

# TECHNICAL REVIEW

النشرة التقنية - الشرق الأوسط

MIDDLE EAST

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Vol 31/Issue Five 2015

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### Plans for Petrochemicals

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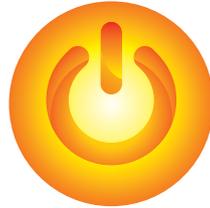
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zhonglei@weichai.com  
amitdeshpande@weichai.com  
liuhb@weichai.com

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## EDITOR'S NOTE

THE BIG 5, which is now well into its fourth decade, returns to Dubai this November. As always, it will provide an excellent overview of where exactly the region's construction industry is, where potential opportunities lie for contractors and suppliers, and what key challenges are facing the industry at this current time. We expect this year to be no different and we've brought you a selection of news from the three major shows taking place during the week with PMV Live, Middle East Concrete and, of course, The Big 5 itself (p48). This issue also features a timely look at one of the region's growing industrial sectors with not one, but two articles focusing on the mining sector (p22 and p26), while elsewhere we look at Saudi Arabia's powerful petrochemicals sector and how it plans to counter falling demand from its biggest customer, China (p16).

At *Technical Review* we always welcome readers' comments to [trme@alaincharles.com](mailto:trme@alaincharles.com)



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# TECHNICAL REVIEW

النشرة التقنية - الشرق الأوسط

## MIDDLE EAST

SERVING THE REGION'S BUSINESS SINCE 1984

**Managing Editor:** Ben Watts - Email: [trme@alaincharles.com](mailto:trme@alaincharles.com)

**Editorial and Design team:** Bob Adams, Prashanth AP, Hiriya Bairu, Sindhuja Balaji, Andrew Croft, Himanshu Goenka, Ranganath GS, Valerie Hart, Rhonita Patnaik, Prasad Shankarappa, Zsa Tebbit, Nicky Valsamaki and Louise Waters

**Publisher:** Nick Fordham

**Publishing Director:** Pallavi Pandey

**Magazine Sales Manager:** Graham Brown - Email: [graham.brown@alaincharles.com](mailto:graham.brown@alaincharles.com)  
Tel: +971 4 448 9260, Fax: +971 4 448 9261

**Special Projects Manager:** Jane Wellman - Email: [jane.wellman@alaincharles.com](mailto:jane.wellman@alaincharles.com)

**Production:** Priyanka Chakraborty, Nikitha Jain, Nathanielle Kumar, Nelly Mendes, Donatella Moranelli and Sophia Pinto Email: [production@alaincharles.com](mailto:production@alaincharles.com)

**Subscriptions:** [circulation@alaincharles.com](mailto:circulation@alaincharles.com)

**Chairman:** Derek Fordham

Country	Representative	Telephone	Fax	Email
China	Ying Mathieson	(86)10 8472 1899	(86) 10 8472 1900	<a href="mailto:ying.mathieson@alaincharles.com">ying.mathieson@alaincharles.com</a>
India	Tanmay Mishra	(91)80 65684483	(91) 80 40600791	<a href="mailto:tanmay.mishra@alaincharles.com">tanmay.mishra@alaincharles.com</a>
Nigeria	Bola Olowo	(234) 8034349299		<a href="mailto:bola.olowo@alaincharles.com">bola.olowo@alaincharles.com</a>
UK	Steve Thomas	(44) 20 7834 7676	(44) 20 79730076	<a href="mailto:stephen.thomas@alaincharles.com">stephen.thomas@alaincharles.com</a>
USA	Michael Tomaszefsky	(1) 203 226 2882	(1) 203 226 7447	<a href="mailto:michael.tomaszefsky@alaincharles.com">michael.tomaszefsky@alaincharles.com</a>

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**Head Office:** Alain Charles Publishing Ltd  
University House, 11-13 Lower Grosvenor Place, London, SW1W 0EX, UK  
Tel: +44 20 7834 7676, Fax: +44 20 7973 0076

**Middle East Regional Office:** Alain Charles Middle East FZ-LLC  
Office 215, Loft 2a, Dubai Media City, Dubai, UAE  
Tel: +971 4 448 9260, Fax: +971 4 448 9261



## Briefly

### Dow Middle East to build R&D centre at KAUST

THE DOW CHEMICAL Company has signed an agreement with King Abdullah University of Science and Technology (KAUST) to expand its presence on the campus through the construction of a new research and development (R&D) centre.

The 13,500 sqm Dow Middle East R&D Center will be built to meet LEED silver certification requirements and will have the capacity to cater for 75 employees.

Construction on the centre, which will house advanced laboratories for the research of water treatment, will begin by the end of 2015 and will provide the company with expanded capabilities in oil and gas, building and construction, and coatings.

“The Dow Middle East R&D Center at KAUST represents the continuing commitment on Dow’s part to the vision of KAUST to serve as a catalyst in transforming Saudi Arabia into a knowledge economy,” remarked KAUST president Jean-Lou Chameau.

### Basra to establish local development company

BASRA COUNCIL HAS announced that it is in the process of establishing Basra Company, a regional development company that will be tasked with boosting the economy in the Governorate.

Basra is home to 70 per cent of Iraq’s gas reserves and 59 per cent of the country’s oil. The new company will aim to attract foreign direct investment in a number of key sectors, including oil, gas and infrastructure. Speaking at the Basra Oil, Gas and Infrastructure Conference, officials from Basra Council and Basra Governorate announced plans to develop under-utilised and degraded oil and gas fields, as well as a range of new infrastructure projects.

Political authorities are now looking to open the city up to the world, capitalising on dramatic improvements in security in recent years, and partnering with international businesses with the aim of unlocking the city’s economic potential.

Ali Al Faris, chairman of the Oil and Gas Committee of Basra Council, said, “Basra Company is the vehicle through which the provincial government will optimise utilisation of resources and position Basra as the economic engine of Iraq.”

## MENA power sector needs further investment

FURTHER INVESTMENT IS required in MENA power projects if the region is to meet future power demands, despite more than US\$65bn worth of major power contracts being awarded throughout the region between September 2014 and September 2015.

MEED Insight’s *MENA Power 2016* found that despite huge investments being made into the power section, installed capacity needed to rise by 50 per cent in order to meet future demand. It estimated that installed generating capacity across the 14 countries analysed needed to rise by 143,221MW by 2020, representing an increase of about 50 per cent on the current level.

MEED power and water editor Andrew Roscoe said, “While several governments have taken steps to reform subsidies in an attempt to curb consumption in the wake of lower oil prices and rising subsidy bills, there can be no let-up in the drive to build new capacity to cope with the additional demand and restore reserve margins to at least 15 per cent.”

Among the key factors cited for the demand in power rising within the report were robust industrial growth, rising populations and increases in housing and essential infrastructure investments. Peak demand growth in the GCC averaged 8.4 per cent in 2014, while for the entire MENA it was slightly higher at more than nine per cent.

“With some of the region’s governments facing the prospect of doubling generation capacity by 2020, a key challenge will be securing financing to cover the significant investment required,” noted



Across the 14 countries analysed in the *MENA Power 2016* report, it has been estimated that an additional 143,221MW will be required by 2020 to meet rising demands. (Photo: Philip Lange)

Roscoe. “Governments are increasingly looking to the private sector to share the burden of the billions of dollars of capital investment needed.”

The report added that the shortage of readily available gas supplies had led governments throughout the region to turn their attentions towards alternative energy sources in order to bolster capacity-building programmes.

The GCC’s first nuclear power plant is close to completion in Abu Dhabi, while Egypt, Jordan and Saudi Arabia have been planning major nuclear power programmes. Coal-fired power plants have already made their mark in Morocco, with Dubai and Egypt set to add them to their generation mix, while Jordan has been exploring oil shale as an option. The emergence of renewable energy into the region’s power sector was also of note within the report.

“The year 2015 will be remembered as the year renewables finally made a breakthrough on a large-scale in the MENA region,” Roscoe remarked.

### Alstom signs US\$204mn railway contracts on Cairo Metro project

ALSTOM HAS SIGNED two contracts with Egypt’s National Authority for Tunnels (NAT) to supply signalling and telecommunications systems, as well as to develop infrastructure for the third phase of Cairo Metro Line 3.

Combined, the two contracts have been valued at around US\$204mn, according to the French transport solutions provider.

Alstom senior vice-president for Middle East and Africa, Gian-Luca Erbacci, said, “We are



Representatives from NAT and Alstom at the signing of the deals. (Photo: Alstom)

pleased that NAT has entrusted Alstom with these new contracts. We are committed to accompany our customer in the further development of Cairo’s metro network to meet the growing demand for mobility.”

The company will provide its signalling solution Urbalis and its operating control centre Iconis. In addition, Alstom will provide point machines and station signalling equipment, which will enable smooth journeys and short headways between trains. Power substations to feed the third rail, ventilation systems and elevators/escalators, will also be provided.

With two lines completed, the Cairo Metro railway line currently stretches along 78 km of track. The third line is partially open as a result of ongoing construction and will be completed in early 2022. Fifteen stations, and track spanning a length of 17.7 km will be added. Once this extension has been completed, Line 3 will be able to carry an estimated 1.5mn passengers daily.

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## Briefly

### AEG Power Solutions wins Saudi Arabia contract

POWER ELECTRONIC SYSTEMS and solutions provider AEG Power Solutions (AEG PS) has been selected by Petronash and another major EPC in two separate contracts, which will secure the power supply for gas process skids in a harsh environment.

AEG PS will supply customised solutions in both contracts, including battery chargers and nickel cadmium batteries, to provide a reliable power supply for the gas process skids. If mains power should fail, the AEG PS systems provide standby power to ensure safe shutdown.

"We chose AEG PS primarily due to its ability to come up with a highly-customised solution to meet our tough specifications at short notice, and to deliver that on budget, and to a very tight schedule," remarked Saurabh Mishra, manager – supply chain at Petronash.

John Lynch, regional director – Middle East at AEG Power Solutions, explained, "We tried to be flexible and easy to work with, and we are able to deliver within a short timescale. Our strong local presence in Dubai also helped."

The orders were placed in September 2015, and the 20 units across both contracts are due to be delivered by the end of 2015.

### JCB takes over generator producer Broadcrown

JCB POWER PRODUCTS has acquired the business and assets of diesel generator producer Broadcrown Ltd.

The acquisition will strengthen and extend the range of generators the company has to offer, with the new business expected to function under the name JCB Broadcrown with its products marketed as Broadcrown.

The business will offer a full portfolio of products and services, providing power solutions to several industries and sectors. The company specialises in diesel generators and power generation systems providing power from 6kVA to 30mVA.

JCB Power Products director and general manager, Jonathan Garnham, said, "This purchase offers us a fantastic opportunity to accelerate the growth of the JCB Power Products business by significantly extending the range. It also offers a great opportunity for the fuel-efficient JCB engine to power more generators."

## World Bank names UAE as 'easiest country' in MENA region to do business in

THE WORLD BANK Group's Doing Business 2016 report has named the UAE as the easiest country in which to do business throughout the Middle East and North Africa (MENA) region.

The annual report, which focuses on the state of health of economies based on detailed diagnostics of features both visible and embedded, ranked the UAE ahead of Bahrain, Qatar and Oman.

The report presents data for 189 economies and aggregates information from 10 areas of business regulation, such as starting a business,

obtaining electricity, trading across borders and resolving insolvency.

Globally, the UAE was ranked 31st, with Bahrain, the region's second easiest country in which to do business, falling into 65th place.

The report included data on the regulation of labour markets, such as on-the-job training and unemployment insurance.

According to the report, the best performing economies were those with good regulation that allow efficient and transparent functioning of business and markets while protecting public interest. In addition, the economies ranking high on the Doing Business indicators also tend to perform well in other international data sets, such as the Global Competitiveness Index and Transparency International's Corruption Perceptions Index.



The UAE was placed 31st globally. (Photo: JOAT)

### Ease of doing business - MENA region top five

Country	MENA Rank	World Rank
UAE	1	31
Bahrain	2	65
Qatar	3	68
Oman	4	70
Tunisia	5	74

Source: Doing Business 2016 (World Bank Group)

## Tata Steel announces partnership with IDC in the Middle East

TATA STEEL HAS strengthened its links in the Middle East through the signing of a partnership with International Development Company (IDC) after recognising the need to have local representation in Abu Dhabi.

IDC will support and assist Tata Steel in obtaining national oil company approvals, in order to offer its products and services for the energy and power sector, including welded line pipe and ancillary products from its UK pipe mills.

Richard Broughton, commercial manager, energy and power, Tata Steel, said, "Tata Steel, along with IDC, will introduce its supply capabilities to oil and gas companies in the region, providing them with an opportunity to work with a supplier that has an excellent track record of providing for offshore and onshore line pipe projects worldwide." Tata Steel announced the partnership following increased focus on

productivity in a bid to reduce the total cost of ownership for its customers' projects.

The company has made a number of significant investments in its production equipment, including improvements to its welder equipment, upgraded expander

tooling, reliability trials, better 'O' press control upgrade and investment in a new lap laser at its Hartlepool 42" large diameter SAW pipe mill.

"It is well known that this is a challenging time for the European steel industry, but there is no effect on Tata Steel's ability to provide high quality pipes to our customers in the energy sector," Broughton noted.

"Our investments over the last year are testament to our

commitment to the industry and we will continue to assist customers by reducing the total cost of project ownership without compromising on quality."



IDC will team up with Tata Steel in the Middle East to offer the latter's products to customers throughout the region. (Photo: zhu difeng)



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## Renewable energy investment opportunities 'rising'

POLICY SHIFTS OVER climate change as countries seek to diversify energy sources have opened investment opportunities for renewables in the Middle East and North Africa (MENA), the head of UAE green energy firm Masdar said.

Masdar's chief executive Ahmad Belhoul said that countries in the region had been increasingly setting renewable energy targets in their energy mix as demand grows, offering a boost to investments in solar and wind power ventures.

[www.technicalreview.me/power-a-water](http://www.technicalreview.me/power-a-water)



*Masdar, owned by Mubadala, was set up with a US\$15bn commitment to invest in green energy. (Photo: WDG Photo)*

## Jubaili Bros' Dubai seminar a success

JUBAILI BROS HELD a technical seminar in Dubai in October that saw a high turnout of businessmen, consultants, suppliers and end users from as far away as Kenya, Ethiopia and Nigeria.

More than 80 people attended the seminar, which had a range of technical information about generator sets and their components. Key presenters represented Perkins Engines, Leroy-Somer Alternators and Deep Sea Electronics.

Jad Jubaili, business development manager, spoke about the evolution of Jubaili Bros as one of the leading suppliers in the region, while Gary Jones, general sales manager for Perkins Engines, discussed the company's new 4000 series engines, which are used for the larger generator sets ranging from 725 kVA and above.

[www.technicalreview.me/events](http://www.technicalreview.me/events)

## Industrial zone set for Sharjah

SHARJAH ASSET MANAGEMENT has said it will develop the Al Saja'a Industrial Oasis Project to boost industrial, real estate and commercial sectors in the emirate. The upcoming project comprises 353 plots spanning 1.3mn sqm and will be located on Emirates Road. The project is being developed close to Sharjah International Airport and Al Hamriyah Port.

Sharjah Asset Management chief real estate officer Gregg Downer said, "This outstanding development will be officially launched in the near future and with full development details."

[www.technicalreview.me/construction](http://www.technicalreview.me/construction)



*The industrial zone will be close to the Sharjah International Airport and the Hamriyah Port. (Photo: Ashraf Jandali)*

## Saudi Arabia and Hungary sign nuclear energy deal

SAUDI ARABIA HAS signed a cooperation agreement with Hungary on the peaceful use of atomic energy to address growing electricity needs in the Kingdom.

The agreement, which was previously signed with France, South Korea, China, Argentina, Russia and Finland, is part of the Kingdom's efforts to diversify its energy sources to achieve its Vision 2032. The vision aims to replace 50 per cent of dependence on traditional fossil fuel with atomic and renewable energy sources.

[www.technicalreview.me/power-a-water](http://www.technicalreview.me/power-a-water)

## Ford to introduce 30 vehicles at show

FORD MOTOR COMPANY is planning to introduce 30 new vehicles in the Middle East and Africa by 2020 as part of its regional expansion strategy.

The company revealed that eight vehicles would be released first, all of which will be

showcased at the Dubai International Motor Show. The models include the Ford GT super sports car, the Shelby GT350 Mustang, Ford Edge SUV, Ford Explorer SUV, Ford Ranger pick-up and the new Ford Figo.

Ford executive vice-president Jim Farley said, "The Middle East is one of the world's most exciting and growing vehicle markets and we are moving very quickly to expand our range with exciting cars, utilities and trucks."

[www.technicalreview.me/logistics](http://www.technicalreview.me/logistics)



*The Ford Explorer is among the eight vehicles that will be unveiled at the Dubai International Motor Show. (Photo: Kevin M. McCarthy / Shutterstock.com)*

## Saudi Arabia power rental market to grow 12.6 per cent by 2021

SAUDI ARABIA'S POWER rental market has been forecast to grow at a CAGR of 12.6 per cent during 2015-21 due to the growth in the construction industry, emerging manufacturing sector, rising electricity demand and need to provide power to off-grid areas, according to 6Wresearch.

Avishrant Mani, senior research analyst, Research and Consulting at 6Wresearch, said, "In Saudi Arabia, diesel generators have accounted for the majority of market share in the overall power rental market. Easy availability and inexpensive diesel have boosted the growth of diesel generators for rent in the country."

[www.technicalreview.me/power-a-water](http://www.technicalreview.me/power-a-water)



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- **Entertainment segment:** Multiplexes/ Amusement parks
- **Urban infrastructure:** Shopping Malls, Residential and Commercial Complexes, Townships
- **Industries:** Engineering, Manufacturing, FMCG, Automobiles, Textiles, Pharmaceuticals, Dairy & Food Processing



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**Kuwait** : Boodai Trading Company Ltd., psharma@boodai.com  
**Qatar** : Boodai Trading Company Ltd., boodai@btctr.com

**Saudi Arabia**: Abdullah Hashim Company Ltd., azizr@ahcl.co.sa  
**Sudan** : Central Advanced Digitech Company  
ahmed.mohamed@digitech.sd  
**UAE** : AL Shirawi Enterprises, charan@ase.ae

**Head Office:** Laxmanrao Kirloskar Road, Khadki, Pune - 411 003, India, Tel: +91 (20) 25810341/ 5341 Fax: +91 (20) 25813208

**Middle East Office:** Kirloskar DMCC, P.O. Box 37745, Unit No. 504, Jumeirah Business Centre 5, Jumeirah Lake Towers, Dubai, UAE. Tel: +971 4 441 4532  
E-mail: enquiry@kirloskar.ae

For enquiries please visit [www.koel.co.in](http://www.koel.co.in) or email: [milind.panadare@kirloskar.com](mailto:milind.panadare@kirloskar.com),

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# EXECUTIVES' CALENDAR 2015/2016

## NOVEMBER 2015

23-26	<b>The Big 5 Dubai</b>	DUBAI	www.thebig5.ae
23-26	<b>PMV Live</b>	DUBAI	www.pmvlive.com
23-26	<b>Middle East Concrete</b>	DUBAI	www.middleeastconcrete.com
25-29	<b>CII EXCON</b>	BENGALURU	www.excon.in

## DECEMBER 2015

1-3	<b>Oman Minerals &amp; Mining</b>	MUSCAT	www.omanminingexpo.com
6-8	<b>Electricx</b>	CAIRO	www.electricxegypt.com
6-8	<b>MEFSEC</b>	CAIRO	www.mefsec.com
6-8	<b>Solar-Tec</b>	CAIRO	www.solartecegypt.com
7-9	<b>Gulf Traffic</b>	DUBAI	www.gulftraffic.com

## JANUARY 2016

10-13	<b>Plastivision Arabia</b>	SHARJAH	www.plastivision.ae
17-19	<b>Intersec</b>	DUBAI	www.intersecexpo.com
18-21	<b>World Future Energy Summit</b>	ABU DHABI	www.worldfutureenergysummit.com
18-21	<b>International Water Summit</b>	ABU DHABI	www.internationalwatersummit.com

## MARCH 2016

1-3	<b>Middle East Electricity</b>	DUBAI	www.middleeastelectricity.com
1-3	<b>Solar Middle East</b>	DUBAI	www.solarmiddleeast.ae
7-10	<b>The Big 5 Saudi</b>	JEDDAH	www.thebig5saudi.com
14-16	<b>Transport Solutions Middle East</b>	DUBAI	www.transportsolutionsme.com

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

## Spotlight on carbon capture and storage at Riyadh summit

CARBON CAPTURE AND storage (CCS) technologies have been endorsed as a key component to alleviate climate change by the 6th Ministerial Conference of the Carbon Sequestration Leadership Forum (CSLF).

The forum was held in Saudi Arabian capital Riyadh in early November 2015.

