains the talent in the region."

A key component of the project is Aggreko's use of its SCADA monitoring system, which allows for on-site and office monitoring at any given time by the customer.

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

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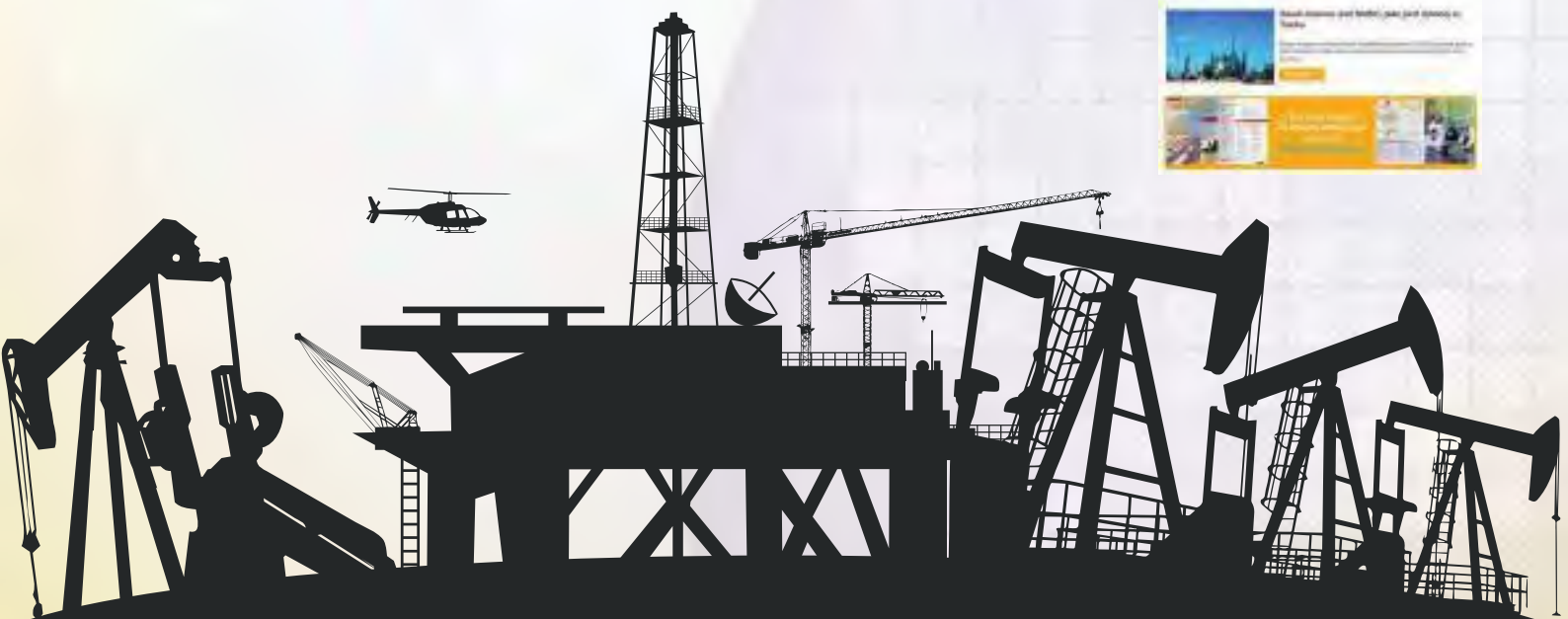
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Event director Rawad Sleem.

'Qatar positioning itself as regional business hub'

Event director Rawad Sleem emphasises why Project Qatar is important for the country's economic and social growth.

“Since 2000, Qatar has grown faster than any other economy, and it now ranks among the top countries in terms of its per capita income.”

Technical Review Middle East (TRME): Despite its small population, Qatar's construction market appears to hold huge potential for both foreign and local investors. How does Project Qatar help facilitate the requirements of international and local buyers?

Rawad Sleem (RS): The role of Project Qatar being the largest exhibition dedicated to the construction industry is to establish a meeting platform to bring local, regional and international suppliers to meet with buyers that have a demand for various construction products and services.

Sourcing products has always been a complicated and delicate process, by bringing manufacturers and suppliers aiming to penetrate new markets, Project Qatar helps in narrowing the gap between buyers and sellers.

Whether they are suppliers, agents, distributors or OEMs, all have the opportunity to showcase their physical products in front of trade professionals and

particularly trade buyers. As per our statistics from last year, which were audited by KPMG, 20 per cent of our trade visitors came from the international markets, which is an indicator that there is a need for buying or venturing into new business fields. Qatar is positioning its place as a regional hub for business investors and commuters due to its abundance in terms of natural wealth, and its clear openness for attracting foreign investment.

Over the last 12 years, Project Qatar has firmly established itself as the definitive avenue for tens of thousands of leading manufacturers and exporters from all over the world, and hundreds of thousands of local and regional importers and construction industry professionals.

TRME: What can you tell us about Project Qatar's contribution towards the Qatar National Vision (QNV) 2030?

RS: Project Qatar is only a reflection of the economy of Qatar and its construction



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QNV 2030 focuses on the diversification and aims at transforming Qatar into an advanced country by 2030, capable of sustaining its own development and providing a high standard of living for all of its people for generations to come. All of this requires a massive infrastructure overhaul by building roads, sustainable cities, airports, ports, stadiums, residential units, schools bridges, hospitals and hotels. Project Qatar is proud to be the bridge connecting Qatar to the world of the construction industry.

TRME: The event receives a lot of support from regional and international industry bodies. How do the event's organisers utilise this support to help to improve the event's offering?

RS: Project Qatar structure is based on international support from export departments, trade agencies and associations. In this regards, we have two types of support that we receive, commercial support and technical educational support.

The commercial support is utilised by the subsidy of the governments representing the pavilions in order to promote and support SMEs in their foreign overseas exports. Our role is to ensure that those manufacturers are meetings with their counterparts during Project Qatar. In this regards, we have introduced the dedicated B2B platform that matches the profiles of the supplier with that of the buyer to have secured and guaranteed pre-arranged meetings. On the other hand, the technical education support and front is utilised by bringing specialist and technical speakers for example from the Middle East Facility Association (MFMA) and the Gulf Organization for Industrial Consulting (GOIC) to aid our audience base in their professional development path.

Being supported by more than 30 supporting bodies gives the event an element of international standard. Reaching a high international standard is something which we believe in at Project Qatar and this is why we have partnered with ASTM International, one of the leaders in world of standard setting.

TRME: What have been the key market trends that have changed since Project Qatar's inception 13 years ago?

RS: Qatar's economic ascent of recent years has few parallels. Large financial dividends

have followed from Qatar's investments in oil and gas, and its macroeconomic achievements have been impressive. Since 2000, Qatar has grown faster than any other economy, and it now ranks among the top flight of countries in terms of its per capita income. To meet the needs of a growing economy and larger population, Qatar has spent enormously on expanding and upgrading economic and social infrastructure, this has catapulted Qatar to the world stage as the hottest market for investment. The massive nationwide programme of investment has resulted in a boost of nearly all domestic sectors in the Qatari market. This could not be more different from 13 years ago, when Project Qatar initially started. Now Qatar is one of the most sought after investment hotspots around the globe.

With regards to construction trends, due to the phases of preparation now, infrastructure projects such as roads, bridges are well underway and we are moving to the phase of facility building such as schools, hotels and others. The phase of construction we are in directly affects the trends as the products and services in each phase are different.

TRME: Knowledge exchange is always a core part of Project Qatar's conference offering. Can you tell us about the additions to this year's programme and how the various conferences can help to benefit delegates and their understanding of Qatar's construction markets?

RS: The conference series offering is created as an answer to the demand for specialist, interactive insights in to the challenges and opportunities facing companies within Project Qatar's product and services profiles. These are the topics are the hot topics of the construction industry and by attending the conference delegates will be able to keep abreast of the latest trends and benefit from hearing from leading specialists from each field.