The endorsement from energy ministers and senior officials of the forum's 22 member nations and European Commission is being viewed as affirmation that CCS must be an integral component of any international plan to combat climate change. The officials reinforced their belief that the demonstration and global deployment of CCS must be accelerated and pledged their commitment to taking necessary actions individually and collaboratively to make



*Saudi Arabia and the USA co-chaired the ministerial conference in Riyadh. (Photo: Saudi Aramco)*

this happen. CCS encompasses a myriad of technologies for capturing carbon dioxide (CO<sub>2</sub>), a major greenhouse gas, emitted by power plants or industrial facilities and safely injecting it deep underground into suitable,

permanent geologic storage sites or converting it into other products. It is increasingly viewed by international experts as an essential part of a portfolio of responses to effective management and reduction of CO<sub>2</sub> emissions. Similarly, carbon sequestration is the process of capture, utilisation or long-term storage of carbon dioxide. This process should either mitigate or defer climate change. It has been proposed as a way to slow the atmospheric and marine accumulation of greenhouse gases.

One of the key actions pledged at the conclusion of the meeting was the assertion and advocacy for clean energy policies that support CCS alongside other clean energy technologies, such as renewable energy and efficiency measures.



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## Successful conclusion to Saudi Build 2015

SAUDI BUILD, THE 27th International Construction Technology and Building Materials Exhibition, concluded in late October 2015 following four days of networking and product launches. The event, held at Riyadh International Exhibition Centre in the Saudi Arabian capital, boasted a footfall of more than 16,000 trade and professional visitors, with a number of leading dignitaries also in attendance.

A spokesperson for Riyadh Exhibitions Co. Ltd., remarked, "The healthy infrastructure project pipeline in Saudi Arabia has fuelled the demand for construction and building material and technology to support the growth and development.

"The success of Saudi Build 2015 reiterates our commitment to cater to market demands as we bring the best international manufacturers and suppliers so that regional industry professionals can source products locally. Aside from visitors, exhibitors also benefitted from the exhibition by closing many lucrative deals."

Mazaya Aluminium marketing manager Eyad Al Saadi said, "We saw an excellent turnout this year as per our expectations at Saudi Build. Twenty-five years ago, we did not see a huge attendance, which demonstrates the tremendous development and growth made by Saudi Arabia.



Riyadh Mayor Eng. Ibrahim Al Sultan opening Saudi Build 2015.

"It is a lucrative market for construction, with several projects underway, and the exhibition is the most successful so far for us, where we have signed many new contracts."

The exhibition, the only construction trade show in Saudi Arabia accredited by UFI, the Global Association of the Exhibition Industry. It attracted more than 850 companies from 38 countries and covered 25,000 sqm of exhibition space.

The event offered what its organisers termed a "tailor-made platform" for exhibitors to present their solutions for the entire construction industry. Among the construction sub-sectors covered at the event were building materials and

equipment; architectural finishing products; stone, marble and granite products; construction tools and technology; engineering services; infrastructure materials; and security and safety systems.

Firas Al Hamidi, marketing manager at Saudi Ceramic Co., commented, "Saudi Build is an important exhibition for us which we continue to participate in every year, as it is a vital platform for us to meet our existing and new customers, suppliers, distributors, or consultants.

"This year, we had a major stand spread over 140 metres displaying newly launched products, and we were happy with the excellent turnout on the first day."

## Cairo gears up for Electricx 2015

A HOST OF power generation, transmission and distribution products and solutions will be on show in Egypt, as Electricx returns to Cairo International Convention Centre on 6-8 December 2015.

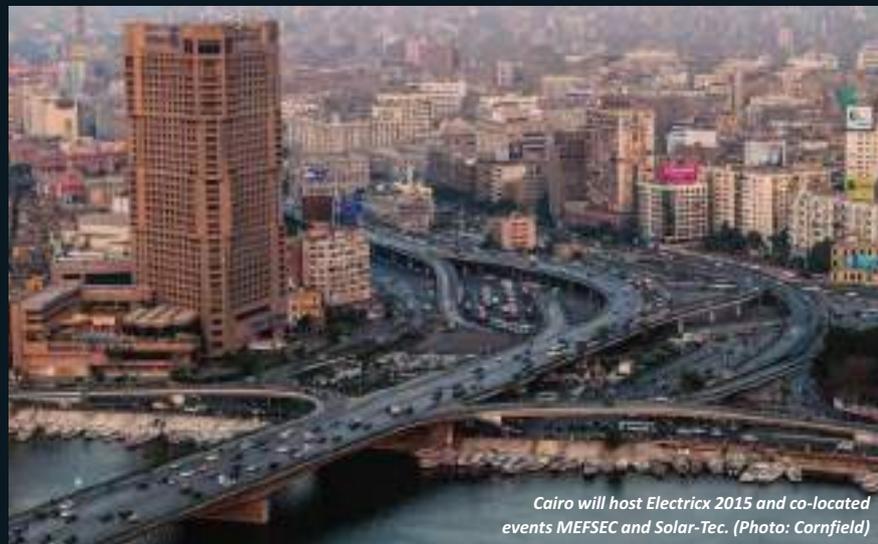
Among the big names set to be in attendance on the exhibition floor will be the likes of ABB, Cummins, Ducab, Eaton, SDMO and Omicron. The event, now in its 25th year, aims to provide a unique platform for visitors to view the latest

power equipment and services from the lighting, renewable and power sectors, as well as help in the development of international relationships and generation of new business opportunities.

Co-located with Electricx will be security event MEFSEC and Egypt's largest solar event Solar-Tec.

MEFSEC will cover a range of sectors from across the security and safety industries, with particular focuses on fire and anti-terror solutions.

Meanwhile, Solar-Tec will bring together exhibitors of PV panels and mounting systems, inverter and UPS systems, batteries and battery management systems, and solar thermal products. All events are free to register for and will be jointly organised by Egytec and Informa Exhibitions – the former is also responsible for the region's leading power exhibition, Middle East Electricity, which will return to Dubai in March 2016.



Cairo will host Electricx 2015 and co-located events MEFSEC and Solar-Tec. (Photo: Cornfield)

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# Surge in electricity demand leads to innovation

Lucy Electric CEO John Griffiths discusses the company's plans to expand its business interests throughout the region as electricity demand soars.

**A**CROSS THE MIDDLE East and North Africa (MENA) region, there is a surge in electricity demand for both business and domestic use owing to population growth, urbanisation and sustained economic development.

As a result, Lucy Electric CEO John Griffiths says that the company is witnessing an ongoing expansion of the transmission and distribution (T&D) market as distribution network operators invest in and develop their electrical infrastructure. "We are also seeing continued investment in renewables in the MENA region, particularly in PV installations and an ongoing commitment to the implementation of smart grid projects for secondary distribution," he notes. "This is driving demand for a range of monitoring and automation-ready products and solutions, such as our recently launched Gemini 3 remote terminal unit."

Specialists in high-performance medium voltage switchgear, Lucy Electric's extensive range includes SF6 gas and oil insulated, transformer or ground mounted, ring main units; pole or structure mounted air break disconnectors and air and gas load break switches.

According to Griffiths, its best-in-class products are continually developed to anticipate the changing needs of its customers, offering both 'off the shelf' and bespoke options to suit all applications, including the most extreme environments.

Catering to low-voltage distribution, the product portfolio includes a comprehensive range of indoor and outdoor cut outs, pre-equipped cabinets, and accessories including the innovative AcuLok fuse handle that is fitted in the TMO transformer-mounted, fused distribution cabinets.

Griffiths says that Lucy Electric's extensive range of distribution network automation products, at the forefront of innovation in automated control, offer a systems-engineered approach. "The range gives our customers a choice of building blocks which can be tailored to offer a complete automation solution. "From non-intrusive retrofit solutions to the latest smart grid ready ring main units we can provide for all our customers' needs."

However, smart grids are also vulnerable to cyber threats and cyber security is a major issue for the electrical distribution industry that Lucy Electric takes very seriously. According to the CEO, in-house experienced engineers continuously work to address this threat and help protect the customers' distribution networks, through their involvement with IEC standards committees that are looking at these issues.

With its strong commitment to sustainability and innovation, Griffiths notes that Lucy Electric is constantly working to ensure its products meet the changing needs of the marketplace.

"This year we launched the new Aegis Plus ring main unit range, which includes a number of features and benefits designed to revolutionise RMU medium voltage protection and automation," he says. "Automation-ready at the manufacturing stage, the units now have integrated remote terminal units (RTUs) in the form of the next-generation Gemini 3, which incorporates an automatic transfer scheme (ATS), enabling Aegis Plus to be smart grid ready."

Lucy Electric takes environmental responsibility and sustainable business very seriously as well.

"Developing environmentally sound products that provide maximum operator safety is fundamental to the success of our business, and in the Middle East region we have a focus on local manufacturing to reduce our overall carbon impact," comments Griffiths.

"We are also investigating more environmentally-friendly alternatives to SF6 gas for our switchgear to create products with a more sustainable profile."

As the case with all businesses in the T&D market, Lucy Electric too has seen the implementation of investment projects slow down over the last couple of years as a direct result of the oil price drop. Also, certain investments are not happening consistently across the region due to the ongoing political uncertainties and the company expects this to affect certain parts of the region for some time.

In spite of these factors, Lucy Electric is continuing to grow throughout the MENA region as its business is exclusively long-term supply contracts rather than project-based.

With the company's next big trade show focus set for Middle East Electricity in Dubai in March 2016, Griffiths says that the company is now looking to support more regional events. ■



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*The petrochemicals industry is the largest non-oil sector in Saudi Arabia providing about 84,000 jobs throughout the Kingdom. (Photo: anekoho)*

# Plotting a path for petrochemicals

Saudi Arabia is by far the region's largest producer of petrochemical products, but, as the oil price continues to sit at below US\$50 a barrel and with the fall in demand from its biggest customer China, the Kingdom's producers have much to consider over the coming months. Economist Moin Siddiqi investigates.

**A**FTER ASIA, THE GCC is the second-largest growth region in the world for the petrochemicals industry, with a total capacity of 149mn tons of products in 2014, up from 127.8mn tons in 2012, according to the Gulf Petrochemical and Chemical Association (GPCA).

Saudi Arabia maintains its leading position as the region's number one petrochemical producer, with two-thirds of the GCC's installed capacity. The sector has helped to diversify the regional economy over the past three decades, thereby reducing heavy reliance on crude oil exports.

With revenues of US\$88bn in 2014, the petrochemicals industry contributed to one-third of the Gulf's total manufacturing gross

**“Saudi Arabia has an edge over its peers regarding product quality and production efficiency.”**

**Khalid Al Rabiah, CEO of Methanol Chemicals Co. (Chemanol)**

domestic product (GDP) and employed some 150,000 people, as well as attracting sizeable private investments.

Abdulwahab Al-Sadoun, secretary-general of the GPCA, explains, “Petrochemicals is evolving into an industry that touches nearly every sectors of the GCC economy – from supply chain, equipment manufacturing, construction and agriculture, to the retail and trade sectors.”

The Gulf remains the world's lowest-cost region for petrochemicals output. GCC manufacturers account for about one-fifth of global output of ethylene glycol, and of total linear low-density polyethylene (18 per cent); high-density polyethylene (17 per cent); ethylene (14 per cent); polypropylene (13 per

SERIES 2015



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cent); and methanol production (11 per cent). The region currently exports around four-fifths of its products to more than 80 countries, amounting to 66.1mn tons.

### The region's leader

State-owned Saudi Basic Industries Corporation (SABIC) has developed a world-scale petrochemicals industry – constituting more than 10 per cent of global production and is now the largest supplier of ethylene, ethylene derivatives and methanol. Three factors underpin Saudi Arabia's petrochemicals sector. First of all, it holds the world's largest conventional oil reserves (267bn barrels), plus substantial proven natural gas reserves of 288.4 trillion cubic feet (Tcf) and an estimated 600 Tcf of unconventional shale gas. Secondly, the availability of cheap energy feedstock costs at US\$0.75 per million British thermal units (BTU), gives an unbeatable comparative edge to Saudi producers. Finally, it has strong industrial and regulatory infrastructure, which have been integrated into specially-developed industrial cities, namely Jubail and Yanbu.

## Projected growth in Saudi Arabian capacity will be led by the demand of its key export market China

Today, the petrochemicals industry is the largest non-oil sector in Saudi Arabia, with over 26 complexes, boasts existing investments of US\$63.5bn and provides about 84,000 jobs. The majority of Saudi's non-oil exports consist of petrochemicals, which include downstream plastic production and building materials. Total investments in the plastic sector have reached US\$50bn. "With a

wealth of experience and skills accumulated over the past 40 years in oil and petrochemicals and an abundance of resources, Saudi Arabia has an edge over its peers regarding product quality and production efficiency. It is very well positioned in the global petrochemicals market," says Khalid Al Rabiha, CEO of Methanol Chemicals Co. (Chemanol) in Dammam.

### Diversification in the Kingdom

Saudi Arabia's current strengths lie mainly in producing basic petrochemical building blocks like ethylene and methanol (accounting for two-thirds of total capacity), followed by other feedstock: propylene, benzene, xylene, butadiene and toluene, respectively. However, various projects are now underway to diversify its petrochemicals portfolio towards more sophisticated, high-value-added speciality chemicals, such as engineering thermoplastics, performance polymers, industrial rubber, acrylics, and sulphonated naphthalene formaldehyde. Recent products include ethanolamines (used in consumer products and industrial processes) and ethoxylates (used in shampoos, cleaning/personal care products, as well as in textiles, agricultural and oil products). The vision is to develop Saudi Arabia as a global leader in new advanced polymers by the end of this decade.

Saudi Arabia is leveraging low crude prices to accelerate development of its downstream petrochemical derivatives sector, while adding more than 30mn tons of new capacity by 2020, therefore raising production to 126mn tonnes from 2014 levels of 94.6mn tonnes, according to the latest edition of *The Oil & Gas Yearbook*. It is estimated Saudi Arabia will be producing more than 115mn tons by end-2016.

The government has announced plans to invest nearly US\$95bn over the next decade to build new plants, expand existing ones and integrate refineries with new or existing petrochemical units.

Global multinationals, namely Total, Dow Chemical Company, and Chevron Phillips, are collaborating with Saudi Arabian companies to develop fully integrated mega-complexes for petrochemical production. Capital expenditure worth US\$50bn by 2020 across three major projects and two expansions are being planned or implemented. The Sadara chemical complex in Jubail Industrial City II and PetroRabigh 11 located near King Abdullah Port on the Red Sea are two such keystone developments.

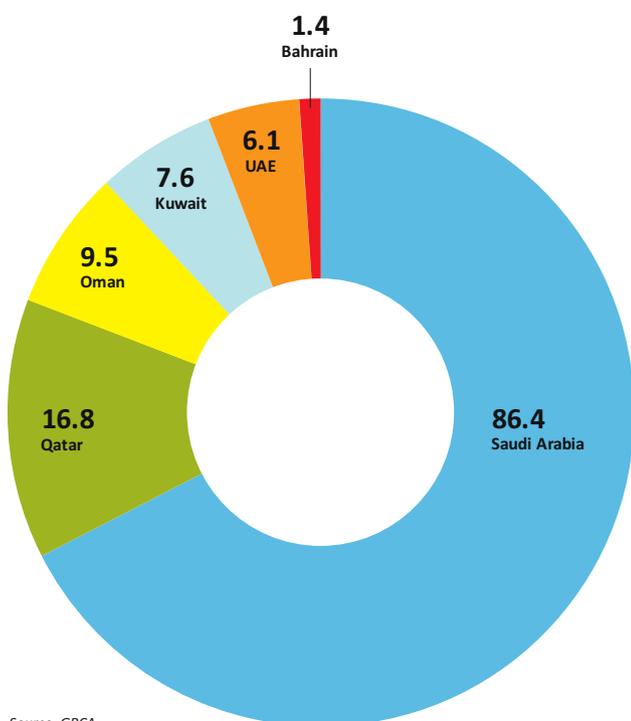
### Landmark projects

Sadara Chemical Company – a joint venture between Dow Chemical Company and Saudi Aramco – is currently building the world's largest chemical complex in a single phase, with 26 manufacturing plants (producing more than 38 products). The project (costing US\$20bn) is expected on-stream in 2016/17. Its sales volume is projected to reach US\$10bn yearly. Sadara will be the first Gulf chemical producer to use naphtha as a liquid feedstock. In 2013, Sadara signed agreements with several banks for a US\$10.5bn project financing.

Petro Rabigh II – partnership with Japan's Sumitomo Chemicals – has transformed Aramco's Rabigh Refinery into a fully integrated petrochemicals facility, producing a range of high-quality fuels (including gasoline). It also produces 1.3mn tons of ethylene and has a capacity of 900,000 tons/year of propylene, according to Petro Rabigh.

Another huge scheme devised jointly by SABIC and Aramco is plans for developing the world's largest oil-to-chemicals plant (costing US\$30bn), for which a feasibility report is being prepared. When completed by 2020, the facility will process about 200,000

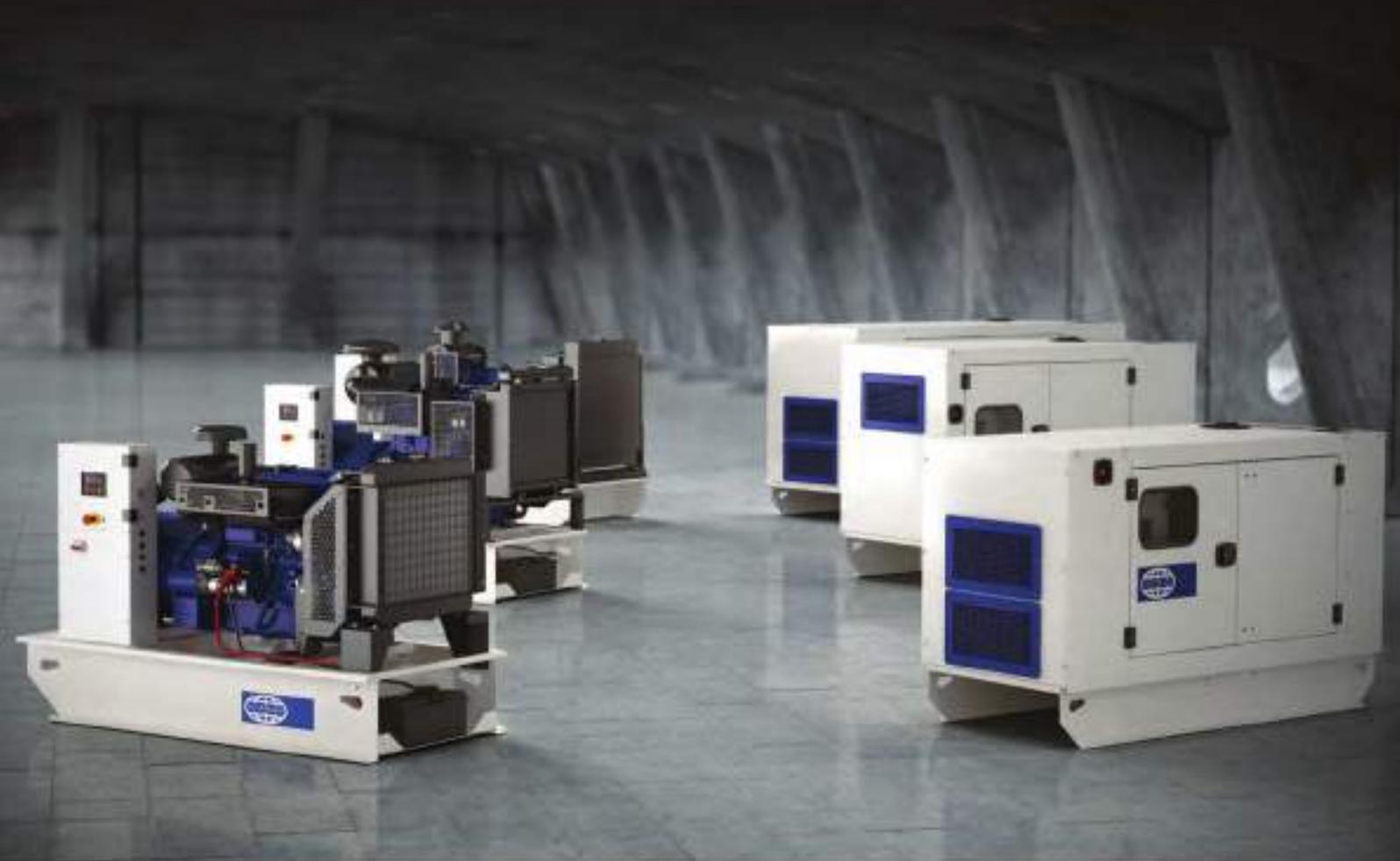
GCC Petrochemicals Capacity by Country (2012 - million tons)



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The product slate of the three crackers includes benzene, butadiene, ethylene, propylene, toluene and xylene, which will be fed into downstream processing facilities at the complex. There are cost factors: oil-to-chemicals plants require abundant supplies of fuel, which in turn, needs heavy subsidy, bringing the crude used for power down to US\$36/tonne, equivalent to the US\$0.75 a million BTUs the Oil Ministry charges for ethane in industrial use.

### Global slowdown and price competition

A weak oil price usually hurts regional producers by eroding their comparative pricing advantage over rivals in Europe and North America that use oil-derived feedstocks such as naphtha in order to make petrochemicals.

The petrochemicals market is sensitive to global output growth because its products – plastics, fertilisers and metals – are used extensively in construction, agriculture, industry and in the manufacturing of consumer goods. Amid stronger industrial activity in emerging economies (until recently), the sector enjoyed higher utilisation rates and firm prices. Now with local end-markets such as automobiles, construction, plastics and appliances slowing down in Asia (notably China), producers are seeing lower sales volume.

Saudi Arabian producers face other challenges, including higher gas extraction costs and booming shale-gas US production, which are affecting Saudi Arabia's competitiveness. With no new commercially viable gas deposits reported in recent years, the use of unconventional deposits will require more complex/expensive technologies. Furthermore, there is likely to be an increased squeeze on gas feedstocks due to soaring demand from power-generation and water desalination sectors in coming decades – reflecting the country's high population growth and ongoing industrialisation drive.

A 2014 report by consultancy firm McKinsey pointed out while the availability of low-price gas feedstocks led to rapid growth of the Middle East's petrochemical industry over the past 30 years, but "with advantaged new gas supply expected to end in most countries in the region over the next few years, petrochemical producers that want to expand domestically face major challenges". Saudi Arabia, however, needs further upstream expansion to sustain growth and bring cost pressures under control.

Projected growth in Saudi Arabian capacity will be led by demand from its key export market China. The Asian powerhouse is



*The economic slowdown in China, along with its plans to increase its domestic capacity of a number of chemicals, is already adversely affecting the Saudi Arabian petrochemical sector. (Photo: Christian Lagerek)*

expanding its domestic capacity, including a total of three million tons/year of ethylene, while it is also experiencing slower consumption growth. Added to overcapacity is the potential for increased Iranian output as sanctions are eased. Moreover, weak oil prices have led to a decline in the supply of naphtha, prompting falling profit margins for the ethane-fed petrochemicals industry.

### Reasons why Saudi Arabia is a global hub for future petrochemicals:

- Saudi Arabia is the only GCC country to allow private investment (including foreign direct investment) in the petrochemicals industry. Private-sector contribution is expected to quadruple in the next decade.
- Affordable energy and low-cost raw materials offer attractive project economies, coupled with long-term supply security.
- World Trade Organisation (WTO) membership allows free access to new export markets for Saudi petrochemical producers – strategically located to serve vast markets in both Europe and Asia.
- Rapidly developing petrochemicals clusters offers lucrative business opportunities for services providers. Saudi Arabia is also developing new industrial parks for plastics conversion to stimulate investments and create jobs.
- World-class infrastructures in Jubail and Yanbu are undergoing continuous upgrades – with new projects in roads, railways, airports and seaports, which will save costs when transferring products and materials from land to sea.
- Additional supply and diversification of petrochemical derivatives create new value chains and attractive opportunities for downstream industries.

With more industries in the Eastern Province than in the rest of the GCC-bloc combined, the ongoing development of clusters and push into petrochemicals derivatives will strengthen local downstream capacities and increase the scope for technology transfer partnerships with foreign majors, value-added services as well as support national professional employment goals. Some 1.9mn Saudis are expected to enter the labour market over the next decade. However, to sustain the robust growth trajectory, capital expenditure in the petrochemicals sector is poised to rise further, with a view to improving the country's performance and global competitiveness in manufacturing, supply-chain management, marketing, sourcing and services. Gulf countries need to invest more in R&D to help boost the value of their products.

Saudi Arabia is actively encouraging foreign investment to help bolster its status as a global petrochemical leader and a number of highly integrated refining and petrochemical schemes are expected to leverage its competitive advantages in the next few years. The mega-projects currently being pursued, notably Ras Tanura Integrated Refinery and Petrochemical Complex, Sadara, and Petro Rabigh Petrochemical Complex, will soon enable Saudi Arabia to rank among industrial giants such as the US and China in terms of market size.

Looking ahead, the industry is forecast to grow at six per cent/year, with GCC production reaching 198.6mn tons by 2020, based on the current pipeline of petrochemical and downstream construction projects. "The drive into higher value products, such as specialty and performance chemicals, is gaining momentum and is expected to act as a catalyst for an even stronger growth of the GCC petrochemical industry in the years to come" noted GPCA. ■

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Non-oil mineral activity in Saudi Arabia is growing at a rate of 10 per cent per year. (Photo: claffra/Shutterstock.com)

# GCC mining stepping out of hydrocarbon's shadow

For many years, countries in the Gulf have striven to develop a viable metals and mining industry that could act as a counterbalance to the region's dominant hydrocarbons sector. Nnamdi Anyadike looks into the sector's potential.

Ma'aden is evaluating the potential of several base metals deposits with the intention of expanding its mineral portfolio.

**E**NERGY INTENSIVE METALS, such as aluminium and steel, were the obvious first steps in bringing the mining industry to the fore in the Middle East and their development took off in the 1990s. Spurred on by low oil and gas prices, the pace is now increasing. Recently, US firm Bechtel set up a Dubai office to support its mining and metals division in the UAE. The greatest mining potential in the GCC region lies in Saudi Arabia where non-oil mineral activity is growing at a rate of 10 per cent per year.

The Kingdom possesses more mineral resources than any other country in the Gulf region with large deposits of bauxite, copper, gold, iron, lead, silver and tin, as well as non-metallic minerals. The Saudi

government has pledged to stimulate mining and is setting aside roughly US\$11.9bn to be spent on its development over the next five years.

To facilitate foreign investment, a comprehensive database on the geology and mineral resources of the Kingdom, including maps, databases, archives and reports, has now been compiled and made available to the public.

At the Saudi Mining and Minerals 2015 conference and exhibition, held on 27-29 October in Riyadh, Khalid Al-Salem, president of the National Industrial Cluster Development Program (NICDP), promised investors that they would be able to benefit from the Kingdom's competitive advantage in energy and financial incentives.

A number of initiatives were unveiled. These included a planned expansion in the mining activities of Ma'aden - the privatised Saudi mining entity, which is now listed on the Saudi Stock Exchange (Tadawul). The company, which is the main vehicle for Saudi Arabia's mining activities, is active in gold, industrial minerals, phosphate, aluminium and infrastructure. Its wholly owned subsidiary Ma'aden Gold and Base Metals Company (MGBM), operates five gold mines in Saudi Arabia.

However, in company documents seen by *Technical Review Middle East*, its gold business is expanding with the entry of two new mines: As-Suq and Ad Duwayhi. In October 2015, trial production began at Ad Duwayhi, which will be Ma'aden's largest gold mine. Commercial production has been scheduled to begin in the first quarter of 2016.

At full capacity, the mine is expected to produce 180,000 ounces of gold per year. This will bring Ma'aden's total gold production capacity to 340,000 ounces of gold per year. And Ad Duwayhi is just one of several new gold mines that Ma'aden is

developing in the Central Arabian Gold Region (CAGR).

In addition to gold, Ma'aden also extracts around 900 tons of copper, 4,000 tons of zinc and 280,000 oz of silver from the Mahd Ad Dahab mine each year. Recently in a bid to further develop its copper mining, Ma'aden formed a joint venture with Barrick Gold to operate the Jabal Sayid copper mine. The mine is expected to become operational in 2016 and is forecast to deliver 100-130mn tons of copper in each of its first five years of operation. Production is scheduled to continue for a further 10 years after that.

On the phosphate side, Ma'aden is currently looking to shore up its business. In September, it entered into discussions with a number of local, regional and international banks on the possibility of replacing its existing debt with new debt facilities on more favourable terms. Ma'aden's phosphate interests consist of Ma'aden Phosphate Company (MPC) – a joint venture with SABIC in which Ma'aden owns 70 per cent and SABIC 30 per cent – and the Wa'ad Al Shamal Project.

Ma'aden is in the process of developing seven large phosphate plants in Wa'ad Al Shamal. Once completed, the ambitious project is expected to produce around 16mn tons a year of product including phosphate concentrate, sulphuric acid, phosphoric acid and sodium tripolyphosphate. The Saudi Geological Survey estimates that Saudi Arabia's phosphate deposits eventually have the potential to make it "one of the top five global producers of phosphate".

Industrial minerals are also seen as a viable future business. Ma'aden is evaluating the potential of several base metals deposits with the intention of expanding its mineral portfolio to include: refractory clays, low-grade bauxite, kyanite, and graphite, pure limestone for Ground Calcium Carbonate (GCC) and Precipitated Calcium Carbonate (PPC) products, potash and iron ore.

Meanwhile, Oman's mineral resources – though modest in comparison with Saudi Arabia – still comprise substantial quantities of chromite; copper; dolomite; zinc; limestone; marble; gypsum; silicon; gold; cobalt and iron.

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Oman's mining and quarrying industry is growing at an estimated 23 per cent Compound Annual Growth Rate (CAGR). Studies show that Yanqul alone holds up to 25mn tonnes of copper reserves and Oman's coal reserves are estimated at 122mn tonnes.

The sultanate is the only Gulf country with substantial gold reserves other than Saudi Arabia. French and Japanese companies have prospected for gold at the northern and eastern parts of the Sultanate and found about 12mn tons of gold and copper. There is also some evidence of the presence of diamonds in Housh al Qahf, east of Oman.

In September, the AIM-listed Savannah Resources announced that modelling results from a survey revealed the potential for volcanic massive sulphide (VMS) ore clusters – consisting mainly of copper and zinc – in northern Oman. This survey vindicates the decision taken last year by Savannah Resources to invest US\$6.3mn to fund expansion into Oman's highly prospective copper belt.

Throughout the GCC, specialist mining equipment suppliers – led by China – are now piling in, tempted by the projected growth in metals and non-metals mining activity. The Anhui Suibao Heavy Industries Machinery company is a recent arrival in the region, having obtained its ISO 9001 in 2008. The company, which showcased its wares at the Saudi conference and exhibition, supplies various crushers, screens and feeders to the mining and quarrying industry.

Other Chinese exhibitors included: Hajjan Trading and Industrial Services Co., which

## Throughout the GCC, specialist mining equipment suppliers – led by China – are now piling in.

supplies tank linings and coatings, turbine and pumps, concrete and leak repairs; and Zhengzhou Kefid Machinery Co., Ltd, China's largest crushing plant and mill equipment supplier.

European and miners and equipment suppliers are also much in evidence in the Gulf. Finland's Flowrox Oy, the manufacturer of heavy duty industrial valves and pumps is expanding here. Under the company's new CEO Jukka Koskela the company's ambition is to achieve a global target of 100mn Euros (US\$109mn) in sales, by 2020. Italy's Geotec SpA, the provider of geotechnical and mining services also sees growth opportunities in the region for its suite of specialist mining services and technologies.

### A number of local companies are also developing expertise in the mining sector. These include:

- Saudi Arabia's Advanced Mashreq Mining Co. (AMMCO). The firm, which provides mining services, is looking to build and expand on its project portfolio in the region.

- Al Amri Labs Co. provides laboratory testing for minerals and water in Saudi Arabia and the wider Gulf. It describes itself as being among the industry leaders in water testing and second to none in the field of mineralogical testing. It is embarking on a mine development programme and is currently constructing new lab facilities.
- Ali Salem Al Raddadi factory for silica sand in Tabuk is diversifying within the GCC's mining sector to meet the growing need for raw and washed sand products and powder.
- The AlWasail Industrial Co., which provides solutions for water applications including complete pipe systems for pressure applications, is now making headway in mining. In September, AlWasail was named by SABIC to be one of the companies with which it had chosen to enter into a strategic marketing relationship with.

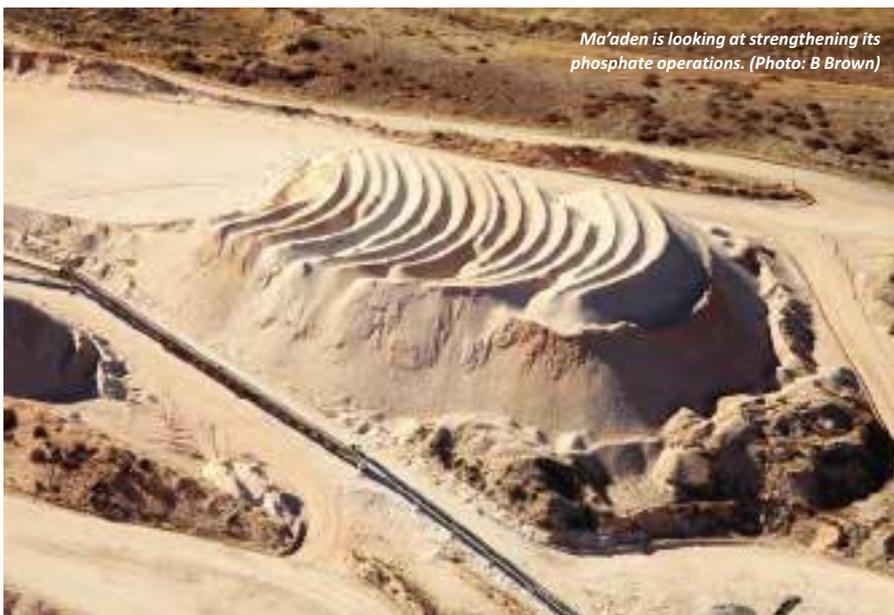
But despite the optimism expressed in Riyadh this October, the GCC's mining sector – alongside that of the wider Middle East and North Africa (MENA) region – is entering a rocky period, on the back of the slowdown in China's economic growth.

A recent report by Moody's Investor Services warned that the mining sector in MENA, plus sub-Saharan Africa, is set to suffer "the biggest impact from China's economic slowdown". Between 20 and 30 per cent of mining revenues from MENA – plus sub-Saharan Africa – comes either directly or indirectly from China.

"Metal and mining companies are most exposed both in terms of export volumes and the knock-on effect of lower prices," said Moody's. At the annual London Metal Exchange (LME) in October, Chinese and western analysts alike, agreed that China's demand for base metals will take a significant hit in 2016 with unavoidable consequences for the GCC's mining and minerals sector.

Demand for metals in China is not expected to improve substantially until at least the second half of 2016. And this slowdown in China – whose demand has been the main factor underpinning growth in the GCC's mining sector for the past decade – could delay some mining project decision in the Gulf for a year.

That said, the region's miners are reasonably confident that they are capable of riding out the present storm and are positioning themselves to benefit from the expected upturn that has been predicted to take place in late 2016. ■



*Ma'aden is looking at strengthening its phosphate operations. (Photo: B Brown)*

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# Mining sees a slow but steady rise in MENA

The Middle East economy is mainly driven by its oil revenues. But the slash in oil prices since 2014 has led the region to slowly diversify its business activities towards other sources of income. One such sector is mining.

**M**INING HAS NEVER gain a true stronghold in this part of the globe, partly because there are often few incentives for companies to look for minerals when they could look for oil and gas. Notwithstanding, the fact is that minerals discovered so far in Saudi Arabia are often of a higher grade than those discovered in countries throughout East Africa — a region endowed with abundant resources.

Luis Santos, senior vice-president – minerals processing for Africa, the Middle East and Turkey market area at Metso, said, “A significant number of economies in Middle East and Africa have been dependent on oil and gas. But with the recent spiralling of prices, there is a growing need for countries to look into other businesses. Countries like Saudi Arabia, Oman, Morocco and Egypt are rich in resources and they need to intensify their already existing mining activities.”

However, according to a Deloitte report, after a steep fall in gold and silver prices in 2013, iron ore, coal and copper followed suit in 2014. Fundamentals such as the growing supply from new low-cost projects, a stronger US dollar, weak global demand and credit restrictions in China have pushed prices of these commodities into a “technical graveyard”.

Weakening prices and a sluggish outlook for demand growth, along with lower total shareholder returns, have turned investors away from the mining sector. But according to Deloitte’s Rick Carr, waiting for a market upswing or adopting traditional cost containment measures will not likely suffice to turn the sector around. Mining companies should consider pursuing innovation for sustainable cost reduction and margin improvement, embracing autonomous mining solutions by working closely with vendors, and leveraging data analytics to increase productivity.

## Great potential in the Middle East

Compared to other parts of the world, the mining sector in the Middle East is relatively underdeveloped. Countries such as Kuwait and the UAE have low levels of minerals resources and, therefore, mining activities are predominantly limited to quarrying, processing and refining minerals. However, in North African countries like Egypt and Morocco there are substantial mineral deposits that need to be looked into.

According to Santos, Saudi Arabia leads the mining sector in the region. State-owned Ma’aden also recently announced that it is looking to diversify opportunities in the Kingdom with the creation of an integrated industry through its aluminium project in Ras Al-Khair. It is beginning to apply its manufacturing vision ‘from the mine to the finished product’ through all the components of the project, from the mine through to the alumina refinery, passing by the smelter and to the rolling mill, as well as the aluminium

*Egypt is an important gold producer, as well as the fourth largest producer of tantalite in the world. (Photo: SARIN KUNTHONG)*



recycling system. Santos revealed that even with the fall in commodity prices, there is a boom in construction activities. The same can be said about the UAE, in that it is witnessing a rise in infrastructure leading to increased mining activity. “The construction activities are steady, but slow,” Santos noted.

In Oman too, there is an increase in the discovery of a minerals resource base, predominantly with mineable minerals such as manganese, chromite, dolomite, zinc, limestone, gypsum, silica, copper, gold, cobalt and iron.

The mining industry is growing Egypt. It is the fourth largest producer of tantalite in the world and an important gold producer.

## Re-engineering the economy for better profit

To drive mining as a major income stream for a country in MENA, the economy must be ‘reengineered’ to boost mining activities in order to become profitable and increase commodity pricing. This must include more innovations, better R&D and adapted mining codes with respect to sustainable mining.

Santos reveals that with commodity prices falling since 2012, mining companies in the region have started to lose a lot of their flexibility. However, one ray of hope shines for the smaller mining companies who have seen much larger growth than the big companies. This is because they are more flexible in conducting their operations, and their cost of operations is lower. This is one way to flow with the reverse tide.

## Bright future

Even with prices going down and reduced exploration of certain mineral resources like iron ore, it is Santos’ view that mining will continue to only increase.

“For investors to regain confidence in the mining sector, operations must run in an efficient way,” he notes. “The future of mining is to accept that commodity prices may not be back to the original figures of 5-10 years ago. And operations must be managed more closely and tightly. The future is bright but it requires different approaches than the ones we have now towards mining.” ■

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# Aluminium winning the battle for GCC markets

The drop in global primary aluminium prices by nearly 50 per cent this year has provided producers in the Middle East – especially in the Gulf Cooperation Council (GCC) – with a golden opportunity to cash in on new markets, writes Nnamdi Anyadike.

**W**HILE IT MAY seem counterintuitive that a price fall could be good for business, the fact is that for decades aluminium has been engaged in a ‘battle for market share’ with competitor materials like steel, plastics and copper.

And now, the fall in the metal’s price has provided it with a perfect opportunity to gain market share from its rivals, which can then be more easily defended when prices later firm up. The cost of energy can comprise up to 90 per cent of the total cost of producing primary aluminium – aluminium obtained from bauxite ore and refined alumina, as opposed to recycled, or ‘secondary’ aluminium. This single fact makes aluminium production one of the most energy intensive industries in the world.

But aluminium is now much cheaper than copper, its main rival in the important power transmission market. As a consequence, demand for aluminium from this sector is rising even as demand for copper is plummeting. It now looks unlikely that copper will ever be able to regain its lost markets and therefore aluminium has won an important victory. UK-based researcher CRU estimates that copper is losing about two per cent of its demand to its rival, year-on-year.

Aluminium’s traditional high cost structure is one of the main reason why over the past few decades new smelters have tended to be cited in regions with the best access to a plentiful supply of energy, such as the Gulf and Asia. And with energy prices in the doldrums, GCC’s cost advantage has become even more enhanced.

So far this year, aluminium production from the Gulf has risen by 8.4 per cent, compared to the global average of 3.5 per cent. This rise has turned the Middle East into the world’s fastest growing aluminium market with an estimated 10 per cent of global production. Gulf output this year has increased to five million tonnes, from 4.83mn tonnes in 2014.

The UAE alone is now the world’s fourth largest aluminium producer accounting for more than 50 per cent of the GCC’s aluminium production. Last year, it produced 2.3mn tonnes.