Project Qatar 2016 will host six specialised conferences throughout the year, including two conferences same time as the show: The 3rd Annual LightingTech Qatar (9-10 May, 2016), The 2nd Annual Future BIM Implementation Qatar (11-12 May, 2016), The 1st Annual Smart Parking Qatar (18-19 April, 2016), The 3rd Annual Future Interiors Qatar (5-6 September, 2016), The 3rd Annual Future Landscape & Public Realm Qatar (24-25 October, 2016), The 3rd Annual Future Drainage Networks Qatar (December 5-6, 2016).

TRME: Last year saw the addition of new country pavilions. How many country pavilions will we see this year and what role do these country pavilions play in offering additional benefit to visitors at the show?

RS: We are blessed and thankful to have recurring pavilions at Project Qatar due to the increasing trend in the construction industry. The international participation and its sales dynamics differ from year to year as pavilions are subsidised by governments and as such have a long-term strategy. This is why we have some pavilions coming every year, while others participate on a year-on, year-off basis. As of today, we have confirmed participations from Belgium, Bulgaria, China, the Czech Republic, Egypt, Greece, Germany, India, Italy, Kuwait, Korea, Saudi Arabia, Pakistan, Poland, Romania, Spain, Taiwan, Turkey, the UAE and the UK.

Visitors will be able to access materials not previously accessible in Qatar.

TRME: What does the Project Qatar Workshop Series have in store in 2016?

RS: The workshop series will include several topics conducted by well-known entities. Excelledia will do the following: GSAS Awareness, HSE Awareness and Project Analytics. British Standards Institution Group Middle East WLL will conduct the following: Modular Scheme, Product Testing, Construction Waste and Sustainable Smart Cities. And, finally, Educare/Gherass will conduct the following: Energy Efficiency and the Role and Importance of Solar Energy in Today's Construction Sector, along with many other sessions.

For the full list of the workshop series please visit our website www.projectqatar.com to keep up to date with the workshop agenda.

TRME: What can visitors expect to see at the co-located Qatar StoneTech and Heavy Max exhibitions?

RS: Visitors will expect to see the full range of products and innovations in stone, Granite, Marble, ceramic, manufactured and ready stones, stone machinery for Stone Tech among others in the fifth edition of the show. As for Heavy Max, we have moved to the new venue in Westbay for the 13th edition of the show just in front of the VIP drop-off area.

Visitors can expect to see the leading brands when it comes to heavy equipment vehicles, machinery, earthmoving equipment and cranes among others. ■



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Solutions for the Saudi construction market

Equipment manufacturers and suppliers were given a useful platform to search for opportunities and present their solutions to Saudi Arabia's bustling construction market at this year's Big 5 Saudi.

THE SIXTH EDITION of The Big 5 Saudi provided a platform for exhibitors to showcase their latest construction technologies, products and services to buyers seeking to take advantage of opportunities within Saudi Arabia's US\$700bn construction industry.

The trade show, believed to be the fastest-growing construction event in the Kingdom, took place from 7-10 March 2016, bringing together more than 500 exhibitors from more than 30 countries.

Major ongoing infrastructure projects and upcoming mega projects such as planned metro works and health facilities investments, helped to attract a diverse crowd of construction professionals to Jeddah looking to make the most of the country's construction market potential.

Jeddah Mayor Hani Abu Ras, who inaugurated this year's event, joined many visitors in noting the large number of regional and international companies exhibiting.

"The Big 5 Saudi is one of the largest exhibitions that we make sure we attend," said Fahad Al-Hossaini from 2016 exhibitor Al-Omran Group. "The construction and building material industry in Saudi Arabia is booming and this exhibition is proof of that."

Other features at The Big 5 Saudi 2016 included a dedicated Concrete Zone, an outdoor PMV Zone and a strong educational agenda at the supporting conference.

Specialist knowledge

On display on the show floor were a selection of innovative technologies and solutions, some unique to the Saudi Arabian market.

Nathan Waugh, portfolio director at dmg events, organiser of The Big 5 Saudi, commented, "Some of these technologies are being seen in Saudi Arabia for the first time. [The event] is a great opportunity for visitors to see what new construction products and technologies are available that could give them a vital competitive edge in their next project."



Jeddah Mayor Hani Abu Ras (centre) being shown around the exhibitor floor by dmg events portfolio director Nathan Waugh (right).

The four-day event took place at Jeddah Centre for Forums & Events attracting construction professionals keen to stay on top of industry developments within the Kingdom. Describing the construction industry in Saudi Arabia as "dynamic" and an "increasingly competitive" job market, Waugh noted, "We're delighted to have been able to offer visitors the chance to top up their knowledge, while having access to the latest international and local construction products and technologies."

A key feature at this year's event was a number of certified educational workshops and seminars that were free for visitors to attend. The introduction of Saudi FIDIC was among leading topics on the educational agenda, held during a time that the regulatory environment in Saudi Arabia is evolving.

Andrew Jones, partner and head of construction – Middle East at Dentons, the global law firm that led discussions on FIDIC contracts at the supporting conference, said of the compliant system, "Historically, there has been a concern that in order to work on state-sponsored projects, in particular, contractors will need to sign up to unfavourable terms. Adopting a localised version of the FIDIC contracts will encourage

parties to review and negotiate the terms and hopefully provide contractors with more comfort regarding their contractual rights and their risk profile."

Other topics explored during the educational platform at the show was sustainable design and construction as projects in Saudi Arabia begin to look to save energy, conserve water and deploy renewable energy sources.

"Most of the challenges we face are a lack of proper knowledge of green design and construction," said Eng. Omar Mohamed Al-Touqi, technical manager at King Abdulaziz University Projects. "People are not aware that there are a lot of activities to be done for any green design for it to be in accordance with LEED. The other challenge is the initial cost of the green design and construction, and choosing the right material and resources."

First-time exhibitors

The event attracted more than 1,200 construction industry specialists to Jeddah and among the companies participating in The Big 5 Saudi exhibition for the first time was adhesives and chemical products manufacturer Mapei.

Stefano Iannacone, managing director of Mapei Construction Chemicals, remarked, "We believe the Saudi market has enormous business potential and we've already been involved in large projects in Saudi Arabia, such as the Riyadh Metro, the Clock Tower in Mecca, the extension of the mosque in Medina and several shopping malls and residential projects, and we plan to open a facility in the country soon.

"These are obviously demanding times for Saudi Arabia, but the construction market remains resilient despite the impact of low oil prices. I see the country pushing ahead with its investment plans in the sector, and we are seeking to strengthen our foothold and increase presence here."

The Big 5 Saudi will return to Jeddah for its seventh edition on 27-30 March 2017. ■

Power to the Kingdom

Saudi Power is set to return for its 19th edition at a time of heavy and much-needed investment in the Kingdom's power sector.

S **AUDI POWER, THE** leading power trade event in Saudi Arabia, will return for its 19th edition in May with more than 200 exhibiting companies set to be joined by more than 4,000 trade visitors at the Riyadh exhibition.

Established in 1997, Saudi Power offers exhibitors and visitors the chance to find solutions, suppliers and buyers in the Kingdom's bustling power, solar and lighting sectors. Held under the patronage of the Kingdom's Ministry of Water and Electricity, Saudi Power 2016 will cover a host of vital power industry sectors, including power generation, transmission and distribution and modern lighting products and technologies.

Co-located with Saudi Aircon, the event will offers visitors a platform on which to interact face to face with key decision makers, including contractors, consultants and utilities.

The event, organised by Riyadh Exhibitions Company, will also offer insights into renewable energy, waste management and recycling, showcasing the latest environmental technologies and products.

Private sector investments are continuing to increase in line with the rapid progress of the regional renewable power sector.

Among the more than 20 participating countries set to be involved in the three-day event will be the UK, Germany, Italy, France, India, Qatar, South Africa and Turkey, along with six dedicated country pavilions.