Further expansions in the Gulf over the coming years are already in the pipeline. In June, Aluminium Bahrain (Alba), owner of the 936,000 tonnes per year (tpy) Alba smelter, won government approval for its Line 6 expansion project. This expansion will give the plant an additional 514,000 tpy and a total installed capacity of 1.45mn tpy, making it the world’s largest aluminium smelter. Construction is expected to start next year and production to begin in 2019.

But it is not just aluminium’s upstream sector that is expanding. Output is also growing in the GCC’s downstream products sector to cater for the rise in consumption in the key end use markets. Demand for aluminium from the transport, packaging, construction and the power transmission sector, is buoyant throughout the GCC.



*The UAE is the world’s fourth largest aluminium producer. (Photo: Pavel L Photo and Video)*

In packaging and transport, aluminium is steeling a march on its two main rivals, steel and plastics, on account of its lightweight properties and ease of recycling. And in construction demand for aluminium profiles is soaring.

Khalfan Al Suwaidi, managing director of at the UAE’s Emirates Extrusion Factory (EEF), said, “The ongoing building and construction activity across the MENA region is leading to huge demand for aluminium profiles. The company is planning to grow 10 per cent year-on-year for the next two to three years in the backdrop of this strong demand and growth potential.”

The EEF recently announced the commissioning of a third extrusion line and powder coating plant at its existing facility in Techno Park, Dubai. The line will increase EEF’s production capacity by 7,000 tonnes per year (tpy).

Also in the region, the Dubai Cable Co., the second-largest cable manufacturer in the Middle East in Abu Dhabi, is building its first aluminium plant that will targeting power transmission customers in Saudi Arabia. The US\$60mn factory will have capacity to produce 50,000 tpy of aluminium rod and overhead conductors. The project, called Ducab Aluminium Co., is planned to open in the first quarter of 2016.

There is also an increase in synergies between the upstream and downstream sectors. An example is the US\$10bn Ma’aden Aluminium (MA) joint venture between the Saudi Arabian Mining Company (Ma’aden) and Alcoa, which is one of the largest integrated aluminium projects in the world.

Meanwhile, earlier this year, the National Aluminium Products Company (NAPCO) of Oman announced plans that would make the

company Oman's only aluminium extruder and one of just three in the GCC to powder-coat extrusion in profile lengths up to eight metres. The new system along with the existing horizontal line will enable NAPCO to produce up to 27,000 tpy.

### The NAPCO strategy

*Technical Review Middle East* invited Robert Holtkamp, CEO of NAPCO, to discuss his company's present and future strategy. In the course of a wide ranging interview he gave his views on the overall condition of the primary aluminium market and, more specifically, about his ambitions for NAPCO in the products market.

On the question of the battle for market segments between aluminium and steel he tackled the rivalry head on. "Both steel and aluminium are staunch rivals across many of its diverse offerings." However, he said, NAPCO's core competence is in extruding aluminium – a product that is widely used in the building and construction industry.

The company has an architectural presence in Oman and throughout the region and has left its mark on several landmark projects. Its current portfolio in Dubai includes Citywalk, a retail destination; Onyx Tower, a three-tower commercial project; and the Dubai Design District (d3).

**“Ongoing building and construction activity across the MENA region is leading to huge demand for aluminium profiles.”**

**Khalfan Al Suwaidi,  
managing director of Emirates Extrusion Factory**

It is also working on Abu Dhabi Plaza, a mixed-use development in Kazakhstan. Past developments include the Supreme Court in Muscat, Salalah Airport, the Dubai International Airport Expansion, the Burj Khalifa and the Al Rayyan Complex.

"Aluminium is highly preferred over the use of steel mainly due to its key attributes like excellent weight to strength ratio, design flexibility, durability and low maintenance. In terms of the benefits and the sales due to falling prices, NAPCO still remains strong as it is still running at full capacity," said Holtkamp.

Holtkamp said that his company's aim is to build on its regional base and secure a more global presence outside of Oman and the wider GCC and exports are now rising steadily. "In fact, due to the expansion strategy that was implemented last July 2014 for the coming years, our exports have already reached around 70 per cent of the company's total production per annum, which is widely exported to key areas such as the GCC region, Europe and the rest of Asia.

"In line with this expansion strategy, the company has spearheaded the introduction of new products and services with an aim to broaden its reach across both regional and international markets...However, we will do more with the acquisition of two new fully automatic state of the art extrusion presses – taking our annual capacity from 18,000 [tpy] to 36,000 [tpy] to meet the increasing demand for our products," he added.



*Robert Holtkamp, CEO of NAPCO, told Technical Review Middle East that the Omani company was planning to build on its regional base and secure a larger global presence. (Photo: NAPCO)*

NAPCO has ordered two extrusion presses from Spain's TECALEX and a vertical powder coating line from Trasmetal, Italy. Teams from both companies will be present for the assembling of the machines, while local suppliers will provide services for fabrication, erection and other mechanical works to build a fully functional plant.

At time of writing, the first press is expected to be operational by end-October 2015, as is the powder coating line. The second press will begin by December. Holtkamp is confident that the new equipment will enable the company to go some way towards meeting the expected high levels of demand in the region for aluminium-based powder coating systems in the coming years.

"The acquisition will enable the company to better respond to higher demand for overall coating services and meet specific orders for higher length profiles. There were many instances in 2014 when we had to turn away customers due to overcapacity.

"The addition of the new vertical powder coating system will enable NAPCO to handle the increasing demand in-house...The company is confident in achieving 100 per cent capacity by the beginning of 2016. In addition, NAPCO is bullish in targeting a total of 20,000 tonnes for the whole of next year," he said.

Although most of the indications point to continued growth in the Middle East, there are some possible dark clouds on the horizon. As is the case with high cost crude oil producers, primary aluminium producers are keeping an anxious eye on the price. And at US\$1,550 per tonne in October, London Metal Exchange (LME) prices are at an uncomfortably low level for some of the high cost smelters that have recently come on-stream.

So unless prices pick up, aluminium producers may find that despite gaining market share from its material rivals, they still need to curb or mothball their less competitive plants. There are also obvious dangers to the GCC producers from new smelter projects in Asia and a less obvious danger of a slow down in GCC aluminium demand that could unravel demand projections. Some speculate that this could be the result of a renewed global economic downturn.

But for the time being at least GCC aluminium producers are in a very happy place – because if there is one region in the world that seems destined to weather any passing aluminium price storm it is the energy rich Gulf. ■

# On a wild GOOSE chase

The international standard IEC 61850 sets the basis for communication between individual devices in substations and between substations themselves. Here we look at the standard outlines data models used, as well as protocols and signals, which use intelligent electronic devices (IEDs) to exchange information between each other and for the whole engineering process.

**T**HE IEC 61850 standard is having a big impact on protection technology. This focuses on the performance, functionality and interoperability of devices in this field and includes the correct function and configuration, both of the messages exchanged over the communications network, as well as of conventional signals (voltages, currents and hardwired binary status signals).

Particularly time-critical information, such as trigger commands for protection devices, is more important and, therefore, requires a faster communication. In IEC 61850 environments, relevant status messages are carried by so-called GOOSE messages – Generic Object Oriented Substation Events – which are issued by intelligent electronic devices (IEDs) as multi-cast messages. As no recipient is specified, the information is spread over the whole network, allowing every connected IED or testing device to read it.

It is always sensible to test the functionality of the whole IEC 61850 system, as illustrated in the following example. Of course, if relevant tests are run directly during the commissioning phase it results in a much higher level of efficiency.

Deviations from regular processes can also be quickly detected at later stages, deviations which could lead to serious problems. This was illustrated by the OMICRON Power Utility Communications (PUC) specialists, working in southwest Africa. A regional energy provider invited them to check the IEC 61850 communications configuration and demonstrate the performance of the DANE0 400 test system.

The energy provider runs four transformer substations that are equipped with the latest IEC 61850 technology. Here, hundreds of GOOSE messages run through channels, exchanging signals between the IEDs in the four facilities. Redundant fibre optic cables ensure that these 'geese' reliably arrive at their destinations on time.

## Substation Configuration Language (SCL) and the network

To make sure that all GOOSE messages are correctly transmitted, the DANE0 measurement system was simply connected via Ethernet cable to a network switch, in order to gain access to the communications network. The port of the switch that DANE0 was connected to was then configured so that it was in the VLAN along with the GOOSE messages, ensuring that all GOOSE packets are then transmitted to DANE0. This enabled the DANE0 to analyse the network traffic in real time and verify each GOOSE message transmitted by the process bus immediately using the configuration in the Substation Configuration Description (SCD) file.

The SCD file is pre-loaded into the DANE0 control software for this purpose. The SCD describes the whole substation using SCL.

This could be done in a matter of a few seconds for all GOOSE messages on the network. The system verification check, displayed immediately, makes two data traffic problems visible. One of the 104 GOOSE messages was tagged with a yellow warning (see Figure 1), indicating that the GOOSE did not match the configuration. Depending on the switch configuration, this can result in that GOOSE not being received in another location, which may prevent a circuit breaker from activating when a protection trip is triggered. In addition to this, the analysis showed that 40 of the SCD specified GOOSE messages did not even transmit in the network. Ultimately, this was the result of messages that were no longer necessary in

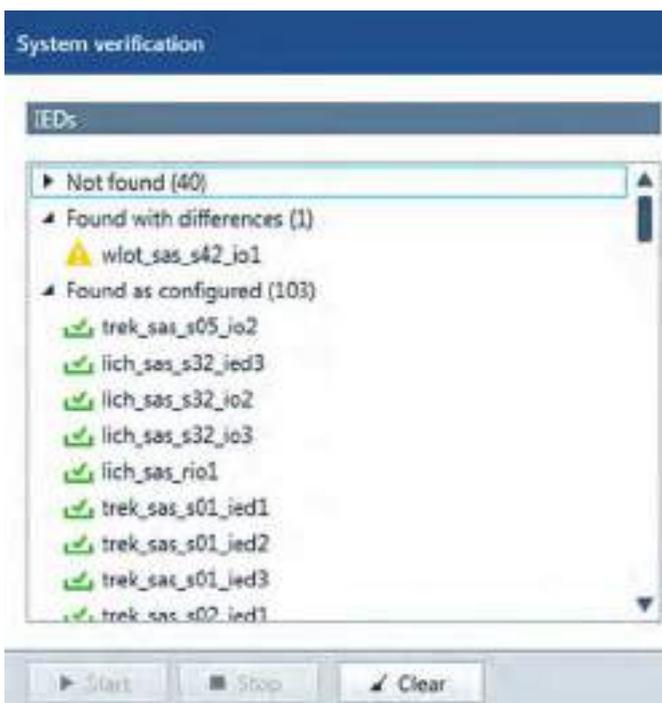


Figure 1: Cross-checking the GOOSE message in the network against the SCD with the DANE0 400, to quickly show inconsistencies.

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operation, even though they had been required when the facility was commissioned. To ensure protection, they were removed from the SCD.

After this first communications check, the sent IEC 61850 reports were next in line. IEDScout was used to test whether they matched the facility's configuration data. This is an analysis tool that looks inside IEDs and their communication, which helps protection technicians operate the system and check it for errors.

While running the test procedure, IEDScout indicated an inconsistency and highlighted a data value yellow, the value of which changed after short intervals. This value then triggered the alarm of a Remote Terminal Unit (RTU). This RTU probably triggered the alarm as it was unable to make a connection to another device. The



Figure 2: The DANE0 400 and the ISIO 200 can easily be connected to the communications network of substations in just a few steps.

energy provider's technicians, who inspected immediately, found the cause quickly: a defective optical network cable, which they replaced immediately.

### Distributed measurements for message runtimes

After using just one DANE0 400 in just one substation to make the first measurements, the next step came in testing the facility: the distributed measurement between substations with multiple measurement systems. Therefore a static IP address was assigned to each device enabling the DANE0 control software to communicate with all of the DANE0 400 units.

An OTMC 100 was then set up on the roof of the first substation building to synchronise the device times exactly. This device has a Precision Time Protocol (PTP) grandmaster clock with an integrated antenna, enabling all the connected measurement systems to synchronize precisely within 100 nanoseconds via GPS and PTP. An ISIO 200 was then also connected to the binary contacts of a RTU, which should then transform the electrical signal of the remotely operated RTU contacts into a GOOSE message (See Figure 2). This enabled the use of test GOOSE signals without disturbing the facility's operations. Each of these prepared measurement systems continued to run while the following day another DANE0 400 and ISIO 200 were set up, synchronized and run in the second substation. This ISIO 200 then received the manually and remotely generated GOOSE message, which it transformed into an electrical signal again. The DANE0 devices used in the test then recorded the electrical and GOOSE signals for the final analysis stage. The aim was to measure the time it took for the test GOOSE signal to be sent by the ISIO 200 in the first substation and received in the second substation, equating to a distance of around 18km. A list of interesting correlations could be drawn from this measurement about the DANE0 control Graphical User Interface (GUI), or web interface, (See Figure 3). The two signals above are from substation 1 and the two signals below are from substation 2.

You can see the binary contacts exchange of the RTU in the binary trace above (stimulus). Below you can see the GOOSE status change triggered in substation 1. In the third binary trace you can see the time at which the GOOSE message arrived in substation 2. Finally, the relay contact exchange, which is the response to the GOOSE message, comes in markedly later than the GOOSE message in substation 2.

You can clearly see that the delay time for the transmission between the two facilities amounted to just 149  $\mu\text{s}$ . However, this is just a single measurement result. Though the value may be standard for normal operation, it does not serve as an indication of what the value would be in a worst case scenario.

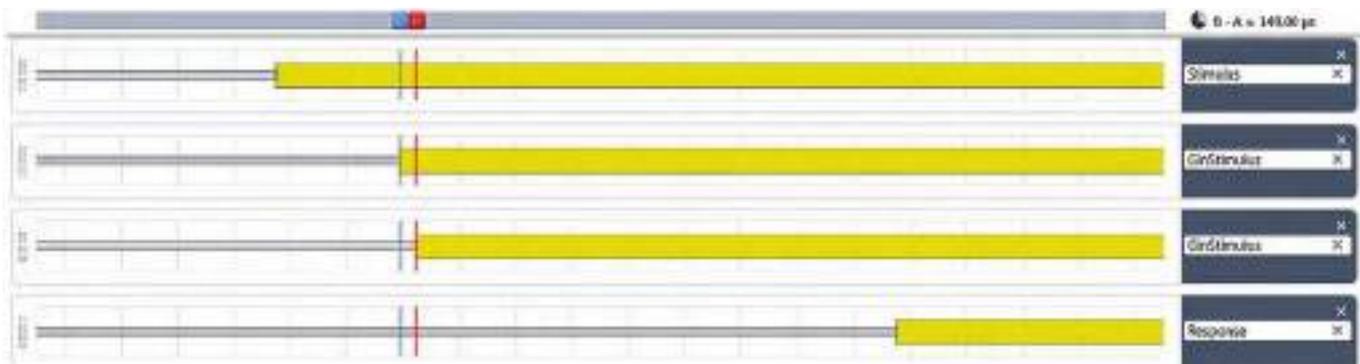


Figure 3: Here, the result displayed by the DANE0 control GUI shows the time points for the status change of the signals in both substations.



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### Worst case scenario simulation

What really interests us, is of course the result in a worst case scenario. To simulate such a scenario, a propagation delay analysis was carried out with the DANE0 400. The basis for such a test consists of hundreds of automatically collated measurements, whose results are finally displayed in a histogram.

To make the simulation mimic a serious situation even more closely, the energy provider's technicians even dared to open one of the two redundant network connections (using Rapid Spanning Tree Protocol) between the facilities. This resulted in the network packets having to take a detour through all four substations before arriving

at their respective destinations. The distance required for this amounted to around 75km.

The result of these measurements showed an average delay of around 476  $\mu\text{s}$  with a total of 556 packets. The maximum value was 658  $\mu\text{s}$ , whereas the minimal value was 471  $\mu\text{s}$ , the latter being most common in the measurement results (See Figure 4).

This measurement proved to the protection technicians that the delay times are more than sufficient for safe operation. The delay times are mostly caused by the intermediary network switches. The result is that the network is fast enough, even in the worst case scenario, to transmit vital messages in time. ■



Figure 4: The results of the Propagation Delay Analysis (PDA) run with the DANE0 400 as a worst case scenario were then displayed as a histogram, which shows the delay times for the redundant path.

### About the authors:



**Andreas Klien** was born in Austria in 1986. He studied Computer Engineering at the Technical University of Vienna and has been working at OMICRON since 2005. At OMICRON, he is currently managing a development team for products relating to IEC 61850. As a member of the Working Group 10 on the Technical Committee, TC 57, of the IEC, he contributes to the further development of the IEC 61850 standard series.



**Christian Wenk** went to Dornbirn to visit the Higher Technical Institute (HTL) for industrial engineering, which specialises in business computer science. He has been working at OMICRON for the last 5 years, working on embedded software development for quality assurance and automation.



**Klaus Jotz** studied electrical engineering at the Georg-Simon-Ohm TH in Nuremberg, specialising in electrical energy technology, after which he completed additional training as an energy manager. He has worked in the field of technical marketing for many years as well as working as a specialised journalist and specialist instructor. He has been working at OMICRON since 2014 as a marketing communications engineer.

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# Lifting logic

Cranes and other heavy lifting devices are perfectly safe if selected and used according to the rules. Your supplier is the best source of advice.

*Crane and lifting suppliers and operators often work closely together to ensure machines can lift the required load without toppling or rupturing. (Photo: lazyllama)*

**T**HE RECENT EVENT in the Holy City drew attention to safety issues concerning the use of cranes and other forms of heavy lifting (and access) equipment here in the Gulf, especially where large crowds gather.

Europe has some of the strictest regulations on this subject, and from there the CECE/FEM manufacturers' federations have produced a useful online document *What is a "safe" tower crane?* (2012). This is not the type that was involved in the tragedy in September, but special attention is always paid to fixed (but still dismantle-able) equipment such as this, because of the sheer height and load limits at which these devices routinely operate.

Suppliers and operators work together to satisfy this requirement, making sure that the machine can lift the required load without either toppling (tipping) or rupturing. Numerous safety devices are built in to ensure no single collapse or 'domino effect' – a risk on tight sites – occurs.

A year earlier, the same industry sources jointly produced a short guide to the identification of equipment that does not comply with regional rules. *Is this tower crane compliant with European legislation?* the title asked. Both documents are available on the construction equipment federation's website ([www.cece.eu](http://www.cece.eu)).

Says the "Safe?" advisory: "Compliance with safety engineering principles is the unconditional requirement for the prevention of hazards in the design, manufacture and operation of cranes." It points out that the operating manuals should always be available and local national legislation requirements adhered to by the project manager on site.

**“Numerous safety devices are built in to ensure no single collapse or ‘domino effect’ – a risk on tight sites – occurs.”**

The "Compliant?" guide provides a useful list of the key features that major lifting devices need to meet the rules. These include a self-recording anemometer if the hook height exceeds 30 metres (particularly important with the sort of self-erecting and top-slewing equipment so widely used in the Gulf), a safety basket on the job trolley, a complete set of toe-boards and handrails with no gaps in the walkway, regular rest platforms within the tower sections themselves, and an efficient windscreen-cleaning device operable in both wet and dusty conditions.

It points out that combination of components, used when a crane is extended or updated, is a critical issue. Individual mast and jib sections are obviously exceptionally important, but so too are the foundation anchors, slewing mechanism and other safety-critical components incorporated. The counterfeit industries are active in this field, it says.

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Safety starts with the mechanical principles of lifting with lever devices, which have resulted in the detailed design, whether this is for a conventional tower, self-erector, level luffer or whatever.

Mechanical advantage – MA, the main performance indicator – results from the principles by which the ratio of the load to applied force equals the ratio of the lengths of the longer (the jib or beam) and shorter (counter-weighted) arm sections. Manufacturers enhance MA by the detailed design of the pulley block system too.

For the machine to be stable, the rated load should always be substantially less than the load that will cause the machine to tip. The moment created by the boom, jib and load combination is resisted by the pedestal base. Stress within the kingpost must be kept less than the yield stress of the base material, otherwise the device will fail.

“Inspection” is the key word the industry groups imply in both documents, avoiding any possibility of failure of components and safety equipment. This should be performed regularly before both commissioning (e.g. after re-assembly at a new site) and substantial modification.

First come the supplier’s obligations. In Europe, all manufacturers have to comply with special Machinery Directives covering electromagnetic compatibility, noise emissions and the use of low-voltage equipment. In addition they have to supply an instruction manual containing specifications, other technical data, erection/dismantling instructions, general advice about use and maintenance, and transportation guidance. Residual risks should be pointed out and there should be a log book supplied. This should



European manufacturers have to comply with special Machinery Directives, which cover electromagnetic compatibility, noise emissions and the use of low-voltage equipment. (Photo: Pavel Vakhrushev)

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indicate when periodic inspections are recommended, and what these should cover.