According to the *Saudi Gazette*, the power industry in Saudi Arabia is set to witness a continued increase in demand, with investment in the local electricity sector potentially reaching up to SAR500bn (US\$133.3mn) in the coming years, while private sector investments are also continuing to increase in line with the rapid progress of the regional renewable power sector.

Keeping cool at Saudi Aircon

Held alongside Saudi Power, Saudi Aircon is among the leading exhibitions across the Middle East for the HVAC and refrigeration industry. Showcasing the latest equipment, technology and solutions for the heating, ventilation, air-conditioning and refrigeration industries, visitors to Saudi Aircon will be able to



Investment in the local electricity sector could potentially reach up to SAR500bn (US\$133.3mn) in the coming years. (Photo: Peter Dowley/Wikimedia Commons)

target business opportunities in one of the world's largest markets for air-conditioning.

High population growth and rising affluence, along with a number of mega projects already underway, are helping to fuel this rapidly growing market in Saudi Arabia. The market in the Kingdom is expected to surpass US\$2.5bn by 2019, as the industry and contractors look to utilise and adopt new technologies such as variable refrigerant flow (VRF) systems, centrifugal chillers and district cooling.

According to the event's organisers, air conditioning is responsible for 70 per cent of electricity consumption in Saudi Arabia and the demand for HVAC solutions has been predicted to double by 2030.

Big names, solid solutions

Among the top leading manufacturers at Saudi Power will be the likes of AKSA Generators (Stand: 2D19), which manufactures gasoline, diesel, natural gas and marine generating sets range between 1 kVA to 3,000 kVA, along with lighting towers and generator hardware. Joining AKSA at the event will be globally-recognised Kohler Power (Stand: 1C10), which offers comprehensive power solutions through its lines of industrial generators, home standby generators, marine generators and mobile generators, as well as complete rental solutions. Specialised equipment systems sector company Alkhorayef Commercial (Stand: 1B10) will also be on hand at Saudi Power, exhibiting its integrated solutions and services.

Saudi Power will take place at Riyadh International Convention and Exhibition Centre on 9-11 May 2016. ■

Power industry meets up for Elecrama

The 12th edition of Elecrama, one of the world's largest transmission and distribution exhibitions, was held in Bengaluru, India, from 13-17 February 2016.

SOME OF THE biggest names in the power industry were present at Elecrama, which ran for five days in February 2016. Organised by IEEMA, the event was inaugurated by Piyush Goyal, the minister of state for power coal, new and renewable energy. The show provided stakeholders in the power industry an insight into the latest technologies, best practices, new systems and trend forecasts for the future of electricity worldwide, from technological and socioeconomic points of view. Around 1,000 exhibitors showcased a diverse range of products, technologies and solutions at the event.

The 'World Utility Summit' saw CXOs of utilities, energy efficiency bodies, regulators, financial professionals and policy makers congregate to discuss the future of utilities and set an agenda aimed at developing optimal solutions, technology and products.

The 'Reverse Buyer Seller Meet' was attended by international players all the way from Africa, ASEAN, CIS, SAARC and Iran. Power utility companies dominated this event. These included Electricity Generating Authority Of Thailand, Kenya Electricity Generating Company, Petro Vietnam Corporation, Transmission Company of Nigeria and Uganda Electricity Transmission Company Ltd.

The 'International T&D Conclave' served as a platform for the power industry to discuss challenges and solutions with regard to the transmission and distribution sector. The theme for this conclave revolved around 'technology and demand'. This brought to focus areas of discussion including challenges faced in integrating renewable energy with the main grid and ways to reduce distribution losses.

This year also saw the return of CIGRE tutorials, a regular feature of this event, where the industry experts discussed some interesting innovations within the sector. The speakers concentrated on overhead



The event saw participation from delegates and energy professionals from around the world.

lines, smart grids, HVDC, substations and HV equipment this year.

The event also hosted a small show called 'Network2network', a kind of interactive platform to bridge the gap between the finance and power sector. It served as a platform for key decision makers from finance to interact with the experts and policy makers of the industry in order to understand the challenges and opportunities in the industry for developing new business associations. The discussions concentrated on finding growth despite challenges in the industry, key concerns and methods to facilitate access to capital for the sector.

A student project competition running concurrently with the event saw engineering students attempt to use their theoretical knowledge and creativity to address diverse real life issues that need attention in the electrical energy sector. Events like these encourage students to plan ahead and be able to see their work with its real-life applications rather than pages and pages of theory.

Renewable energy resources received special attention at this year's edition of Elecrama

Tomorrow's world

Elecrama 2016 placed a special emphasis on renewable energy resources this year.

A dedicated pavilion provided a platform for equipment manufacturers and public sector representatives from the renewable energy sector, while another space was dedicated to 'Energies of tomorrow', which showcased companies that have been researching and developing the energy technologies of the future.

More than 120 countries were reported to have been represented and 120,000 visitors attended the show. ■



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Bobcat launches new backhoe loader range

Features on the new backhoe loaders include open centre hydraulic systems, tandem gear pumps, extended ground clearance range and top speeds of 40 km/h.

CONSTRUCTION EQUIPMENT MANUFACTURER Bobcat has launched a new range of backhoe loaders for markets throughout the Middle East and Africa.

The new range comprises four models – the B700, B730, B750 and B780 – and offers a choice of specifications for applications in construction, rental, roadworks, demolition, excavation, landscaping and agriculture.

The four models are powered by the Perkins 1104C-44T 4.4 l engine, which features direct fuel injection and a best-in-class output of 74.5kW (100HP) at 2,200 RPM. The engine has a maximum torque of 408 Nm at 1,350 RPM, and delivers low operating costs due to its low fuel/oil consumption, according to Bobcat.

Each backhoe loader has a top speed of 40 km/h, and comes with a standard two-year powertrain warranty and a choice of 4-speed synchroshuttle, powershift or auto powershift transmissions in the different models that help to meet the demands of a variety of applications.

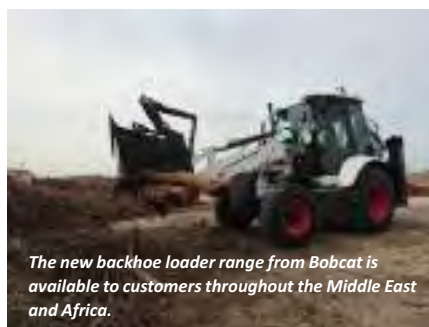
All models have an open centre hydraulic system and are equipped with tandem gear pumps with high flow capacities of 136 l/min in the B700 and 154 l/min in the B730, B750 and B780 models. An unloader valve is featured as standard on all the models, as is the electrohydraulic differential lock, with a limited slip differential being used on the B730 and B750 models. All of the new Bobcat backhoe loaders are supplied with class-leading Michelin tyres.

The B700 and B730 offer a choice of an open canopy or an enclosed cab, while the B750 and B780 are equipped as standard with an enclosed cab.

The B700 is an entry-level machine including many of the features of the next model in the range, the B730. It is driven via a synchroshuttle transmission and has 'Cab and Canopy' and '2WD or 4WD' options. It



Each of the new backhoe loaders has a top speed of 40 km/h and come with a standard two-year powertrain warranty



The new backhoe loader range from Bobcat is available to customers throughout the Middle East and Africa.

also has a single loader bucket cylinder with a full cylinder diameter to increase breakout force and reduce maintenance costs with fewer hoses and fittings.

According to Bobcat, each model provides a spacious and comfortable operator environment. An "easy to enter/exit" cab, features a fully adjustable operator's seat with all of the controls within close reach.

The B730 features double loader bucket cylinders, is driven through a standard powershift transmission and controlled by mechanical levers. The model is equipped with 18 inch front tyres and has 2-wheel steer and has the same features as the B730, except for 20 inch front tyres and a hydraulic joystick control system.