Second, the operating company’s representatives have special obligations, and these usually vary slightly from country to country. These require them to operate the machinery according to the instructions supplied, to always use *original* spare parts and components, ensure maintenance procedures are carried out properly, to train employees adequately, to test for proper installation at each new site, and to inspect critical components and sub-assemblies at regular intervals.

Erection and dismantling can take place frequently, especially when the machine is rented, the guidance points out. This should always be entrusted to trained personnel working in accordance with the manuals supplied.

In general terms it explains what these qualifications are. Such individuals should know about the different levels of inspection and maintenance required in each national market in a community such as the GCC.

The American Society of Mechanical Engineers ([www.asme.org](http://www.asme.org)) is an excellent source of information with general relevance to applications in MENA. In France (the birthplace of Potain equipment, see below) where CECE rules apply the regulations can be consulted at [www.legifrance.fr](http://www.legifrance.fr)

For example, *daily* inspection by the operator himself covers a visual check of the entire mechanism, its brakes, indication devices, ropes and so on. Further up, a *thorough* inspection can only be carried out by an expert engineer who will oversee the dismantling of the equipment, checking for vibration, unwarranted noise, corrosion, condition of brake conditions and more. Two *intermediate* levels are described also, to be undertaken by persons who are “designated” and “competent”.

“For definition of qualification refer to ISO 9927-1 and FEM 1.007 [[www.fem-eur.com](http://www.fem-eur.com)]” the first advisory says. ■



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## Innovation award for Doka Muscat

FORMWORK SPECIALISTS DOKA Muscat was acknowledged for its innovation at the Dossier Construction Awards & Summit 2015 in Oman recently. The company picked up the prize for “Most innovative concrete quality assurance system,” in reference to the firm’s originaive Concremote device.

In its third year, the Dossier Construction Awards & Summit is a construction, real estate and infrastructure-focused event that acknowledges the achievements of the top industry performers within Oman.

Concremote is a product used exclusively by Doka that allows for the real-time non-stop measuring of concrete hydration temperature evolution and compressive strength build-up, enabling up-to-the-minute removal of shuttering, while allowing consultants to assess and potentially correct the measures taken to avoid thermal induced cracks.

Having collected the award for ‘Best Innovative Formwork System’ in 2014, this is the second consecutive year Doka has been



Doka Group has more than 160 sales and logistics facilities in more than 70 countries. (Photo: Doka Group)

recognised for its industry excellence at the Dossier Awards.

Founded in 1958 in Austria, the Doka Group has more than 160 sales and logistics facilities in more than 70 countries. Supplying a range of formwork products, systems and design services, Doka’s business includes production, equipment sale and rental, engineering and maintenance.

## Pascal supplying formwork for 50 years

GERMAN FORMWORK SPECIALIST Paschal-Werk G Maier is among the leading suppliers of modern formwork solutions to the construction industry in the GCC, providing concrete formwork, scaffolding systems and formwork planning software.

In Dubai, for example, the firm has been supplying its modular panel system for such projects as the Akoya Golf Course Development, where a number of apartments are being built; residential and commercial buildings at Tecom; and residential, retail and medical facilities for the City Walk Development. The modular panels have been used in the construction of the vertical elements, such as walls, columns and water tanks.

One of Paschal’s current projects is a new dental college in Riyadh being built for the Al-Farabi Medical Group by Madar Alnour for Contracting Company. The project, which started in the summer of 2015, is using Paschal’s formwork for walls, columns, elevator shafts and ceilings.

At the last Saudi Build, Paschal presented some examples from its product groups:

- Trapezoidal girder formwork TTR with adjustable radius for circular concrete structures.
- Wall formwork LOGO.3 can make industrial storey height elements up to 3.40m.

- Wall formwork LOGO alu, a lightweight formwork for construction sites, can be used without cranes and is fully compatible to LOGO.3 with steel frame.
- Modular universal formwork for small, manual, foundation and joist formwork.
- The Paschal deck, a versatile slab formwork for ceilings, which can be used for any slab thickness. The adjustable MODULAR Column formwork, a steel frame formwork whose elements are assembled according to the so-called windmill principle. The movable MODULAR dismantling inside corner post greatly reduces time required to form and dismantle the inner formwork for lift shafts, stairway cores and structures with tight spaces, says the company.

Paschal has been supplying customers for 50 years and is now active in more than 40 countries. In 1997, it set up its main office for the Middle East, Paschal Concrete Forms, which moved into its purpose-built premises in June 2010 at the Bahrain International Investment Park in Hidd. With a production facility for modular formwork and a stockyard in Bahrain, branches in Abu Dhabi and Dubai and sales agents in Iraq and its Scientific and Technical Office in Dammam, Paschal is well represented in the MENA region.

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## 4D: Adding time to temporary work

WITH BUILDING INFORMATION Modelling (BIM) now well established in the industry, the future development of 4D programme solutions is set to challenge the way that projects are delivered in the future, claims RMD Kwikform.

“The fourth dimension we refer to is time, which when it comes to temporary works, really has an impact on both cost and programme delivery,” says Ian Fryer, RMD Kwikform Engineering Director. “With a large proportion of the market being the hire of equipment, it is clear that if you can reduce hire time, you can make significant savings. So, if 4D programme solutions can be developed from BIM data, outlining not just the 3D models of the formwork and shoring, but the timings of delivery and collection, numerous benefits can be delivered to a wide variety of projects.

“We often talk about how 3D can be used to avoid clash detection, but by introducing time into the equation, we take this whole concept to a fourth dimension, creating a 4D solution around the avoidance of clashes within the programme itself.

“From a practical point of view, if you have a potential programme clash, by knowing when equipment is being erected or dismantled, you can make changes to the phasing of the project. This then allows the contractor to plan timely delivery to site of such things as large precast stair units. It also focuses the mind on design solutions that can assist with further programme time reduction, especially if engineers have practical experience of the job at hand,” says Fryer.

“For example, changes can be made to temporary works to incorporate equipment platforms for safe delivery of goods when



RMD Kwikform was part of a fast-track project to build five bridges in Muscat, Oman. (Photo: RMD Kwikform)

working at height and even second fixing. So you could have a situation where a high-rise building solution receives wet concrete at the top and reveals a fully clad and glazed building from the bottom, this is certainly possible.

“Having the 3D model ensures all the equipment needed on a particular project is delivered, and when you work this up to a 4D model, you can even determine when components need to be delivered to site. This, in turn, moves much closer to creating a just-in-time approach, minimising the need for site storage and additional hire costs.”

RMD Kwikform is very active in the MENA region. For example, it supplied temporary support to the arch roof trusses rising up to 45m for the Midfield Terminal at Abu Dhabi International Airport and erected towers up to 43m high for the landmark Sultan Qaboos Mosque in Nizwa, Oman.



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Streets of Riyadh get flooded with a single downpour.  
(Photo: cmonville/Wikimedia Commons)

# Construction boom a boon for facilities management

With the seemingly endless construction in the Middle East, it is time for the facilities management industry to put its best foot forward. *Technical Review Middle East* suggests some ideas for where opportunities lie.

**T**HE INCREASING AMOUNT of construction across the Middle East is giving a fillip to the facilities management (FM) industry. According to estimates by leading companies in the FM industry, the global market for FM services is expected to grow to US\$394bn by 2017. Due to the growth in construction in the GCC region, the regional market is expected to be worth US\$892bn in the next 25 years.

This expanding market gives cleaning and hygiene companies a huge opportunity to grow significantly if they maximise productivity by providing innovative and cost effective equipment to their clients. Construction activity in the GCC region, which Deloitte estimated at US\$172bn in 2015, makes the region very attractive for companies

**“We must ensure that roads and open spaces are equipped with high-capacity channels and large water reservoirs in anticipation of the future.”**

to set up shop there, as well as to expand already existing operations. Below are two potential directions that FM companies can look at, in order to grow their business.

## An opportunity in the drain

The Middle East is among the regions with the lowest rainfall in the world, and it only rains a few times in a year in the GCC. That has led to very little focus on surface drainage, which in turn leads to flooding caused by the meagre rainfall that does happen in the region. The flooding causes a lot of damage, in terms of both people and property. Electrocutions are commonplace on flooded streets, and garbage mixing and flowing with rainwater also creates health and sanitation problems.

The increasing construction in the Middle East means that more and more buildings are likely to be damaged by floodwater. According to Johann Groult, general manager of drainage manufacturer BIRCO, the long-term cost of not having drainage installed will become increasingly apparent as the region's construction continues to experience strong growth. Referring to the effects of climate change, Groult said, “While rain is less frequent in the Middle East now, we must ensure that roads and open spaces are equipped with high-capacity channels and large water reservoirs in anticipation of further changes in our climate.”

This makes surface drainage a great opportunity for FM companies, in an area they are already familiar with.

**Taking a chance on waste**

A sizeable opportunity lies in the waste treatment industry. There are already numerous companies working on various technologies to treat waste more and more effectively, including ways to recycle it and convert it to energy. While that is both productive and good for the environment, no one wants a waste treatment plant in their backyard because of the foul odour usually associated with it. And that is precisely where an opportunity presents itself for the FM industry.

For example, the Al Aweer sewage treatment plant in Warsan, Dubai has an odour management system which monitors the levels of odour, by monitoring the dispersal of particles associated with odour released into the surrounding area regularly. The system is



*Sewage treatment plants can be made more acceptable by reducing the stench they produce. (Photo: Matteo Festi/Shutterstock)*

**The foul odour that emanates from sewage treatment plants makes them unpopular with the communities near which the plants are set up.**

used to improve the ambient air quality and thus reduce the impact of the facility on the community. Dubai Municipality says that the number of complaints it receives about foul odour from the plant has fallen drastically since the system was put in place.

Odour management systems typically use activated carbon, with its high adsorption abilities, as the main component for removing fumes and smells from the plant. ■

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*LG's Multi V series first hit the market in 2004 and the current series, Multi V IV, was launched in 2013.*

# Keeping cool by going 'green'

From solar-powered air conditioning systems to installations capable of meeting the demands of the Middle East's harsh climatic conditions, LG has been continually developing its HVAC offering to suit the unique demands of buildings throughout the region.

**“We are jumpstarting our new focus to achieve our ultimate goal of leading the industry with our innovative technology.”**

**Lee Jae-sung, president of the LG System air conditioning business unit**

**A** CONSTANT STREAM OF high-rise developments, retail outlet projects and the construction of office facilities throughout the arid Middle East over the past two decades has led to a boom within the region's commercial air conditioning (CAC) industry. The region's hot and humid climate means that while these installations are essential, they can prove to be expensive and energy intensive ways of keeping building occupants cool.

LG Electronics, the market leader within the global HVAC solutions market has been looking at ways in which to enhance the industry's business-to-business (B2B) infrastructure by working on developing solutions for the HVAC sector that have a focus on long-term cost-reduction and energy-saving applications.

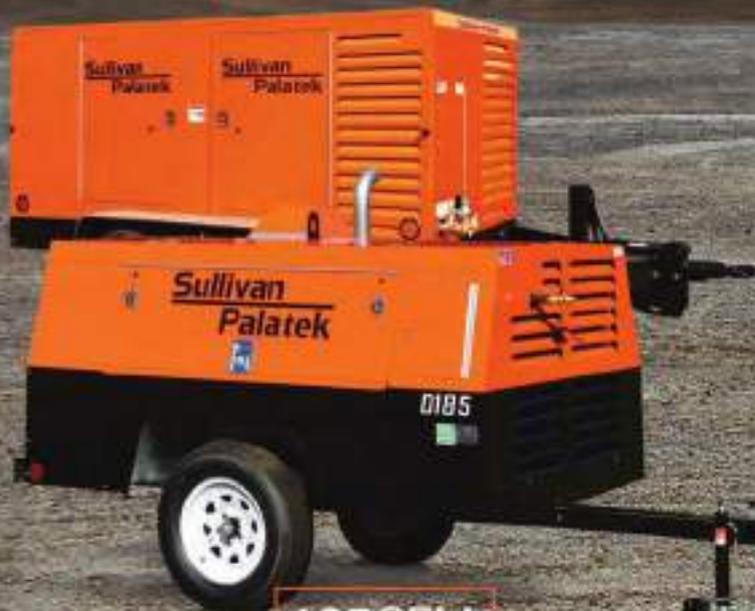
Announcing plans earlier in the year to shift its focus towards B2B sales, Lee Jae-

sung, president of the LG System air conditioning business unit, remarked, “LG is already a true total HVAC and energy solution provider. But we shouldn't rest on our laurels. That is why we are jumpstarting our new focus, to achieve our ultimate goal of leading the industry with our innovative technology.”

In the Middle East, this commitment has been no less evident than at a number of large commercial and residential projects, such as at Al Khaliji Bank Tower in Doha, Qatar, where the company faced the challenge of isolating different systems in the 70-metre-high tower. The solution was the company's Variable Refrigerant Flow (VRF) systems, which offers energy-efficient solutions that provide flexibility to the operator. LG was the first company in Doha to introduce Variable VRF systems, with the LG Multi V units decided to be the most

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energy-efficient and convenient to maintain, and more compact compared to the company's chilling system.

It extended the operation range by using a more enhanced inverter compressor known as V-Scroll and control technology, with the V-Scroll inverter compressor proving to be 11 per cent more efficient than a conventional compressor. The Multi V II systems installed at the site comprise 18 outdoor units, as well as 32 indoor units, with a total system capacity of 504kW.

At the Cosmopolitan Hotel in Dubai, the building's operators were looking for a solution that offered energy savings, lower maintenance costs and innovative eco friendliness able to cope with Dubai's extreme weather conditions. LG's solution was to provide energy efficient units within reasonable noise levels and lower total cost of ownership in parallel to the best design solutions, notably the capability to have VRF compressors connected to Air Handling Units (AHU). The LG Multi V 1,678kW-capacity system that was installed provided a flair of style to the hotel and allowed the air conditioning sense, manage and switch to provide comfortable room temperatures during seasonal changes that can reach more than 50°.

The Multi V series, probably the best known of LG's CACs, first hit the market in 2004 and has been continuously improved due to developing technological capabilities ever since. The current series, Multi V IV, came out in 2013 with an energy saving function and a high pressure oil return. The line has been modified and adapted for different markets, with versions developed to suit



Sagar Kulkarni, managing director of Consistent Engineering Consultants.

**“A lot of retail and hotel projects are expected, so it's a good market for the HVAC industry over the next few years.”**

**Sagar Kulkarni, managing director of Consistent Engineering Consultants**

conditions in coastal areas, or adapted to the nuances of a country's power grid in order to reduce installation and maintenance costs.

The version best suited to the desert climates of the Middle East and North Africa region has been adapted to operate at temperatures as high as 54°C.

Along with VRFs, LG's HVAC solutions also include chillers, which are required to support VRFs in large facilities with vast open areas. LG's chillers are extremely popular in power plants, district cooling facilities and commercial buildings throughout the Middle East, while its BECON (Building Energy Control) line provides a solution that operates a building's entire HVAC system.

#### Changing trends within the HVAC market

The HVAC market in the Middle East has been progressing strongly in recent years, thanks in part to a large number of major project announcements and developments.

Sagar Kulkarni, managing director of Consistent Engineering Consultants, a building services engineering solutions firm based in Dubai, says of the region's commercial air conditioning market, “The whole market is experiencing an uptrend because of the activity that is being planned in the next few years.

“We are preparing for Expo 2020 Dubai, which means the construction market is much more energetic. We are also looking forward to the 2022 World Cup in Qatar, while Saudi Arabia is performing strongly. The construction sector is going well, but apart from that it is also a lot to do with tackling new challenges and sustainable development.

“A lot of retail and hotel projects are expected, so it's a good market for the HVAC industry over the next few years.”

The upturn for the industry is leading to more competition and better solutions – especially when it comes to the sustainability side of things.



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“When we talk about the selection of equipment on big project, we talk about the whole lifecycle cost analysis, which help meet green building regulations like Estidama in Abu Dhabi. We talk about the initial operational cost and maintenance cost, and we have carried out a number of projects with a full lifecycle analysis.”

With many customers now better informed, or at least willing to listen to the argument for installing sustainable HVAC solutions, regulations such as Estidama are leading to a wholesale shift in the HVAC industry.

Dharmesh Sawant, senior manager – B2B AC at LG Electronics Gulf FZE, says that the increasing number of sustainability-driven regulations that are being established throughout the Gulf has been driving the sector towards a one-stop culture of improvised products and installations, with many customers opting to utilise the power of the sun to power their CAC systems.

“A leading trend is for Air-cooled VRF systems,” Sawant notes. “However, there is lot of potential in the Water-cooled VRF system which can be a replacement for Centrifugal Chillers, wherein the customer is looking for independent billing between Tenant and Authorities. Also Water-cooled VRF system consumes much lesser power and lower

connected load making it attractive in long runs.

“Many governments throughout the region have been subsidising the cost of energy, causing a lot of financial pressure, so the motivation for these governments is to reduce the amount of energy they can subsidise, says Sawant. “Utilising solar energy to power CAC systems will mean that these governments will not need to introduce additional taxes, benefiting all stakeholders within the market.”

### Exchange of information

Knowledge transfer is a key component of LG’s CAC offering, says Consistent Engineering Consultants’ Sagar Kulkarni, as experts experienced in dealing with the region’s humid and hot conditions share information on the latest developments in CAC technology.

“Sales support is a key aspect of the service, and we’re not just talking about the support, but analysing the data,” he notes.

“We get regular updates from Dharmesh and his team members on how to develop our plans for future installations, and the application of knowledge and keeping the information updated is what, I believe, sets LG’s offering apart from less established CAC companies in the region.”

As the market develops and construction projects throughout the region become even more ambitious, the HVAC market, led by established players such as LG, is continuing to keep pace while aiding and abetting the drive for ecological and environment building solutions. ■

To find out more about LG’s CAC portfolio, please visit: [mea.lgeaircon.com](http://mea.lgeaircon.com)



Dharmesh Sawant, senior manager – B2B AC at LG Electronics Gulf FZE






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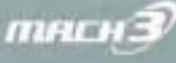
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Attendance records were broken at last year's Big 5.

# Construction takes centre stage

The industry will return to Dubai for this year's Big 5 exhibition as construction activity is set to soar throughout the region.

**Billions of dollars have been earmarked for spending on buildings and public sector infrastructure.**

**T**HE BIG 5 construction show once again takes centre stage in Dubai from 23-26 November at the Dubai World Trade Centre, with the largest gathering of construction professionals under one roof in the Middle East.

Exhibitors will be showcasing thousands of new and innovative products, with live demonstrations and industry experts on hand. At the same time, there will be more free educational seminars and CPD-certified workshops for all disciplines of the construction industry than ever before.

With government initiatives across the region aimed at economic diversification and to meet the infrastructure needs of rapidly growing populations, construction remains big business.

According to the *Ventures Onsite GCC Construction Industry – Trends and Challenges for 2015*, a report produced for the Big 5 show, “The GCC population is estimated to grow from 35mn to 60.2mn by

2050, which is likely to stimulate growth in construction activity in the buildings and infrastructure sectors, especially in housing, education, healthcare and infrastructure to support the communities.”

Billions of dollars have been earmarked for spending on buildings and public sector infrastructure, including for landmark events like Dubai Expo 2020 and the 2022 FIFA World Cup in Qatar.

“The GCC construction industry foresees growth from 2015-2018, encouraged by factors such as favourable macroeconomics, higher government allocation, positive demographics, and rising tourism activities. Higher budget allocation towards the construction sector, as part of the strategic vision of the member nations, lends an added push to the industry,” said Alpen Capital in its GCC Construction Industry report (23 June, 2015).

For more than 35 years, The Big 5 has offered visitors the opportunity to see,

compare and test thousands of the latest products, equipment and technology from across the globe in one place, at one time. Attendees are also encouraged to take part in the free educational sessions to improve their industry credentials and meet career goals.

Last year marked a record-breaking year as The Big 5 sold out of exhibition space, with 2,800 exhibitors from more than 60 countries and more than 80,000 participants having gathered at Dubai World Trade Centre during the show's four days, an increase of nine per cent over the previous year, according to event organiser dmg events.

For 2015, capacity has been increased with the addition of a brand new hall. The 'Big 5 Focus' hall includes a dedicated project management theatre, a technology in construction theatre and a CPD certificate collection area. The organiser is expecting around 3,000 exhibitors from 63 countries to display an estimated 36,000 products.

A key feature this year is the enhanced educational programme. This has grown to include more than 75 workshops on construction technology and project management. Run by industry experts, who will draw on real world experience, the free-to-attend workshops are CPD accredited, and participants can register the points earned with their professional association.

The workshops this year are themed under the following areas:

- Project management
- Sustainability
- Business and market intelligence
- Design and architecture



*A host of big name construction manufacturers and suppliers will be joined at Dubai World Trade Centre by a plethora of technical experts and project managers working across the region.*

- Affordable housing and sustainable communities
- Technology in construction.

The new Technology in Construction area is aimed at visitors looking to source the latest and most innovative technology software. Among the planned topics to be discussed in the Technology in Construction theatre are 'The Internet of Things' for Smart Cities, building information modelling, air curtains, 2D and 3D design tools, energy-efficient technologies and computer-assisted facility management.

New, too, is the dedicated project management area, which is organised in association with PMI Khaleeji UAE chapter. This will present information and discussions

on best practices in relation to the management of projects.

In the Sustainability Theatre there are planned updates to Dubai's green building regulations, sustainable practices, materials testing and certification, retrofitting existing buildings, and an introduction to the 'UN Global Compact Principles: Sustainability and ethicality in real estate and construction'. There will also be workshops covering affordable housing and sustainable communities.

In the Business & Market Intelligence theatre, topics covered will include standards and certification, arbitration and dispute resolution, project control and procurement planning, supply chain efficiency, developing leadership skills for the construction sector,

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managing culturally-diverse teams, contract management, ethical issues and property management. There is also a scheduled GCC construction sector update on the region's mega projects and project pipeline, as well as business opportunities.

In addition, the Design Summit, to be held on Tuesday, 24 November, will bring together architects, consultants, urban planners, engineers and contractors to share experiences and best practice in achieving sustainable urban design. Planned topics include urban planning and smart cities, green buildings and sustainability, balancing contemporary design with the preservation of cultural heritage, updates and opportunities for the design and construction sector and transport planning.

"One of the biggest opportunities is the development of sustainable projects; projects and urban spaces which will last a long time and provide a space where people will want to work and live. Lately, stakeholders and developers have become aware of the



The Big 5 will return to Dubai World Trade Centre from 23-26 November 2015.

benefits of sustainability; however, more work is required in order for the benefits of sustainability to be fully applied in the design and construction," said Dr Ioannis Spanos, senior sustainability manager at KEO International Consultants on The Big 5 website. He will be participating in the Design & Architecture Workshop.

Once again, the Gaia Awards will honour companies within the construction sector whose products and services can demonstrate a reduction in impact on the

environment. The winner will be eligible to receive more than US\$50,000 worth of marketing support for their product.

The *How to Trade in the UAE* seminar returns to the Big 5 this year, and is free to attend. Taking place on the Tuesday, it presents information on navigating the complex regulatory framework to set up a business and win contracts in the UAE's construction market, with help on laws and business practices, useful even for established businesses within the UAE. ■

## GAIA Awards: sustainability and environmental impact

NOW IN ITS eighth year, the Gaia Awards will again honour products in the construction sector that demonstrate a reduction in environmental impact. A panel of industry experts selects winners among companies that produce an innovative, sustainable and economically viable product.

The awards are open to both exhibitors and non-exhibitors whose products are distributed within the MENA region. The winner will be eligible to receive more than US\$50,000 worth of marketing support in order to showcase the winning 'green' product to the market.

One of the judges, Mario Senevirante, director of Green Technologies, GAIA's education partner, talks to *Technical Review Middle East*.

**Technical Review Middle East: How do you view sustainability?**

**Mario Senevirante:** Achieving sustainability involves 'optimising', not by increasing cost or reducing standards, but by reducing costs and maintaining the same level of quality. We can all be good, but we've got to be good at the best cost. In a nutshell, sustainability is doing great things at a reduced cost.

**TRME: What are the biggest opportunities for companies like yours in the Middle East?**

**MS:** There is a lot of opportunity here and

sustainability is becoming part of our culture and the way we do things. It is still a relatively new idea, and really started to gain momentum when HH Sheikh Mohammed bin Rashid Al Maktoum, vice-president and Prime Minister of the UAE and Ruler of Dubai, said in 2006 we are going to build green.

**TRME: The Middle East has a reputation for being one of the world's least sustainable places. Is this perception changing, and how can places like Dubai show the positive steps being taken in construction?**

**MS:** The fact that the region is not considered sustainable has a lot to do with statistics regarding things like per capita energy and water consumption. Now, whether the baselines are correct I'm not sure, but there is no doubt that consumption is high.

However, the UAE and especially Dubai, has taken the view that this challenge can become a great strength and provides opportunities for the emirate to become a global leader in sustainability. This has prompted nuclear energy, renewables and solar programmes, which are positive steps. There are also more energy forums being held in the region that are bringing leaders together and that can help to change perceptions.

Also, Dubai is becoming a leader in

sustainability through the creation of investment and tourism markets, the success of which is driven by operating costs that are affected by sustainability, energy and water consumption. As lower energy and water consumption and costs are achieved, the real and perceived value of these markets will be enhanced, and the city will be seen as a sustainable success story.

**TRME: What about the demand for green building certifications?**

**MS:** In the past two years we've seen exponential growth in the demand for green building certification. LEED certification is great because it brings another quality dimension to a project. However, there is an upfront soft cost associated with certification. It is an insignificant and perceived high cost, and a challenge is people don't realise it can bring the overall cost of the building down and so they ask to take it out of the budget. Clients aware of this are increasingly recognising the value of this upfront cost in the same way as going to the doctor is viewed as reducing the costs of unhealthy lifestyle choices and ill health.

*Green Technologies is an engineering consultant specialising in environmentally sustainable solutions.*

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**BIG 5 STAND 1D25 – MEC STAND E97**

## Bacacier and Philippe Starck join forces to customise cladding

FRENCH COMPANY BACACIER will be at The Big 5 presenting Bacacier By Starck, its alternative solution to facade metallic cladding for industrial and commercial buildings, designed in conjunction with Philippe Starck, one of the world's most renowned designers.

For the past 50 years, the cladding on industrial and commercial buildings has been built using metal sheets with the same shapes, restricting what architects can do. "Everything looks the same. The loss of identity in city suburbs is too obvious. For an architect, creating a unique building using the available products in the metallic cladding market becomes an aesthetic and economic challenge," said the company.

Bacacier, which has been supplying metallic cladding for more than 20 years, has created a Meccano-type building system



*Bacacier will be presenting a new solution to customise industrial buildings.*

incorporating new stamped sections with varying imprints, patterns, materials, and colours that can be connected to each other, allowing the customisation of a building.

A patented fixing system allows the architect to accessorise the building

without re-drilling or without losing its integrity or thermal performance. Finally, there is a set of accessories offering endless finishing possibilities.

"Aesthetic and practical, Bacacier By Starck meets traditional installation techniques and to date presents the most economic solution to clad a metallic construction and make it unique, giving it a strong identity while being 'reversible' without major intervention," the company noted. "In France, less than two years after its market release, the 100th building equipped with the Bacacier By Starck solution has just been installed. Bacacier by Starck is presented for the first time at The Big 5 in Dubai before its launch in New York in 2016," stated the company.

**Stand: 1C35**

## Highly resilient pipes from RAKtherm

AT THIS YEAR'S show RAKtherm will be exhibiting its comprehensive range of piping systems for residential, commercial and industrial applications.

"RAKtherm's PP-R, PE-X, REINFORCED, and anti-UV piping systems delivers the most advanced piping technology proven to be chemically stable, non-corrosive, extremely tough and durable and highly resilient, even in the most extreme conditions," the company said. "Made from polypropylene, RAKtherm pipes and fittings are extensively used in food and medical industries owing to their 'harmless and safe' properties. A random copolymer grade of polypropylene called PP-R 80 was especially developed for engineering applications with certain stringent requirements.

"PP-R 80 is characterised by excellent physical and chemical properties even at elevated temperatures. Compression strength, elasticity, corrosion, chemical and heat resistance are just some of its properties. RAKtherm's PP-R 80 system has shown high resilience even at the most extreme conditions, making it appropriate for the delivery of potable hot and cold water in the home, office or factory."

Meanwhile, PE-X systems can be used independently or can complement the PP-R systems. PE-X is a modified and condensed structure of the polyethylene molecule developed especially to improve the material's physical properties. Cross-linked polyethylene (PE-X) results from chemically adjoining polyethylene molecules in order to improve



*RAKtherm will be on hand at The Big 5 presenting its innovative piping systems and solutions.*

their properties, especially at high temperatures. This results in a structure that does not soften when high temperature is applied, thus raising the thermal stability of the material under load. This greatly increases the resistance to environmental stress crack and to slow crack growth due to deterioration of the material under continuous temperature use.

**Stand: 4B177**

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## Automatic door solutions offer convenience and added security

DOOR AND WINDOW technology manufacturer GEZE will be on hand at The Big 5 2015, where it will be promoting its automatic doors that comply with the latest European safety standards, bringing added aesthetic benefits and barrier free access for users.

The 152-year-old family-run company has influenced architects and building technologies with the pioneering developments in its product offerings, according to GEZE Middle East FZE managing director Charles Constantin. Along with automatic door systems and door technology, GEZE offers a range of products that includes glass systems, smoke and heat extraction systems, safety technology, window and ventilation technology.

Constantin says that the highest of quality standards means that GEZE products have contributed towards some of the world's most innovative building concepts, ensuring convenience and security for all users.

In addition to its primary function, automatic doors are integral to the environmental efficiency of a building, he notes. The longer a door is kept open, the more energy loss there is through wasted heating or cooling. For sliding doors, this can be mitigated through the use of a two-door 'air lock' system where the simultaneous open time of the two doors is vastly reduced. This can be reduced further by the



*Al Jalilah Children Hospital in Dubai, which GEZE furnished with innovative technologies for automatic swing and sliding doors at the entrance and interior of the building.*

use of uni-directional sensors, which only detect the movement of a person coming towards, not away from the door, meaning the door can stop detecting the user after passing through and commence its closing the phase earlier.

While the door is closed, the use of slim-line aluminium profiles with perimeter seals and low-E coating double glazed units brings huge benefits to the thermal efficiency of the entrance.

One step further is the incorporation of an elegant revolving door. This highly sophisticated entrance provides a continuously sealed entry and exit point which virtually eliminates heating or cooling losses.

Another key feature of automatic doors is their integration into the building

management system, providing security and access control capability. When connected to the fire alarm system, these same doors can become emergency exits configured to open on the sounding of the alarm, providing free passage for escaping personnel.

GEZE has equipped Porsche's new facility in Dubai with state-of-the-art engineered door systems. With 49 Porsche cars on display, the new dealership on Sheikh Zayed Road is one of the largest Porsche sale centres in the world. GEZE has also furnished Al Jalilah Children Hospital, with its most innovative technologies for automatic swing and sliding doors at the entrance and interior of the building.

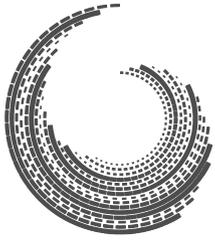
**Stand: Zabeel J111**



*GEZE Middle East FZE managing director Charles Constantin.*



*GEZE provided state-of-the-art engineered door systems to Porsche's brand new facility in Dubai.*



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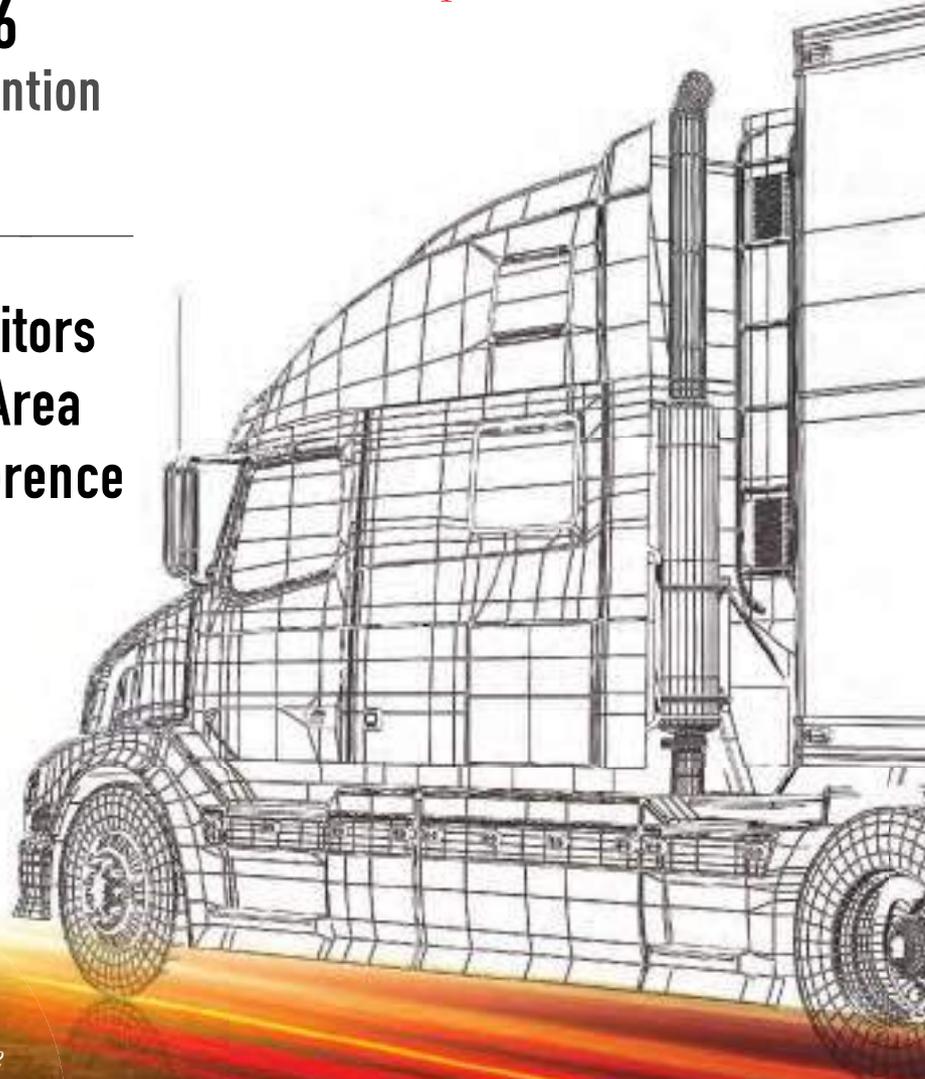
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## Sullivan-Palatek redesigns and launches new compressors

WITH THE ADVENT of Tier 4 final engines, Sullivan-Palatek's large air machines, such as the D1150 dual pressure dual capacity and D1600 have been redesigned with an updated exterior. Products that will be undergoing a similar process include a CAT 185 cubic foot per minute (cfm) compressor as well as at 375 cfm.

The USA-based manufacturer said that Tier 3 machines, from 750 cfm to 1800 cfm, are available in the Middle East. Included in the Tier 3 model inventory is the newly redesigned D1300-D1800 range of portable air compressors.

Sullivan-Palatek said that the D750-D900 portable series is highly versatile and the best for construction, blasting, drilling and mining projects. Offered with a CAT or Cummins engine, these models are 750 cfm at 150 psi, 825 cfm at 70-125 psi and 900 cfm at 150 psi. The D750-D900 models are engineered with large 204 mm twin screw air ends for high efficiency, and carry a three-year unlimited hour air end warranty. The galvanneal sheet metal exterior provides extra protection from rust and scratching while working in the toughest environments. Also available are dual pressure/dual capacity extra high pressure machines (900 cfm at 500 psi and 1150 cfm at 350 psi).

Soon to be released in the newly redesigned enclosure — the 900/500 or 1150/350 — will look much like the D1300-D1800 series. Now built with a full containment base and dual axle running gear, the machines are easier than ever to maintain and move.

Sullivan-Palatek's largest portable compressor — D1300-D1800 portable series — has a redesigned range that produces 1300 cfm at 150 psi, 1600 cfm at 150 psi and 1800 cfm at 100 psi.



*The SP20-300VFD is designed for a tough industrial environment.*

Meanwhile, Sullivan-Palatek has also recently released their new SP16 industrial electric air compressor series that covers all applications possible from low pressure 75 psig up to 250 psig high pressure in a single stage.

The packages come standard with across the line starters, with optional Y delta, SSRV and VFD available.

Compared to its predecessors, the SP16 has a much smaller footprint and is considerably quieter during operation.

## Surface care solutions from Fila

FILA, THE MARKET leader in surface care solutions, will be at this year's Big 5 presenting its latest product offerings.

Products span dirt-repellent protectors, solvent-free stain protectors, grout haze removers, epoxy removers and stain

removers and detergents. They are designed for the treatment of marble, granite, natural stone, porcelain, ceramics, terracotta and wood.

"As a global, eco-focused company, we combine the traditional values of a family-

run firm with innovative product development. Our products are recommended by more than 220 leading brands and are designed to provide high performance, whilst protecting natural surface characteristics," the company said.

Fila's products consist of stone protection and maintenance products that cover the whole life of a building — from pre-treatment to daily maintenance.

The company is well established in the region, with its products having been used to protect, for example, the New Presidential Palace in Abu Dhabi, the new Hamad International Airport in Doha and the Dubai Tram. It has an overseas branch in Dubai from which it services the Middle East markets.

At the Big 5, Fila will be presenting its latest innovations:

- FILANO RUST - a ready-to-use rust stain remover applicable even on delicate surfaces.
- FILAZERO SIL - a ready-to-use residue remover to get rid of residue of silicone, glue, adhesive tape, wax and old labels from any surface.

*Stand: Rashid A227*



*Fila provided products for use on the construction of the Dubai Tram. (Photo: Tatsiana Amelina)*



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# Seeing concrete with new eyes

In the build-up to his Decorative Concrete workshop at Middle East Concrete, which is co-located with The Big 5 2015, Matthew Burns, a decorative concrete specialist and general manager of Taj Concrete, discusses how the niche industry could play a crucial role in the future of the Middle East's construction industry.

## Technical Review Middle East: What can visitors expect from the Decorative Concrete workshop at Middle East Concrete?

**Matthew Burns:** I think the biggest thing is that visitors are going to get to meet industry leaders, which is really unique. That doesn't happen very often where everyone comes together at the same time. Jaime Villagomez from New Look International is one of the industry leaders globally, as is Melanie Royals at Modello Designs. The other big name we are talking with is Brad Mickelson from Concrete Décor, and of course I'll be there as well.

## TRME: You talk about a regional skills shortage in terms of people who truly understand how to use decorative concrete in the industry. Why do you think that is?

**MB:** I think there are a couple of reasons. In the beginning I used to question 'where are all of the decorative concrete artisans?' I did a lot of research, and I was baffled by the fact that I could only find two companies.

I did find another one, but they were more of a coating and epoxy company, they don't really get too heavily involved in decorative concrete. The more research I did, the more I realised that one of the major reasons why there are no decorative concrete artisans here, is because the industry doesn't know about this product.

The architects and the people who are responsible for projects stay away from decorative designs for two reasons. Essentially, either they do not know enough about it, or they know that there are so few people here who do that they are reluctant to put it into their design.

## TRME: What does it take to become as qualified as someone would need to be to be successful in the decorative concrete market in the Middle East?

**MB:** You need to understand business and how it's done in Dubai, and you also need to have hands-on experience. You need to have worked in this industry and have many years under your belt working with the different stamps. You need to be able to work with all the different colours, and there are hardeners, liquid stains, dyes and many other products.

**“Decorative concrete is on fire. To be honest, I've never seen anything like it.”**

In fact, it's very similar to the food industry, as you need to understand the ingredients that are important in determining what the finished product looks like. You can only learn that by working in the industry.

## TRME: Do you think there is a gap in the market for vocational training, internships, and skills-based training courses?

**MB:** Yes there is, and we are going to do something about in the very near future. One of the things we are going to do is open a school, which is looking like a 5,000 sqm workshop for teaching. This is driven by the large number of enquiries that I have received recently from other countries in Africa, that send their people to me for training. We will be training a lot of people here in the Middle East on a four-week intensive training programme, with classroom and practical training.

## TRME: You said you are travelling hundreds of kilometres across the emirates, does that mean demand is increasing?

**MB:** It's huge. Decorative concrete is on fire. To be honest, I've never seen anything like it. I have a website and have never done SEO before, but I started recently with about 250 key words and I receive no less than 30-40 hits per day, and in less than 6 months I've had more than 12,000 visits to my website. I have friends that work for other companies, and it's the same with them. I'm also getting calls from contractors because the other two big companies in the industry are booked up until the end of the year, if not longer.

## TRME: Decorative concrete came here previously, but hasn't really taken off until now. What went wrong?

**MB:** What I think went wrong is an architect, or architects, produced a few wild designs and hired a guy who said he could do the job. When that turned out to be a bluff and the job turned sour, this scenario put a dampener on this use of concrete and it halted.

From what I've learned, it was moving along steadily about eight years ago and there was a keen interest in it, that's why you see it at the Atlantis, The Palm, in Dubai and you can find it in other places. But then it just stopped, and the feedback I've had is that the architects and the engineers that were tendering their projects saw decorative concrete as garbage and that people don't know how to do it, and then of course they had to tear it out.