The B780 has the same features as the B750 and is driven through a standard auto powershift transmission, while the low-effort loader joystick controls in the B750 and B780 provide precise control and driver comfort.

The B780 offers a ground clearance of 385mm, while the B700, B730 and B750 offer a ground clearance of 400mm as well as a 25° back ramp angle.

Bucket capacity for loaders on the B780, B750 and B730 models is 1.1 cubic metres, with the B700 being able to hold a capacity of 1 cubic metre. Operating weight for each machine varies from 6,600 kg for the B700 model to 8,700 kg for the largest model, the B780.

Service and maintenance of the components is available at ground level on all models by removing the side panels, while refuelling of the tanks can also be accomplished from ground level. The tanks on each model are protected with a lock matching with the ignition key. ■

For more information about Bobcat and Bobcat products, visit the website: www.bobcat.eu.

JCB becomes first power generation manufacturer to make telematics standard

JCB HAS ANNOUNCED a major new innovation for the power generation industry by becoming the first manufacturer to make telematics standard on its generators.

The move, which the UK manufacturer said would “revolutionise the way customers, including rental companies, monitor and manage their generators”, will help customers improve the performance of their generators and reduce cost of ownership.

JCB LiveLink has been made available on generators from 65 to 600 kVA, including QS, QX and Inteli-Hybrid ranges.

Jonathan Garnham, managing director of JCB Power Products, remarked, “JCB LiveLink on generators from 65 to 600 kVA will radically change the way fleets of generators are monitored and managed.

“Our competitors cannot offer customers a telematics solution that is capable of delivering so much useful data. It is the ultimate customer benefit and will mean increased uptime, greater profitability and reduced cost of ownership,” he added.

JCB Power Products is also making LiveLink available as standard on its QS 20-220kVA range of generators, as well as its full line-up of Scania-powered QX models and its Inteli-Hybrid generators. Among the features offered by JCB LiveLink for power generation are monitoring operational hours and fuel levels of generators, real-time monitoring of load profiling and load per phase and real time notifications to prevent misuse and provision of intelligent fuel management.

It also offers generator health alerts, remote diagnostics, location detection and usage reports.

LiveLink, which has been available on JCB machinery for more than five years, has been fitted to more than 90,000 machines and offers a range of information to support fleet managers.

A single log in portal to view a generator’s utilisation can be accessed via a number of devices to manage machines remotely.



Terex Port Solutions mobile harbour crane targets increased capacity demand

TEREX PORT SOLUTIONS (TPS) has introduced a new variant of its diesel-electric Terex Gottwald Model 8 mobile harbour crane.

Targeting the increasing demand from terminal operators for cargo-handling machines for loading and unloading vessels with a loading capacity of more than 8,800 standard containers, TPS has said that the G HMK 8412 crane offers terminal operators a cost-effective handling solution.

The new variant has been designed for terminal operators that require mobile large-sized cranes with the ability to handle 20 container rows across and up to nine containers stacked on the vessel’s deck.

The latest new development from TPS is based on the existing Model 8 G HMK 8410 two-rope crane variant from the Generation 5 Terex Gottwald crane modular system.

TPS vice-president – engineering, systems and automation, Dr. Mathias Dobner, said, “Our mobile harbour crane range of the current Generation 5 includes three crane families and eight crane models, ranging from the entry to the high-performance crane for all types of terminals, applications and vessels.

“With the new G HMK 8412 crane, we are demonstrating once again how quickly we



The new variant of its diesel-electric Terex Gottwald Model 8 mobile harbour crane has a loading capacity of more than 8,800 standard containers.

are able to develop machines on the basis of our modular design principle to meet rapidly changing market conditions including the need to serve new types of vessels and ready them for the market.”

Compared to the present variant, the new G HMK 8412 has a higher tower with a correspondingly higher boom pivot point and a tower cab featuring a crane operator eye level of 43 m.

The maximum outreach of the crane has been extended by 3 m compared to the G HMK 8410 and comes to 61 m. The crane

has a particularly powerful lifting capacity curve, offering terminal operators 24 per cent greater capacity in the end range of its outreach, which means a lifting capacity of 50 tonnes even at maximum radius.

The crane, with a lifting capacity of 41 tonnes under spreader, is capable of serving three container bays next to each other, even in the 20th row, without having to be travelled alongside the vessel.

As with the majority of Terex Gottwald cranes, the G HMK 8412 is fitted with state-of-the-art three-phase drive technology that provides greater benefits for operators with regard to upkeep and maintenance.

The travel gear of the G HMK 8412 includes a total of four 3-axle arrangements with a distance of 1,650 mm from axle centre to axle centre. In addition, the distance between one 3-axle arrangement and the next has been increased by 1,000 mm from 1,650 mm to 2,650 mm, improving how the load is distributed to individual fields of the quay structure.

The propping system of the crane consists of the Terex Gottwald H-shaped stabiliser system with a propping base of 13 m x 15 m. When the crane is propped, four 2 m x 6.5 m stabiliser pads distribute the weight of the crane and cargo to the quay structure.

Volvo signs integration agreement with Trimble

VOLVO CONSTRUCTION EQUIPMENT has entered an integration agreement with Trimble to enable the design of a Trimble 3D machine control solution.

Trimble made the announcement at the 31st edition of bauma, held in Munich, Germany, in April 2016.

The new solution will be featured on Volvo Dig Assist 2D machine control on Volvo excavators, stated the firm.

"The solution that we are developing will provide our customers a world class combination of Volvo premium machine technology and Trimble Connected Site technologies that include geometric site data," said Niels Haverkorn, vice-president of Business Platform Solutions at Volvo.

According to Trimble, its newly developed technology enables field and mobile workers in businesses and government become more efficient. Solutions are focused on applications requiring position or location, such as surveying, construction, agriculture, fleet and asset management, public safety and mapping, the firm noted.

"We are very pleased to work with Volvo on a machine control solution integrating the best of what both companies have to offer," said Bryn Fosburgh, vice-president of Trimble Engineering and Construction.

"Contractors are seeking new ways to improve competitiveness, efficiency and productivity. Tightly integrating Trimble solutions with Volvo allows our mutual customers to more easily leverage construction technology in their business," Fosburgh added.



Volvo Dig Assist 2D machine control system. (Photo: Volvo)

Aksa wins Doosan award

AKSA POWER GENERATION has been named "The best customer in 2015" at the Doosan Customer of the Year Awards.

marking the fourth year in succession the firm has been named "best customer" by the South Korean engine manufacturer.

Aksa Power Generation CEO Alper Peker, who picked up the award at the prize-giving ceremony in Dubai, remarked, "At Aksa Power Generation, we deliver our products and services to many countries around the world. When power generation is mentioned, we are the top Turkish manufacturer and among the top five manufacturers globally.

"Based on our customer oriented and reliable brand image, cooperating with such companies as Doosan, with which we share common values, makes a significant contribution to our branding power."



Aksa received its award during a prize-giving ceremony in Dubai earlier this year.

Measuring resistance in the micro-ohm range

KOCOS MESSTECHNIK AG has introduced two compact, battery-operated devices that can measure resistance in the micro-ohm range.

For the purpose of measuring resistance in the micro-ohm range, KoCoS Messtechnik AG now offers two compact, battery-operated measuring devices, which feature a configurable, load-independent test current up to 200 A – Promet SE and Promet SMO.

Flexible handling with battery operation and the high functionality and precision make these measuring devices



Promet SE and SMO. (Photo: KoCoS)

particularly suitable for portable use in switching stations or industrial environments. The device also uses 'four-wire' measuring technology that supposedly enable the measuring devices to meet stringent accuracy requirements.

The device measures resistances with temperature compensation. The temperature at the measurement point is measured using a sensor and the resistance value is calculated for the reference temperature.

Promet SMO is also claimed to be capable of measuring the resistance of inductive loads up to 1,000 henrys, such as HV, MV and LV transformers, motors and instrument transformers, for example. A special algorithm ensures that inductive loads are charged and discharged quickly, keeping measurement times short. The two voltage measurement inputs, the quality of connections such as screws on busbars can be determined quickly using the quality factor on the SE device.