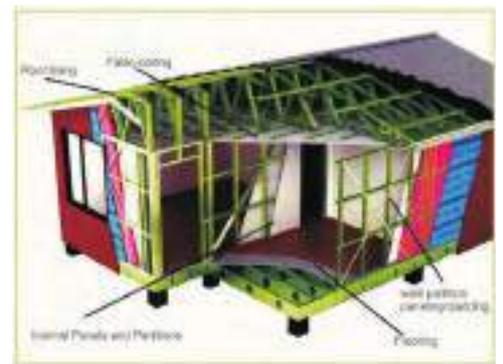
The other reason is the misunderstanding about the versatility of decorative concrete, then the interlock pavers became the kings of concrete, the industry got lost, and no one really picked it back up – until now. That's changing as confidence is restored. ■



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## UAE-manufactured aluminium scaffolding and ladder solutions

HAVING ENTERED ITS 10th year of operations in the UAE, the Ascend family will be on hand at The Big 5 2015 presenting its market-leading range of aluminium scaffolding and ladders.

Ascend Access System Scaffolding LLC is the only manufacturer with a manufacturing unit in the UAE recognised by PASMA, the lead trade association for the mobile access tower industry. It is the leading manufacturer of training units of scaffolding and formwork products located in Dubai.

The company's academy team offers the Ascend Scaffolding Compliance Training Course, which has been designed to assist participants in reaching the objective of obtaining a thorough knowledge of the proper erection and dismantling procedures as lined out by PASMA. The purpose of the course is to provide users with the regulations, safety guidelines and procedures needed to recognise and eliminate hazards in the field with the five-year PASMA-Towers For Users license.

Ascend has been certified ISO 9001:2008 and OHSAS 18001:2007 and the products manufactured at its manufacturing unit comply to a range of international standards.

According to Ascend Access System, the company's management is committed to a Quality Management System to ensure that all work carried out is performed to the highest possible standards by trained and motivated personnel, adequately addressing



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

the requirements of all applicable international and national codes of practice or standards for towers. It aims to meet all statutory and regulatory requirements and customers' specifications common within the scaffolding and access industry across all levels within the organisation. The company has been servicing the global sectors for the past nine years and has familiarised itself with international quality parameters in a host of different geographical markets.

Ascend's new production unit, which will be completed by the first quarter of 2016, will consist of a 80,000 square feet manufacturing and logistics area, equipped with the latest state-of-the-art machinery. The company envisions it will manufacture approximately 1,800 tons of aluminium scaffolding and ladders annually.

The company is supported by its own design department, which is responsible for designing different application of scaffolding and also designing new and innovative products. The design department is supported by well qualified staff.

Based in Dubai, Ascend believes its location is well suited to serve as a hub for global trade, with a host of unrivalled land and sea transportation network links that can ensure the company's goods are able to reach market worldwide. This advantage, it says, makes it possible for the company to offer its customers competitive prices, while maintaining the high standards in quality, delivery and services.

Ascend says it will continue to focus on improving the quality of its products and services through the implementation of an employee suggestion scheme, as well as reducing customer complaints through corrective and preventive actions. Its promise is to offer a prompt, efficient and cost-effective service.

**Stand: PMV A81**



*Ascend Access System Scaffolding LLC is the only company with a manufacturing unit in the UAE to have been recognised by mobile access tower industry body PASMA.*



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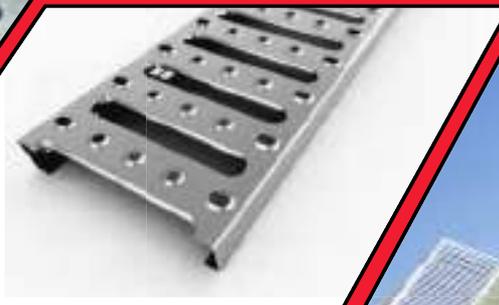
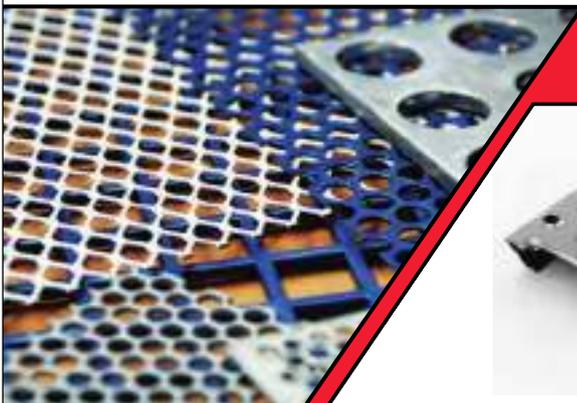
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## Presto: tapping into water efficiency

FRENCH FIRM PRESTO will make its debut at this year's show, displaying its PrestoGreen range of tapware solutions for public buildings and healthcare facilities. Building on the many years of experience operating in water-scarce countries where the need to save water is crucial, the company has been able to develop more water-efficient solutions.

The PrestoGreen range has been designed in line with international green building standards, such as the French High Environmental Quality certification, the USA's Leadership in Energy and Environmental Design certification and the UK's and global environmental assessment method BREEAM.

The taps save water by reducing the flow time to seven seconds or through a water flow at 1.9 L/minute that is achieved by 'spray effect' aerators which ensure maximum ease of use and an optimum jet pressure quality for such a low flow rate, and which can be interchanged with all types of taps.

Presto will also be exhibiting its SO'O® wash basin mixer tap from its electronic tap range. Just by detecting the user's hand, it delivers the adequate amount of water to ensure perfect hygiene without having to touch the tap. It features an anti-overflow safety system that is triggered if the cell is obstructed as well as an anti-scalding safety system that limits the mixed water temperature to the required value.

Meanwhile, the Presto® 1000XL DVA, a dual volume direct flush valve, allows a

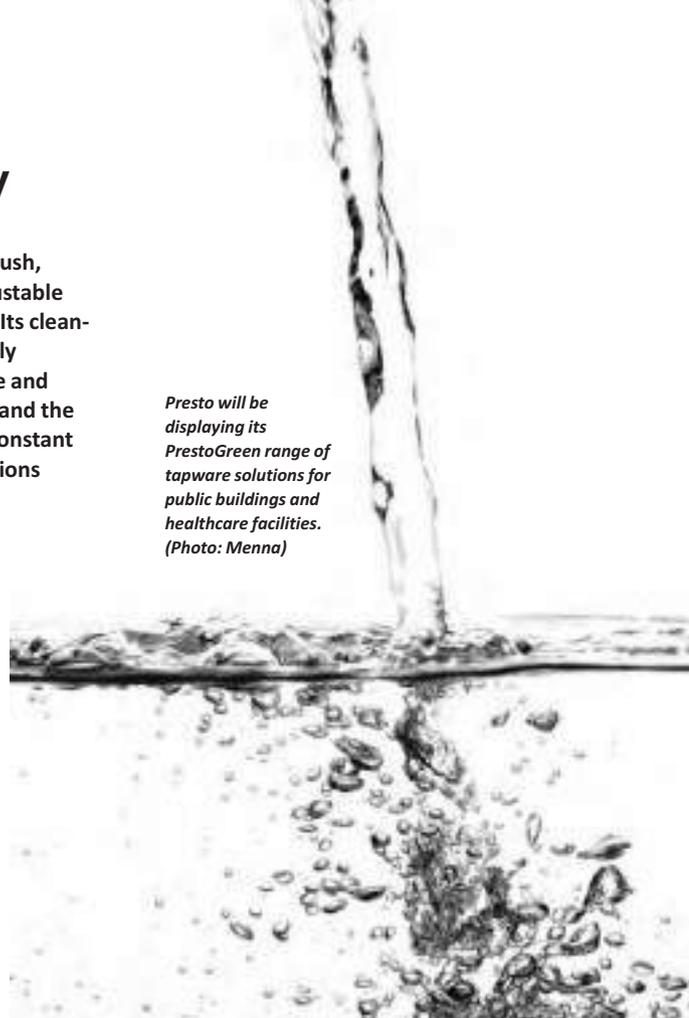
water saving of up to 90 per cent compared to a conventional flush, thanks to its two independent adjustable water volumes, says the company. Its clean-cut, contemporary design is not only hygienic and practical, but also safe and efficient: water is always available and the two flow rates (high and low) are constant regardless of water pressure variations (between 1 and 4 bar).

The flush valve's anti water-hammering device shuts off the flush by gradually reducing the water flow, thus preserving the installations and guaranteeing their longevity. Its anti-siphon mechanism protects the drinking water system against possible back-flow of polluted water.

It comes pre-assembled, which not only significantly reduces the installation time, but also provides the assurance that it is correctly placed. Disassembly for servicing and maintenance has been designed to give maximum accessibility.

MasterMix®, a shower thermostatic mixer tap from Sanifirst®, is especially suited to healthcare institutions (hospitals, dependent care facilities for the elderly). It offers the advantage of no cross-connection between hot water and cold water (no check valve), thereby limiting the risks of bacterial proliferation. The MasterMix® tap also offers an anti-scalding safety system for users

*Presto will be displaying its PrestoGreen range of tapware solutions for public buildings and healthcare facilities. (Photo: Menna)*



(securing of the cartridge, cold body) and is easy to maintain.

Presto operates in more than 80 countries worldwide. In 2014, the group opened a new subsidiary (Presto Middle East) in Dubai and recently opened its subsidiary Presto North Africa in Tunisia.

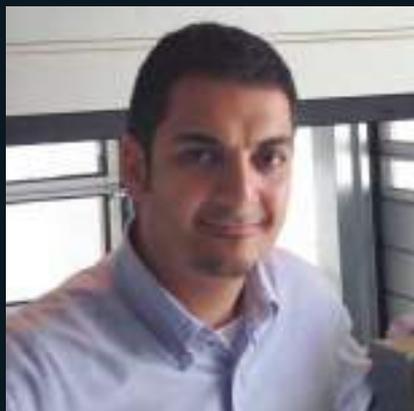
*Stand: 1G30 (French Pavilion)*

## Hormann to introduce new industrial doors

FOR THE SEVENTH successive year, industrial, commercial and residential door manufacturer Hormann Middle East, will display the latest door technology and designs. These include garage doors, entrance doors, internal doors, fire doors and smoke-tight door assemblies, industrial doors, loading technology and frames.

According to Darius Khanloo, managing director, Hormann Middle East, "Our consistent participation at Big 5 reiterates our commitment to this region and our firm belief in the region's construction sector. This year, we will introduce three new products: industrial sectional door SPU F 42 Plus, LPU T ribbed and ALR 67 Thermo with wicket door."

Headquartered in Germany, the Hormann Group has 28 specialised factories in



*Darius Khanloo, managing director of Hormann Middle East.*

Europe, the USA and Asia. This year, it completed new projects in Pakistan and Iran, and invested in a new office and production facility in the UAE.

"We have a new extended showroom in Jebel Ali Free Zone, and in addition we are planning to launch the assembling of the high speed door V 5015 SEL, V 5030 SEL and V6030 SEL in Dubai," he added. Other products on display at Big 5 will include rolling shutter Decotherm S, high speed door V 5030 SEL, spiral door HS 7030 PU, sectional garage doors, loading technology products as well as a wide selection of steel hinge doors, among others.

*Stand: Zabeel J120 (German Pavilion)*

## Roof temperature control from Icobit

ICOBIT ITALIA WILL be at this year's Big 5 to showcase its 'Star' solar heat reflective product line.

A roof's temperature can easily reach 80°C (176°F) under direct sunlight, and heat build-up and urban heat islands cause concern as they lead to higher electricity demand for air conditioning systems, therefore increasing energy costs and pollution.

The company noted that roof surface temperatures can be dramatically reduced by up to 50 per cent by simply applying its innovative Star product range.

Using the solvent-free, water-based Star products, such roofs have the ability to reject solar heat and decrease the heat build-up, and a significant Solar Reflectance Index can be easily achieved.



*Icobit claims that applying products from its Star range can act to reduce roof surface temperatures by up to 50 per cent. (Photo: symbiot)*

Icobit has been providing waterproofing solutions for the construction industry for 40 years, specialising in cold-applied, liquid, seamless waterproofing membranes. In addition, the company supplies a broad product portfolio of bitumen primers, cementitious membranes, asbestos encapsulation coatings, protective paints for bitumen felts and liquid membranes, resin flooring, sealants, thinners, additives and ancillary products.

Although Italy is still the company's predominant market, it is significantly growing its business worldwide, having opened a subsidiary in Brazil and building a manufacturing plant to supply the South American region.

**Stand: FOCUS C41**

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## MAN: Regulations required before GCC region can embrace 'green' construction vehicles

ONE OF THE leading suppliers of construction and commercial vehicles has said regulations making green technologies mandatory will be required for the region to achieve sustainability amid a raft of planned construction projects.

Speaking ahead of PMV Live 2015, one of the most important heavy construction machinery, plant equipment and construction vehicle events in the region, Dr Richard Brown, head of product at MAN Truck & Bus Middle East and Africa, said that the latest resource-saving, environmentally-friendly vehicles are available to the region, but that the market has so far been reluctant to adopt them.

"The construction industry in the GCC is undergoing a revival, meaning that hundreds of billions of dollars of some of the most dynamic and exciting projects in the world are in the pipeline. From an economic



MAN has been building commercial vehicles for more than 100 years. (Photo: MAN Group)

point of view this is extremely positive, but the increased number of vehicles that will be used to construct them is set to place an enormous strain on an already fragile environment," he said. "The industry has an ideal opportunity to offset this impact through the use of green construction vehicles, but without regulations to govern their use, there is little incentive to do so at present."

The revival Dr Brown refers to includes more than

US\$340bn in large-scale development that will be constructed during the next 15 years, as well as the US\$194bn in contracts awarded in 2015.

In line with this, the global construction equipment market is forecast to reach US\$241bn by 2020 and, as a subsidiary of the MAN Group, Dr Brown said that the GCC construction industry was a priority for MAN Truck & Bus Middle East. "MAN has been building efficient and reliable

commercial vehicles for the past century and has a strong presence in the GCC, and, together with our partners, we have shared some great successes in transforming the built environment. As we celebrate our centenary year, we will be bringing a 100-year old MAN truck to PMV Live this year, as well as our latest products," he said.

With 36,000 international visitors attending PMV Live last year, Nathan Waugh, dmg Events' portfolio director of the show, said, "We're delighted to welcome long-time supporters like MAN Truck & Bus to PMV Live for the fourth consecutive year. We are also pleased to be working with some other new and exciting exhibitors in showcasing what promises to be a spectacular range of vehicles and heavy machinery."

**Stand: OS 70**

### Ford Trucks: Going 'green'

EMRAH DUMAN, INTERNATIONAL markets director at Ford Trucks, has said the global manufacturer's new technology E6 Emission Ecotorq Engines will be much more environmentally-friendly ahead of the launch of a new series of 'green' trucks in 2016. Speaking ahead of PMV Live 2015, he also revealed the development of vehicles that use alternative fuels sources (LNG/CNG) is assuming importance in the company's future product cycle plans.

"More than 2.7mn new 6+ trucks come onto the roads every year, and we see vehicles with environmentally-friendly systems as providing assurances for our futures on account of their ability to reduce pollution and energy demands," he said.

Duman also said that since the construction business is so important to a country's development in providing new living spaces for an increasing population, the market share for construction vehicles will continue to grow, making R&D paramount in meeting future demand.

"One of the challenges is that new



Ford is planning to launch a new series of 'green' trucks in 2016. (Photo: James R. Martin / Shutterstock.com)

technologies require more R&D studies and investment," he noted. "This is not only about engines, but the aerodynamic features of vehicles since they are so important for better fuel consumption. Our product development teams are working on a special new cab and vehicle design that minimises drag force on the vehicle – and in the process improving fuel efficiency."

Studies on self-drive products are also planned, according to Duman, proving particularly relevant in the Tractor & Road Truck segment, which is used for domestic and international long-haulage and city distribution and applicable to tough and risky construction projects to eliminate risks and driver misuse on work sites.

**Stand: OS 90**

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*PMV suppliers and manufacturers have called for further regulations requiring the use of green construction vehicles in the Gulf. (Photo: Smileus/Shutterstock)*

# PMV Live set to embrace sustainable ideals

*With growing construction market, there is also a push for greater sustainability from leading manufacturers across the globe.*

**The global construction equipment market is forecast to reach US\$241bn by 2020.**

**I**N RESPONSE TO the booming construction market in the GCC, PMV Live, which will be held simultaneously with The Big 5 in Dubai, will host some of the biggest names in the construction machinery and transport sector, including MAN Truck and Bus, Ford Trucks and Putzmeister.

PMV Live has grown in status over recent year to sit among the Middle East's leading heavy construction machinery, plant equipment and commercial and construction vehicles events. It connects a host of PMV professionals with industry experts and buyers that are looking to source innovative and high-quality products and solutions.

This year the focus on sustainable and 'green' solutions looks set to be stronger than ever before, with a number of leading PMV companies calling on the sector to

remain committed to GCC markets, in spite of a lack of green regulations.

Richard Brown, head of product at MAN Truck & Bus Middle East and Africa, has noted that the latest resource-saving, environmentally-friendly vehicles are available to the region, but that the market has so far been reluctant to adopt them.

MAN Truck & Bus has also chosen PMV Live to celebrate its centenary year and will be bringing a 100-year-old MAN truck to this year's event.

Another company pioneering the introduction of 'green' commercial vehicles is Ford. According to Emrah Duman, international markets director at Ford Trucks, its new technology E6 Emission Ecotorq Engines will be far more environmentally-friendly ahead of the launch of a new series of green trucks in 2016. Duman also revealed that the



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**In addition to 30 live product demonstrations at PMV Live, there will also be more than 54 free CPD certified workshops and seminars.**

development of vehicles that use alternative fuel sources like LNG or CNG are assuming importance in Ford's future product cycle plans.

#### **Concrete solutions**

Beyond the efficiency of construction vehicles, companies like Germany's Putzmeister, producers of truck-mounted and stationary concrete pumps, will demonstrate its machinery for construction, mining and tunnel construction, as well as for major industrial projects, power stations, sewage treatment plants, waste incinerators and precast industries.

Another German company, HESS Group, will unveil a new universal inkjet printer for concrete panels, with which any desired motifs, whether pictures, logos, or text, can effectively be printed on concrete products.

The company will also launch a new statistical software package designed to provide production data from concrete plants, including orders, shifts, staff, units, downtime and other information. The innovative system allows data to be captured and sorted by location, plant, and plant equipment, meaning that several production facilities can be evaluated simultaneously. Through a web-based platform, data can also be retrieved on and off site via a mobile device that is connected to the Internet.

#### **Free industry education**

In addition to 30 live product demonstrations due to be held during PMV Live, there will also be more than 54 free CPD certified workshops and seminars taking place over the course of the four-day event. Topping the agenda will be a session on how to do business in the UAE as well as a series of technical seminars on a range of topics that address safety in construction, new trends and developments in improving plant and asset performance, guarantee mechanisms for building materials and equipment, and contract management.

All of the seminars and workshops that will be held at PMV Live will be free for visitors to the show, and will be led by construction experts.

Some of the must-attend sessions at PMV Live include:

- Safety in construction
- New trends and developments in improving plant and asset performance
- Guarantee and warranty mechanisms for building materials and equipment
- Effective contract management
- Top tips and best practice in project management for construction projects in the GCC
- Implementation of multi-geodetic and geotechnical sensors in structural health monitoring for mega structures
- Assessing new models of construction procurement and risk allocation and mitigation strategies
- Determination of the thermal history on concrete structures by thermogravimetric analysis and infrared spectroscopy
- Service life and life-cycle cost of reinforced concrete structures
- How to do business in the UAE

PMV Live 2015, together with The Big 5 Dubai 2015 and Middle East Concrete 2015, will take place from 23-26 November at the World Trade Centre in Dubai. ■



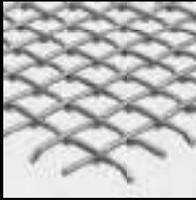
*MAN Truck & Bus will be celebrating its centenary year at PMV Live.*



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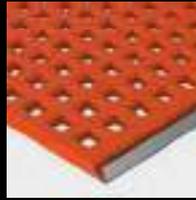
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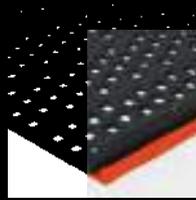
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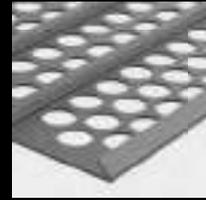
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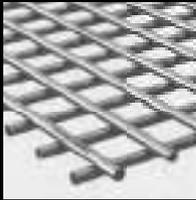
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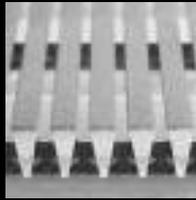
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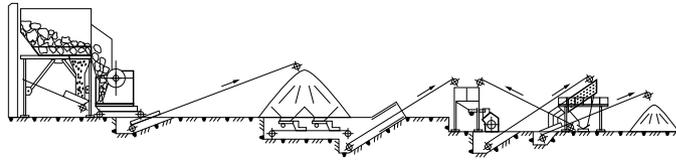
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*Formwork will form a significant part of the show this year.*

# Concrete plans for construction

There is renewed faith and expectation from the UAE construction market, as Middle East Concrete (MEC) 2015 is set to showcase the latest trends and newest products in concrete.