Both measuring devices can be operated and controlled by means of a built-in control panel equipped with a high-resolution, resistive three and a half inches touch screen and function keys or in combination with an ACTAS switchgear test system. Using the ACTAS testing software, these measuring systems easily be integrated in circuit breaker tests.

It is possible to evaluate the results, which give a direct indication of the state of the current paths of busbars, the contact resistance of switchgear devices or earth connections. The integrated measurement functions provide informative analysis to help maximise operating times and minimise maintenance work.

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Safe and secure scaffolding standards

Dubai-based Ascend Access System Scaffolding, a specialist in the manufacturing of aluminium mobile scaffolds and aluminium ladders, has a range of safety-certified products and training solutions that help to ensure safe working practices are followed.

INTERNATIONAL STANDARDS FOR safety manufacturer of aluminium scaffolds ensure that manufacturers are producing Kitemark quality certified or GS Mark certified scaffold towers. These product and service quality certifications ensure these products are manufactured to the best possible quality, following quality production procedures and ensuring stringent quality control, as well as product traceability in any cases of faulty manufactured products.

According to Ascend Access System Scaffolding, a number of local manufacturers in the Middle East have been producing scaffolding equipment that could prove to be faulty, potentially leading to accidents, scaffold collapses and severe injuries for operators.

The scaffold work platform quality and plywood standard is a very important standard for optimum load bearing capacity and plywood quality must be certified EN1995-1-1.

Non standard castor wheels are used by many manufacturer where safe working loads are not embossed on the castor wheels – these wheels must be certified EN1004. The strength of all castor parts is important for the overall safety and integrity of a tower, and must be certified to the EN1993 standard.

As Ascend Access System Scaffolding points out, in some cases manufacturer are not producing scaffold frames that are not properly aligned, which could mean that the scaffold parts do not fit properly and could potentially generate instability and scaffolding collapses.

The aluminium tube's thickness and alloy plays a vital role in the required rigidity and strength of a tower, while 6082 T6 grade aluminium meets the required yield and tensile strength.



*Ascend Access System Scaffolding LLC
managing director Shadab Ahsan.*

Ascend Access System Scaffolding has already started the process of acquiring the Kitemark quality certification for its product. All of its scaffold parts have been certified to the relevant standard and its work practice certified to ISO9001 and OSHA 18001/2007 standard.

Safety is becoming paramount at construction sites across the GCC and safer

Safety is becoming paramount at construction sites across the GCC and safer mobile access scaffolds are currently in great demand.

mobile access scaffolds are currently in great demand, according to Ascend Access System Scaffolding. To meet this demand, Ascend Access System Scaffolding introduced Advance Guardrail Scaffold in 2013, which it says is safer than traditional 'Through The Trap' mobile scaffolds.

Revolutionising the fit-out and exhibition industry, Ascend Access System Scaffolding's 'One Man Tower' is also creating a lot of buzz within the scaffold tower industry, the company says.

Ascend Access System Scaffolding's new training centre for scaffolding usage, which includes Erection Dismantling courses, is PASMA-approved and delivers accredited training on the safe use of scaffolding through the process of educating scaffolders.

Training, the company says, plays a vital role in promoting safe working practices, reducing the number of falls from height, and is a key component in compliance with the UK Health and Safety Executive's Work At Height Regulation (WAHR) 2005. ■

Conditioned for the heat of the GCC

LG's Multi V IV Tropical has been designed to work in the extreme outdoor temperature conditions of the GCC, as well as offer high-energy efficiency and environmental benefits.

ACCORDING TO MULTINATIONAL electronics company LG Electronics, its latest innovation is aiming to bring a fresh and cool experience to commercial properties. Offices across the GCC rely on air conditioners throughout peak summer days, however, these units have often not been designed to withstand the humidity and blazing temperatures during the hottest months.

The variable refrigerant flow (VRF) air conditioning system has evolved to become one of the most advanced, versatile air conditioning solutions available on the market. Capable of providing greater comfort, energy efficiency and reliability, VRF systems are highly regarded by building managers, business operators and engineers. LG has been creating friendly solutions in this space by producing high performance inverters and its Multi V IV Tropical is, the company states, the latest and the most efficient VRF system around.

The Multi V IV Tropical has been designed to suit the extreme outdoor temperature conditions of the GCC market and with its advantage of a wide operational range the unit exceeds the market needs of high-energy efficiency and environmental friendliness. LG says the unit can cool at temperatures as high as 54°C. The new model is energy efficient, and built with the customer in mind. Enabled with LG's latest proprietary compressor, refrigerant, heat exchanger and oil control technologies, LG says that advancements in these key areas of VRF technology has allowed the Multi V IV Tropical to perform effectively in the most challenging environmental conditions.

Green solution

In terms of energy-efficient air conditioning products, GCC countries have witnessed a growing number of regulations, which will result in higher initial costs but will also reduce energy

consumption by up to 40 per cent in the long term.

In the UAE, the Emirates Authority for Standardization and Metrology (ESMA) has issued standard UAE S 5010-5:2014 covering MEPS for ductless room air conditioners to raise minimum energy efficiency requirements. This translates into the potential for high savings given that air conditioning consumes almost 20-30 per cent of the electricity used in a building within the region. Previously chillers were more common, but in recent years, the number of green buildings constructed in the region has been rising, which is uplifting demand for high-efficiency variable refrigerant flow (VRF) systems.

Built for business

Commercial properties are looking for solutions that powerfully and silently run in the background. The Multi IV Tropical's outdoor units have been powered with several automated features to ensure

a smooth experience and less chance of breakdowns, including an alternate cycling function that extends the life span of compressors by operating them alternatively increasing the shelf life.

In support, the auto-addressing feature allows system integrators to manage the units at a press of a button. In parallel, the automatic back-up systems are built for trouble shooting during emergencies.

Finally, they have a generally lower noise in comparison to competitors due to its silent operation feature. To further save energy, the Multi V IV Tropical has a night silent operation that runs automatically in the background.

Innovative technology

LG has fitted the Multi V IV Tropical with HiPOR™ and special corrosion resistant advancements. This proprietary HiPOR™ technology enables the compressor to return the oil directly to a high level of pressure instead of the low levels on conventional AC units.

By minimising unnecessary recompressing in the lower pressure level, HiPOR™ reduces energy losses and increases COP levels by up to three per cent.

It has also been specially treated to resist corrosion to make it exceptionally durable and a cool long lasting experience. This is done through: ocean black fin and dual protection coating.

LG's exclusive 'ocean black fin' heat exchanger is designed to perform even in extremely corrosive environments. The black coating provides strong protection from corrosion and the hydrophilic coating minimises moisture build-up on the fin.

The dual protection coating shield core components from corrosive elements with two levels of protection: double layered coating and double sided coating. The protected components include the unit's outer panels, control box panel and cover, brackets and valve supports. ■



The Multi V IV Tropical has been conditioned for the unique conditions of the GCC region.



غرفة مراقبة موانئ دبي العالمية في ميناء جبل علي

تخصيص استثمار إضافي جديد لتطويرات سريعة للمحطة (ج)، كما أن هناك خطاً لبناء محطة جديدة - المحطة (د) - داخل محطة الحاويات الدولية في عمان. ومن المزمع البدء في إنشاء المحطة (د) في وقت مبكر من عامي ٢٠١٨/٢٠١٩.

بالإضافة إلى النمو المطرد، استفادت محطة الحاويات الدولية في عمان من نقل حركة المرور التجاري من ميناء السلطان قابوس في مسقط بدءاً من سبتمبر/أيلول ٢٠١٤. وقد نمت حركة مرور الحاويات في ميناء صحار بنسبة خمسة في المائة خلال التسعة أشهر بعد ٣٠ سبتمبر/أيلول ٢٠١٥ لتبلغ ما يتجاوز ٤٠٧ آلاف وحدة مكافئة لعشرين قدماً، مقارنة بفترة سابقة من العام نفسه، طبقاً لبيانات ميناء صحار. كذلك تم إعداد ميناء الدقم، أحدث بوابات عمان، لمناولة حركة الحاويات كجزء من «عمليات المرحلة المبكرة» التي تعتبر تمهيداً لخط تغذية الحاويات الذي يربط ميناء الدقم بموانئ صلالة وصحار وميناء جبل علي في دولة الإمارات العربية المتحدة، ومن المستهدف البدء في تشغيلها هذا العام. وبالإضافة إلى كونها بوابة لمنطقة اقتصادية خاصة يتم تطويرها بالتزامن مع الميناء، فمن المزمع تطوير ميناء الدقم ليكون مركزاً لنقل الحاويات بين السفن في المستقبل، طبقاً لمطور ومشغل الميناء، وهي شركة ميناء الدقم، وهي مشروع استثماري مشترك تملكه - مناصفة - الحكومة العمانية وشركة كونسرتيوم أنتورب بورت. ويمكن للمرافق الحالية في الميناء مناولة ما يصل إلى ٢٠٠ ألف وحدة مكافئة لعشرين قدماً سنوياً، وسفن حتى ٣٠٠٠ وحدة مكافئة لعشرين قدماً. ولكن شركة ميناء الدقم ترى أن هذه المرافق «بديل مؤقت» لحين البدء في مرفق محطة الحاويات المكتملة عام ٢٠١٨.

مع واحدة من أكبر الشركات البحرية السعودية، وهي الشركة الملاحية للأعمال البحرية، وتوفر المحطة طاقة مناولة سنوية تقرب من ١,٥ مليون وحدة مكافئة لعشرين قدماً.

وفي الوقت ذاته، أطلق ميناء الملك عبد الله، الذي تم افتتاحه في أواخر عام ٢٠١٣ وهو أول ميناء يتم تمويله من القطاع الخاص بالسعودية، المرسى الرابع في مايو/أيار ٢٠١٥، بما يرفع طاقة المناولة السنوية للحاويات إلى ما يزيد عن ٢,٧ مليون وحدة مكافئة لعشرين قدماً. ويوفر المرسى الجديد عمقا محاذياً قدره ١٨ متراً لكي يتسع لأكبر سفن الحاويات. كما أنه ساهم في زيادة رئيسية في السعة التخزينية للحاويات بالميناء إلى ثلاث ملايين حاوية سنوياً. وقام ميناء الملك عبد الله بمناولة ١,٣٠٧ ملايين وحدة مكافئة لعشرين قدماً في ٢٠١٥. وقد تم تطوير الميناء، الذي يقع على بعد ١٠٠ كم شمال جدة، لكي يرفع بعضاً من الضغط عن ميناء جدة الإسلامي الذي يتمتع بفرص محدودة للتوسع.

توسع عمان

يسعى ميناء صحار بعمان، وهو واحد من أسرع الموانئ ومشاريع المنطقة الحرة نمواً، إلى تحقيق خطته الطموح للتوسع في طاقة المناولة للحاويات السنوية بنسبة ٦٥٠ في المائة حتى يصل إلى حوالي ستة ملايين وحدة مكافئة لعشرين قدماً. وتبلغ الطاقة الحالية في محطة الحاويات بميناء عمان الدولي ٨٠٠ ألف وحدة مكافئة لعشرين قدماً. ومعظم الاستثمار - حتى اليوم - يجريه على المحطة (ج) مالكو محطة الحاويات الدولية في عمان، وهو مشروع استثماري مشترك لشركة هاتشسون بورت هولدنجز ليمتد والحكومة العمانية والشركة الهولندية شتاينفيج وعدد من المستثمرين العمانيين. وقد تم

وإنشاء مساحة إضافية في المخزن في محطة ميناء خورفكان. إدارة شركة جلفتينر. للاستعداد لطاقة مناولة سنوية قدرها ستة ملايين وحدة مكافئة لعشرين قدماً بنهاية هذا العام، وثمانية ملايين وحدة مكافئة لعشرين قدماً بحلول عام ٢٠٢٠. وتبلغ الطاقة الحالية ما يقرب من خمسة ملايين وحدة مكافئة لعشرين قدماً. وبينما تقوم محطة ميناء خورفكان - إدارة شركة جلفتينر - بخدمة المنطقة بصورة عامة، فإن محطات الحاويات الأصغر لمحطة جلفتينر في الشارقة والرويس، تقدم خدمات متخصصة للأعمال التجارية في الشارقة والإمارات المجاورة. وتجاوزت الإنتاجية السنوية في محطة حاويات الشارقة ٤٠٠ ألف وحدة مكافئة لعشرين قدماً لأول مرة في عام ٢٠١٤. كما أن محطات جلفتينر بالإمارات العربية المتحدة جميعها قامت بمناولة حجم إجمالي قدره ٣,٨ مليون وحدة مكافئة لعشرين قدماً في ٢٠١٤.

مشروعات الموانئ السعودية

من الملاحظ أن طاقة مناولة الحاويات السعودية تواصلت في الارتفاع. ففي نهاية أبريل/نيسان ٢٠١٥، شهدت المملكة بداية العمليات التجارية في محطة ثانية في ميناء الملك عبد العزيز في الدمام، وهي أكبر ميناء يطل على الخليج العربي ولا يسبقه سوى ميناء جدة من حيث حركة الشحن في الشرق الأوسط وشمال أفريقيا.

ويتم تشغيل المرحلة الأولى من المحطة الجديدة بعمق ١٦ متراً من المياه وهي الأكثر عمقا في المنطقة، عن طريق الشركة السعودية العالمية للموانئ ذ.م.م، وهي مشروع استثماري مشترك بين صندوق الاستثمارات العامة السعودي ومشغل الموانئ والمحطات، الذي يقع مقره في سنغافورة، شركة بي إس إيه إنترناشيونال. وهيجهزة بست رافعات رصيف على ٧٠٠ متر من الرصيف، وتوفر طاقة مناولة سنوية قدرها ٩٠٠ ألف وحدة مكافئة لعشرين قدماً. وحينما يتم تطويرها بالكامل، سيبلغ طول رصيف المحطة الجديدة للشركة السعودية العالمية للموانئ ١٢٠٠ متر، و١٢ رافعة رصيف بطاقة تصميمية قدرها ١,٨ مليون وحدة مكافئة لعشرين قدماً سنوياً. ويقول مستخدمو خط الشحن إن المحطة الجديدة قد جلبت إلى المنطقة طاقة مناولة مطلوبة بشدة، مما يخفف من الازدحام المتزايد الذي شهده مستخدمو الميناء في السنوات الثلاث الماضية. وترى الشركة السعودية العالمية للموانئ أن المحطة الجديدة ستؤدي عند الانتهاء منها بالكامل، إلى تحويل الدمام إلى «بوابة رئيسية تطل على الخليج» وستكون قادرة على مناولة ما يقرب من ٣٠ في المائة من بضائع السعودية. ويتولى تشغيل محطة الحاويات الأخرى في ميناء الملك عبد العزيز شركة خدمات الموانئ العالمية المحدودة، وهي شركة تابعة لشركة هاتشسون بورت هولدنجز ليمتد ومقرها في هونج كونج، ضمن مشروع استثماري مشترك

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أحجام الحاويات المتزايدة تنعش طموحات الموانئ

تقول ليندا ديفيز، في هذا المقال، إن دول مجلس التعاون الخليجي تتوسع حالياً في الطاقة الاستيعابية لموانئها، وتستثمر فيها مليارات الدولارات من أجل استيعاب الحركة المتزايدة.

حجم الحاويات التي يتم مناوئتها. وينسب المدير التنفيذي لمحطات أبو ظبي، مارتن فان دي ليند، النمو السريع إلى التوسع الهائل في الصناعة بأبو ظبي، وأيضاً الزيادة الجوهرية في الدور الإقليمي الذي تلعبه في نقل البضائع بين السفن، وارتفاع عدد خطوط الشحن في المحطة. وقال إن السعة الجديدة المخطط لها هي لاستيعاب الطلب المستقبلي، ولتلبية النمو المتوقع في الصناعة المحلية والإقليمية. ووفقاً لدي ليند، فإن محطة حاويات ميناء خليفة لديها إمكانات توسعية مستقبلية لزيادة الطاقة الإنتاجية السنوية إلى خمسة ملايين وحدة مكافئة لعشرين قدماً.

وقد شهدت محطة حاويات ميناء خورفكان - إدارة شركة جلفتيير في الإمارات العربية المتحدة بإمارة الشارقة - نمواً بنسبة ٤, ١٤ في المائة في إنتاجية الحاويات في النصف الأول من ٢٠١٥، مقارنة بفترة سابقة من العام ذاته. وتعرّض جلفتيير هذا النمو إلى الزيادة العامة في الطلب على البضائع من دول مجلس التعاون الخليجي، وأيضاً النمو في واردات الإمارات العربية المتحدة نتيجة الاستثمارات في البنية التحتية المحلية، والاقتصاد من جانب الحكومات المحلية.

وقال المشغل إن جُل تركيزه ينصب على تحسين البنية التحتية. ففي نوفمبر/تشرين الثاني عام ٢٠١٤، على سبيل المثال، تم ضخ استثمارات جديدة قدرها ٦٠ مليون دولار في محطة حاويات ميناء خورفكان - إدارة شركة جلفتيير - بالإضافة إلى أربع رافعات جسرية جديدة من السفينة إلى الشاطئ و١٢ رافعة ذات إطارات. ولاشك أن الزيادة في المعدات مكنت المحطة من مناوئة الفئة الجديدة ذات ١٨ ألف وحدة مكافئة لعشرين قدماً من سفن الحاويات.

وتخطط جلفتيير لتطوير مرافق إضافية للرصيف،

في الربع الرابع لسنة ٢٠١٥، فإن الاستخدام في جبل علي يظل مرتفعاً بما يقرب من ٩٠ في المائة.

وقام ميناء جبل علي ومحطات الحاويات الأخرى لشركة موانئ دبي العالمية في الإمارات العربية المتحدة، التي تتألف من مرافق في الفجيرة وميناء راشد وميناء الحميرية، بمناوئة ٢٩, ١٥ مليون وحدة مكافئة لعشرين قدماً في ٢٠١٥، بما يمثل زيادة بنسبة ٢, ٢ في المائة، مقارنة بمناوئة ٢٥, ١٥ مليون وحدة مكافئة لعشرين قدماً في عام ٢٠١٤، حيث يتم مناوئة غالبية الإنتاجية في ميناء جبل علي.

وفي الوقت ذاته، تستعد محطة الحاويات الرئيسية في أبو ظبي، محطة حاويات ميناء خليفة، للمرحلة التالية من التوسع بمعدات جديدة من المقرر إضافتها هذا العام وخلال عام ٢٠١٧. وقام مشغل الميناء - محطات أبو ظبي - بمناوئة إجمالي ٥, ١٥ مليون وحدة مكافئة لعشرين قدماً في المحطة في ٢٠١٥، مقارنة بمناوئة ١٤, ١ مليون عام ٢٠١٤ بما يمثل ارتفاعاً بنسبة ٦, ٣١ في المائة عن الفترة عينها من العام الماضي. ومع طاقة مناوئة حالية قدرها ٩, ١ مليون وحدة مكافئة لعشرين قدماً، تمثل الطاقة الإنتاجية للعام الماضي متوسط استخدام بما يقرب من ٧٨ في المائة. ومن المقرر إضافة ثلاث رافعات جسرية جديدة من السفينة إلى الشاطئ، و١٠ رافعات جسرية مثبتة على قضبان لزيادة السعة السنوية للمحطة، والتي ستبلغ ٥, ٢ مليون وحدة مكافئة لعشرين قدماً عند الانتهاء من التوسع المتوقع بحلول ٢٠٢٠.

وتعد محطة الحاويات في ميناء خليفة متكاملة كلياً مع مدينة خليفة الصناعية في أبو ظبي. وخلال ثلاث سنوات من التشغيل، ارتفعت حركة المرور من خلال المحطة بخطوات أسرع من أية محطة حاويات في الشرق الأوسط. فهي تشهد نمواً سنوياً يقدر بالعشرات، وضعف

الطاقة الاستيعابية لموانئ الحاويات في دول مجلس التعاون الخليجي أخذت في التزايد. ولهذا تواصل الحكومات ومشغلو الموانئ في الاستثمار بقوة في البنية التحتية من أجل استيعاب الحركات المتنامية للحاويات، وعدد السفن المتزايد وخاصة الأكبر حجماً. وبالرغم من الاعتقاد بأنه من الممكن حدوث فائض في الطاقة الاستيعابية نتيجة العدد الهائل للمشروعات الجديدة، فإن مستويات الإنتاجية المرتفعة في العديد من موانئ المنطقة، مصحوبة بالنمو المطرد في أحجام الحاويات والتجارة، هي خير برهان على التزام مشغلي موانئ مجلس التعاون الخليجي السيطرة على أحجام البضائع الدولية المربحة.

وتتحكم الموانئ، في دولة الإمارات العربية المتحدة، في حركة الحاويات بالمنطقة. فموانئ دبي العالمية، وهي أكبر مشغل موانئ بالإمارات العربية المتحدة، سوف تضيف ٢ مليون وحدة مكافئة لعشرين قدماً إضافية للطاقة الاستيعابية في ميناء جبل علي في دبي، وذلك حينما تعمل محطة الحاويات الثالثة بكامل طاقتها في النصف الثاني من هذا العام. وخلال شهر يوليو/تموز الماضي، أعلن المشغل عن بدء أعمال الإنشاء في محطة الحاويات الرابعة في الميناء، حيث يستهدف الانتهاء من المرحلة الأولى لهذه المحطة الجديدة في ٢٠١٨، والتي سترفع من الطاقة الكلية لميناء جبل علي إلى ١, ٢٢ مليون وحدة مكافئة لعشرين قدماً.

وقال رئيس شركة موانئ دبي العالمية، سلطان أحمد بن سويلم، إن التوسع الإضافي هو استجابة لطلب العملاء لطاقة استيعابية أكبر في جبل علي، مع اعتبار التطلع القوي لنمو المحلي والإقليمي، والذي يشمل الفعاليات التي تسبق معرض إكسبو ٢٠٢٠. وقال: «بالرغم من الإضافات الجديدة للطاقة الاستيعابية، والأحجام الأقل

زيادة إنشاء الوحدات السكنية بنسبة ٥٠ في المائة بالسعودية



حقق برنامج المبيعات العقارية على الخريطة نموا ملحوظا في ٢٠١٥

أعلنت وزارة التجارة والصناعة السعودية أن هناك ارتفاعا بنسبة ٥٠ في المائة في إنشاء الوحدات السكنية في المملكة خلال عام ٢٠١٥. وكشف أحد التقارير، الصادرة عن وزارة التجارة والصناعة، أن القيمة الإجمالية للمشروعات في برنامج المبيعات العقارية على الخريطة، قد بلغت أكثر من ٩ مليارات دولار أمريكي منذ اعتماده، والذي يتضمن مشروعات تفوق قيمتها ٣,٥ مليار دولار أمريكي تم ترخيصها خلال ٢٠١٥، مما يشير إلى ارتفاع بنسبة ٥٠ في المائة مقارنةً بالعام الماضي. وفي الوقت الحالي، يشرف برنامج المبيعات العقارية على الخريطة على تنفيذ ٢٩ ألف وحدة عقارية على الخريطة في مختلف مناطق السعودية. كما أشار التقرير إلى منح الترخيص إلى ١٠ مشروعات جديدة وتجديد، تراخيص ١٣ مشروعا قائما. وعلاوة على ذلك، تم منح تسعة تراخيص لتسويق مشروعات أجنبية داخل المملكة العربية السعودية، و١٥ ترخيصا لمشروعات قائمة. وفي العام الماضي، طرح البرنامج أساليب جديدة لبيع العقارات على الخريطة؛ مثل ترخيص الوحدات، وترخيص الأراضي للبيع على الخريطة، وترخيص تسويق البيع العقاري على الخريطة (داخل المملكة العربية

المبيعات يوفر مرونة أكبر للمشتريين في عملية الشراء والتمويل، ويساعدهم في اختيار وتصميم وحداتهم.

السعودية)، وترخيص تقديم البيع العقاري على الخريطة (داخل معارض المملكة العربية السعودية). وقد لاقى ذلك الأمر قبولا لدى المطورين والمعنيين بالعقارات. وقد حققت مشروعات البيع العقاري على الخريطة نمواً كبيراً في ٢٠١٥. إذ أن هذا النوع من

مفكرة رجال الأعمال

مايو/ أيار

- ١١-٩ المعرض السعودي للطاقة الرياض
- ٤-١ المعرض السعودي للحديد والصلب الرياض
- ١١-٩ المعرض السعودي للطاقة الرياض
- ١٢-٩ معرض مشروع قطر الدوحة
- ١٥ - ١٦ مؤتمر إيران للنفط والسكك الحديدية والموانئ طهران
- ١٨-١٦ المعرض السعودي للصحة والأمن الدمام
- ٢٢ - ٢٥ قمة الشرق الأوسط للمصاعد وناطحات السحاب دبي
- ٢٣ - ٢٥ معرض بيح فايف للتصميم الخارجي والبناء دبي
- ٢٥ - ٢٦ مؤتمر ومعرض الشرق الأوسط وشمال أفريقيا للطاقة الشمسية - 2016 MENASOL دبي

فولفو توقع اتفاقية تكامل مع ترمبل

الذي تقوم بتطويره سيزود عملاءنا بمجموعة عالمية المستوى من التقنية الفائقة لآليات فولفو، وتقنيات ترمبل المتصلة بالموقع، والتي تشمل بيانات الموقع الهندسية. ووفقا لشركة ترمبل، فإن التكنولوجيا المطورة حديثا ترفع من كفاءة العمال الميدانيين والمتقلين، سواء في الشركات أو الجهات الحكومية. وذكرت الشركة أن هذه الحلول تنصب على التطبيقات التي تتطلب موقعا مثل المسح والإنشاء والزراعة وإدارة الأسطول والأصول والسلامة العامة والتخطيط. وقال نائب رئيس شركة ترمبل للهندسة والإنشاءات، برايان فوسبرج: «يسرنا للغاية العمل مع فولفو على تطوير حل التحكم في الآليات، ومن ثم إحداث التكامل بين أفضل ما تقدمه الشركتان». وأضاف فوسبرج: «يبحث المفاوضون الآن عن طرق جديدة لتحسين التنافسية والكفاءة والإنتاجية حيث تتيح حلول ترمبل عالية التكامل مع فولفو لعملاء الشركتين تعظيم الاستفادة من تكنولوجيا الإنشاءات في أعمالهم».

أبرمت شركة فولفو لمعدات الإنشاء اتفاقية تكامل مع شركة ترمبل لتصميم حل ترمبل للتحكم الثلاثي الأبعاد في الآليات. وقد أعلنت شركة ترمبل عن هذه الاتفاقية خلال الدورة الحادية والثلاثين من معرض بوما الذي أقيم مؤخرا في ميونيخ بألمانيا. وذكرت الشركة أن الحل الجديد سيتم دمج في تحكم آليات Volvo Dig Assist ثنائية الأبعاد ومعدات حفر فولفو. وذكر نائب رئيس حلول منصة الأعمال في شركة فولفو، نيلز هافركورن أن «الحل



الحل الجديد سيتم دمج في تحكم آليات Volvo Dig Assist ثنائية الأبعاد ومعدات حفر فولفو

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برج دبي الجديد يفوق فيه الارتفاع برج خليفة

كشفت مطورو برج خليفة عن وجود خطط لبناء برج يتجاوز ارتفاع أطول مبنى في العالم. وصرحت شركة إعمار العقارية ش.م.ع، الشركة المدعومة من الحكومة والتي قامت ببناء برج خليفة، بأن البرج الجديد سيتم تزيينه بشرفات دائرية، ومناظر طبيعية مرتفعة مستلهمة من حدائق بابل المعلقة الأسطورية. وعلى خلاف برج خليفة، لن يكون المبنى الجديد ناطحة سحاب تقليدية، بل سيكون البرج، الذي تقدر تكلفته بمليار دولار، مصمماً في صورة قمة برج مدعومة بكابلات تحتوي على حديقة بها أسطح للاستمتاع بمنظر المدينة، فضلاً عن الأشجار والنباتات الخضراء الأخرى. ويخطط المطورون لكي يضم البرج فندقاً صغيراً ومطاعم وشرفات زجاجية تدور خارج جدار البرج. هذا وسوف يكون برج دبي الجديد مركزاً لتطوير جديد يقام على مساحة ستة كيلو مترات على أطراف خور دبي، ويقع بالقرب من محمية برية تجتذب بانتظام طيور الفلامنجو وطيوراً مائية أخرى. ومن المقرر أن يتم افتتاح البرج بالتزامن مع افتتاح معرض اكسبو العالمي عام ٢٠٢٠.



برج دبي الجديد سيكون أطول قليلاً من برج خليفة الذي يصل طوله إلى ٨٢٨ متراً

الثابتة سعة ٢٠ قدماً، والتي تسمح بالنقل البحري. إذ يتم تصميم الحاوية بحيث يمكن نقل مجموعة المولد بسهولة، ويمكن مناوالتها بالأوناش والرافعات. كما أنها تحتوي على أبواب عريضة بها أقفالاً للسلامة لتمكين الوصول إلى جميع المكونات في الصيانة والخدمة السريعة والسهولة.



المولدات الجديدة تحظى
بطاقة إزاحة أكبر واستهلاك
للوقود أقل من المولدات
الأخرى

هيمونيسا تطلق مجموعة مولدات مزودة بمحركات TU

أجرت شركة هيمونيسا، المُصنِّع والموزع لأنظمة توليد الكهرباء، توسعات هائلة النطاق بسلسلة جديدة من المولدات المزودة بمحركات MTU. ووفقاً لما ذكرته الشركة، سوف توفر الطرز الحديثة ميزات أكثر من الطرز الأقدم في السلسلة ذاتها، والتي تعمل بتردد ٥٠ هيرتز. فلديها نطاق طاقة يتراوح ما بين ٧٤٥ كيلو فولط إلى ١٢٧٠ كيلو فولط، ومن ٨٢٢ كيلو فولط إلى ١٤٠٢ كيلو فولط في وضع الاستعداد. وصرحت الشركة بأن السلسلة تتضمن نموذجاً ثنائي التردد HRMW 1270 5D-6 يستهدف بصورة رئيسية قطاع الإيجار. وقالت مصادر من هيمونيسا إن محركات MTU تتميز بنظام حقن الأنابيب المشترك، ومنظم إلكتروني جديد يسمح بطاقة إزاحة أكبر، واستهلاك للوقود أقل من المحركات الأخرى. كما أن متوسط حدود المعدلات للحمل وساعات التشغيل ترفع من حالات القدرة التشغيلية. ويعد HRMW 1270 5D-6 متكاملًا في حاوية ISO

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- ٤ برج دبي الجديد يفوق في الارتفاع برج خليفة
- ٤ هيمنيسا تطلق مجموعة مولدات مزودة بمحركات MTU
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