**“At MEC 2015, we will bring together relevant companies, products, technology and industry knowledge.”**

**T**HE MIDDLE EAST construction market has shown signs of buoyancy over the past year, and investors are hopeful of capitalising on business opportunities at Middle East Concrete 2015. The show, co-located with Big 5 Dubai and PMV Live, will be held from 23-26 November 2015 at the Dubai World Trade Centre.

Nathan Waugh, event director of Big 5 Dubai, feels that now is a great time to be involved in the UAE construction sector, and it is a fruitful period for contractors,

architects, engineers and construction companies. Undoubtedly, Expo 2020 is one of the most anticipated events in the country, with a slew of major projects being planned.

“We see ourselves as partners of the Middle East construction industry. At MEC 2015, we will bring together hundreds of relevant companies, products, technology and most importantly, industry knowledge.”

With a goal to add more value to the event, MEC 2015 will emphasise educational programmes in addition to networking



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opportunities. Several seminars, conferences and workshops will be held, which could be of great use to attendees, said Waugh. Exhibitors too have expressed interest in the educational programmes, as they feel this is an ideal way for attendees, especially new entrants to the market, to get a better understanding of the market trends in the UAE. "Moreover, exhibitors recognise the need to deliver as many reasons as possible for visitors to attend the show. Educational content not only brings in more visitors, but also a diverse set of attendees. There will be a wide range of informative programmes for everyone to attend, which will be a value-add."

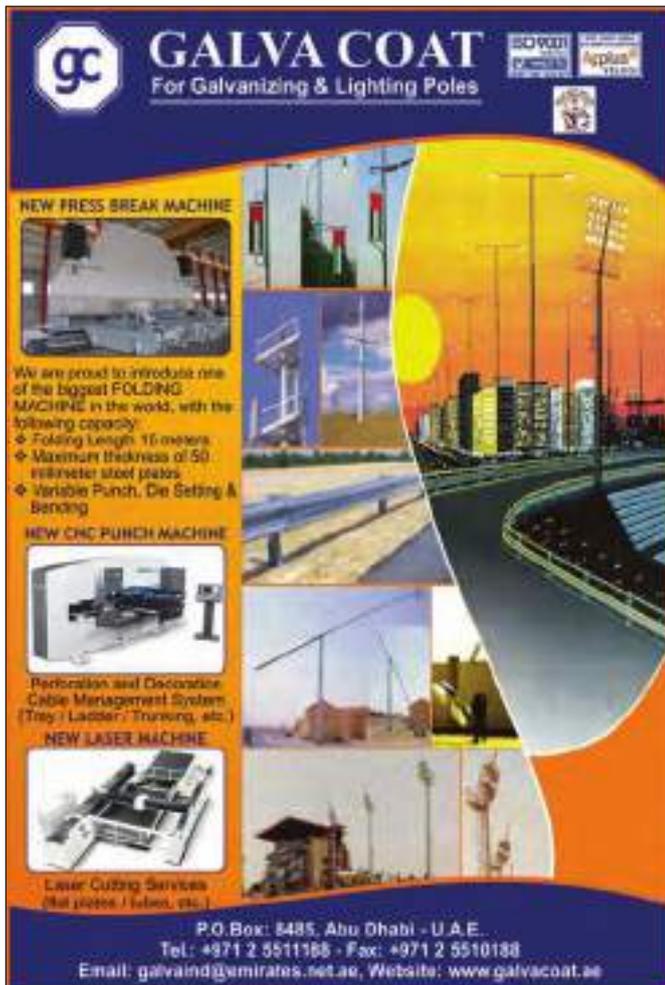
**“Decorative concrete has high aesthetic value and structural significance.”**

#### What to expect at MEC 2015

There will be around 430 indoor and outdoor exhibitors from concrete structural sectors. Being a standalone event guarantees exclusivity, especially for companies that specialise in concrete solutions. While formwork, scaffolding, chemical admixtures and construction machinery are the mainstays of MEC, this year's highlights include sustainability in construction and decorative concrete. Sustainability in construction is a global preference, and



*Nathan Waugh, portfolio director, MEC and PMV*



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the show is expected to highlight the use of energy efficient products that would have a minimal impact on the environment.

"Decorative concrete and decorative precast concrete has high aesthetic value and structural significance. It is done extensively in the USA and we're hoping to bring the same technology and design to the UAE."

In addition, Waugh also said that social housing will be in the spotlight at this year's event. Low-cost and sustainable social housing is being given an impetus right now in the country, and is expected to emerge significantly in the months to come.

With the decline in oil prices, there has been considerable debate over how it may affect the construction sector. Waugh, however, feels that the UAE at least will not feel the impact as major construction projects are underway. Even in Saudi Arabia, there has been little impact on construction activities, he pointed out. Some major projects are underway in the oil producing nation, such as the Kingdom Tower.

Similarly, in the UAE, residential projects, hotels (especially being built for Expo 2020) and transport projects are all ongoing currently. According to Waugh, the UAE has been a trendsetter in the field of construction. Compared to its GCC counterparts, the UAE was the first to push the boundaries of construction through the use of new materials and incorporating global construction trends. Decades later, the country is still acknowledged for its diverse and innovative construction trends, which is why the Expo could stretch the limits of versatility. "The event is a major one and we are in close contact with decision-makers as we are keen to support them in this endeavour. Through MEC 2015, we would like to reach out to relevant stakeholders of the Expo." ■

*MEC 2015 will be open from 11 am to 7 pm on all exhibition days.*

Gareth McMurray, Regional Manager METS

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# Fastening innovation at The Big 5

Italian manufacturing company Specialinsert will be on hand in Dubai during The Big 5 2015 to discuss their Keepnut, Masterplate and Deform Nut fastening solutions.

**S**INCE 1974, SPECIALINSERT has been engaged in the production of fastening systems that are suitable to all fixing needs across a range of different materials and applications.

The company has maintained its initial specialisation in mechanical fasteners through the introduction of manufacturing custom solutions, and ever more innovative products.

All of its production is 100 per cent 'Made in Italy' at the company's Maerne plant in Venice, while its R&D activities are carried out at laboratories and technical departments across the firm's three locations in Turin, Milan and Venice.

Specialinsert's R&D department has a particular focus on composites, in order to find new fastening solutions dedicated to innovative and versatile materials. Thanks to this effort, Specialinsert has developed specific product lines for the construction and building industry.

## Keep-Nut



Specialinsert's self-anchoring insert for natural stone and compact composites, Keep-Nut is a revolutionary press-in insert with mechanical anchoring, says the company. It can create threaded seats on panels, even if they are thin, made of marble, granite or other stones, or on composites, carbon, Corian, HPL, glass and other compact materials.

It comes in a range of different lengths, with or without flange, and fits to several different panel thicknesses. It is easily installed, with the material just needing to be drilled with the correct hole diameter, before pressing in the insert. Additionally, it can be customised with different versions and sizes, in order to fit the customer needs.

The Keep-Nut insert has been specifically developed for ventilated façade, wall-coverings, décor and interiors, furniture, kitchen and sanitary elements fastening, funerary art and many more.

## Master-plate

Master-plate is used where the requirement to install a threaded fastener exists, but where it is not possible to drill into the surface.



The product comes with a base plate of varying shapes and dimensions, whether its round, square, rectangular, and a fastener element – a threaded bush, stud or nut of a different length and thread size. These can be manufactured in zinc-plated steel or stainless steel AISI 316.

The "just in time" production process of Master-plate guarantees the fastest delivery time and a very competitive price. Master-plate is used in several industries such as building and construction, automotive, yachting, trains, furniture and more.

## Deform-Nut TC/SC/1

This threaded blind rivet nut by deformation with double anchoring system, mechanical and chemical, is first given by the anchorage of the tubular rivet nut on the skin of the material. The second is assured by an adhesive dropped in the hole before the installation of the internal screw insert.

This kind of fastener guarantees flatness during insertion, avoids the choking of the weakened part, and works on the total thicknesses of the sandwich panel. To conclude, it offers an advantage to be used and moved immediately, differently from other types of fasteners available on the market.

Concerning the Deform-Nut TC/SC/1, Specialinsert carried out testing of the product at its laboratory with the following results:

### Sandwich panel with fiberglass skins and foam internal material (Thickness: 20mm)

Used insert (SpecialInsert)	Pull-out strength
TC/SC/M6/20/XZ without resin	686N
TC/SC/M6/20/XZ with resin	2.550N

### Sandwich panel with aluminum skins and expanded internal material (Thickness: 20mm)

Used insert (SpecialInsert)	Torque strength	Pull-out strength
TC/AM8XZ1-M6/15	25/30Nm	3600N
	Screw break 12.9	1° - 3320N / 2° - 4158N

(The reported values are indicative and not binding since results from the laboratory test might not be replicable for different applications).

The Specialinsert team will be at The Big 5 2015 in Dubai (Hall 6 Stand G242), where they will be available to discuss the company's innovative products.

## Compact and easy to transport generator sets from Cummins Power Generation

CUMMINS POWER GENERATION has added the new compact and transport-optimised 20, 40 and 60kVA generator sets to its rental product range. Along with offering a selection of standard rental industry features, these new generator sets also boast sound-reducing enclosures and fuel tanks that allow long periods of autonomy. Operating in prime power mode at 75 per cent load, they offer noise levels as low as 62 dB(A) at a distance of seven metres and a fuel autonomy of up to 32 hours.

The company is targeting these new generator sets at the specific needs of rental fleet operators who have customers in demanding sectors including construction, events, telecommunications and manufacturing. Multiple control options including Cummins PowerCommand, DeepSea and ComAp, help operators achieve fleet consistency and keep training costs down. Robust construction and heavy-duty components reduce maintenance cost and thus minimise total cost of ownership. The overall result is rental units that deliver optimum reliability in the field, with excellent uptime and service intervals of up to 500 hours.

The design and quality of the new generator sets keep them running in the tough environments of up to 50° C limiting ambient temperature without any need for derating. The machines also comply with the latest EU Stage IIIA emissions standards. The three new models have also been introduced in Europe, meaning that Cummins' range of generator sets for the European rental sector now run from 20kVA to 1250kVA.



All of the new units comply with EU Stage IIIA emission standards. (Photo: Cummins)

According to Gary LaFine, director for the rental business at Cummins Power Generation, these three new generator sets are coming to the rental market at the right time. "We fully expect operators will be stocking up on emissions-compliant generators, if they are not doing so already," he said. "These new generator sets are more fuel efficient, and rental companies will be able to promote their better fuel economy to customers."

Across the range of the company's rental products, service and support are provided by factory-trained technicians throughout Cummins' extensive global network of 600 distributors and 6,000 sales and service outlets in 190 countries. Standard warranty options of one year, unlimited hours or three years, 3,000 hours are available with all purchases.

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2500MVA Short Circuit Generator



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## JSPCheck helps track, inspect and manage safety equipment

JSP HAS LAUNCHED a new system that helps a company keep track of its height safety equipment, allowing it to measure inventories, prevent losses and comply with safety regulations.

JSPCheck uses radio wave technology designed for use in construction and industrial markets. The system utilises durable radio frequency identification (RFID) tags to uniquely and accurately identify assets such as tools and equipment. It also includes a secure, powerful, cloud-based database for the user to accurately inspect, locate, assign, store and back up their own asset profiles and data in real time, plus RFID scanners to efficiently connect assets and data anywhere, at any time. Scanning can also be done using Android mobile devices.

Automatically updated, JSPCheck removes the need for a company to maintain data on its own servers and replaces inefficient pen and paper inspections, therefore taking care of disaster recovery and inspection histories.

Easy to operate, JSPCheck has a myriad of uses, tracking asset and inspection history, asset location including named locations or



*According to JSP, the system is fast, automatic and contactless.*

people and GPS coordinates, usage, warranty dates, date of first use, end of life date, manufacturer's serial numbers and safety information on each piece of equipment.

The JSPCheck user simply has to scan RFID tagged assets and use the JSPCheck cloud software to perform and store safety

inspections on them as the required safety forms can be built into the system.

JSPCheck also enables the user to log on at any time and from anywhere and see where, and to whom, a particular tool was last assigned, view the documentation and see the history associated with that tool.

## Wireless switchgear temperature monitoring system launched by Eaton

EATON CORPORATION (EATON) has launched a diagnostic system that provides permanent temperature monitoring of the critical areas of switchgear systems. Building on the company's low-voltage switchgear expertise, the Eaton Diagnose System reduces the risk of plant shutdowns through continuous temperature monitoring of vital system components and the generation of alerts in the event of imminent system overload.

The system analyses behaviour in various operating conditions and generates information on switchgear capacity. Using this information, upgrades can be implemented at significantly less risk. The diagnostic system is suitable for all kinds of primary distribution systems, and in particular for switchgear conducting high currents, housed outdoors or in containers and for facilities in which extensions or alterations are anticipated.

The diagnostic system consists of autonomous temperature sensors that are placed at critical points in the substation, such as busbars and junctions. They supply themselves with energy independently through the rail's electromagnetic field and wirelessly transmit a temperature reading to a controller every 10 minutes. The data is then stored in the controller and can be displayed graphically when needed or called up for detailed analysis. The controller

uses special firmware to display the thermal behaviour of the switchgear. The diagnostic functions include, for example,

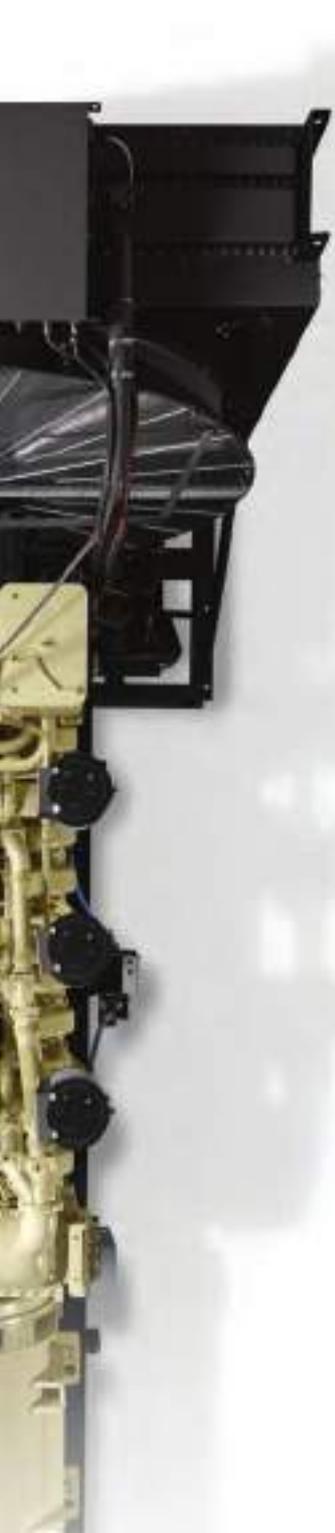
parameter checks as well as the generation of trend analyses. If pre-defined thresholds are exceeded, an alarm is sent to the monitoring station.

Bernhard Gegenbauer, product line manager at Eaton, says, "Overheating is one of the biggest risks posed by switchgear. Intelligent temperature monitoring in the switch cabinet not only reduces potential hazards to personnel and equipment, it also reduces long-term operating costs." He goes on to explain that "the new diagnostic system offers significant advantages over the established market solution of using thermography. First of all, because it provides continuous monitoring and detection of hidden or hard to reach places in the cabinet, it's able to offer a much more accurate picture of the thermal behaviour of switchgear systems. Secondly, the diagnostic and alarm features provide for better risk management."

This technology can provide temperature measurement and data transfer with as little as 50 A of current. The system is completely maintenance-free and is ideal for places such as busbar compartments that are inaccessible during operation. Being wireless, the device also reduces potential wiring hazards.



*Switchgears are often affected by overheating, which can damage the equipment. (Photo: fotoslaz/Shutterstock)*



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## Alsina's formwork expertise works to reduce construction time

THE ALSINA GROUP (Alsina), based in Barcelona, Spain, is a manufacturing company that sells and rents formwork and concrete solutions. The company specialises in providing 'in situ' formwork solutions, allowing it to work with clients to monitor the progress of the projects until completion and make necessary adjustments as and when needed.

The Spanish company has already been involved in numerous projects in the Middle East. Alsina used its 'mecanoconcept' system for the construction in the Internal Security Force Camp Project in Qatar. Using the new formwork system, the pace of work went from construction of 750 sqm every 15 days to 600 sqm every two days, the company says. The system uses simple and mechanical formwork, and 80 per cent of the equipment used can be recovered within three days of being concreted.

For the Batinah Expressway Package 5 in Oman, Alsina supplied its multiform equipment and the AR-80 shoring system. The company also created a special box culvert and a special formwork element



*Alsina's metallic piles are being used for construction of a new highway in Qatar. (Image: Alsina)*

connector on the AR-80 shoring system, customised for the client. Six metre movable carts with wheels were supplied

for the implementation of more than 28 km of tunnels.

Currently, Alsina is working with Saudi Arabian construction company, Al Toukhi, on a new power plant being built in Riyadh, for which it is supplying its 'alumecano' formwork system for slabs. Al Toukhi chose the system for its high recovery rate, allowing for faster completion of the plant, says Alsina.

The company is also working on the New Orbital Highway and Truck Route coming up in Qatar, where among other things, it is supplying a new system called 'friction collars' that provides support to the capitals without leaving a mark on the piles, while supporting weights of up to 55 tonnes. Alsina is also providing metallic piles, special capitals and a formwork shoring system for the project.

Within the last three months, Alsina has expanded its presence in the Middle East by opening a commercial office in Riyadh, as well as a branch office in Dubai, to provide better and more efficient service to its regional customers.

## Wacker Neuson's new excavators use innovative kinematics to boost power

WACKER NEUSON LINZ GmbH (Wacker Neuson) has launched three new excavators, ET65 and EW65 in the 6-tonne range and ET90 in the 10-tonne range. The machines boast features such as a load sensing hydraulic system for simple and precise operation, innovative kinematics for powerful excavation and a revised machine and cabin design for ideal all-around visibility of the entire working area.

Good all-around visibility as well as a view of the tracks and attachment on both sides are indispensable for safe operation and quick working on construction sites. Due to the lateral offset of the boom as well as the strongly rounded valve hood to the front, the new excavators meet these requirements. A higher torque and the increase of the bucket's angle of rotation to 200° make the new models the best in their class in terms of excavation performance, says the company.

The innovative kinematics allows the bucket to be inserted



*The ET90 can be used for demanding applications, such as road and highway construction.*

deeper vertically into the ground and gives it significantly more power when excavating. The load sensing system, using a load-independent flow control, ensures that the operating speed of all movements always remains constant and independent of the load, even if multiple movements are performed simultaneously.

Up to five auxiliary control circuits are available with the new models. The continuous adjustment of the individual circuits takes place via a 'jog dial', enabling individual storage and attachment settings to be performed easily even during operation. A 3.5-inch display allows for convenient control of all equipment functions. In connection with a 7-inch display that is optionally available, all the three excavators can also be equipped with a rear view camera.

The new 6-ton track excavator ET65 is extremely compact, allowing the operator to work safely and accurately even in tight spaces on the construction site. A low height of 2.5 metres and width of less than two metres makes the excavator highly manoeuvrable. There is also the option of a boom for more flexibility, extra reach, digging depth and dumping height. The 10-tonne ET90 is also a track excavator which has an impressive engine output and excavation power even for demanding applications, such as road and highway construction.

The other 6-tonne model, EW65, is a wheeled excavator, characterised by the infinitely variable drive system up to a maximum speed of 30 km/h in combination with compact dimensions. Thanks to the street driving mode, it is not necessary to use transport vehicles when changing job sites. EW65 is also an optimal equipment carrier, which is ensured by five control circuits, load sensing hydraulics and a closed driving circuit for optimal synchronisation and no impairments between the working and driving circuit.

# Generator sets customised for the harsh GCC climate

**T**HE DIESEL GENERATOR set market in Saudi Arabia is expected to be worth US\$709mn by 2020, according to a report by TechSci Research, and that 429bn kW will be generated in Saudi Arabia by 2020. The report also says that during 2014, the residential sector alone represented 30 per cent of the market of diesel generator sets in Saudi Arabia. To make the most of this increasing demand for power generation through diesel generators, Spain-based HIMOINSA is focusing aggressively on the country by linking up with local distributor FAMCO and customising its products to suit the harsh GCC climate.

Lydia Gracia, executive director at HIMOINSA, said at a recent press conference that the key to the success of the company in Saudi Arabia has been its flexibility in adapting its generator sets to the specific needs of the market, due to its extreme weather conditions. HIMOINSA generator sets headed for desert climates have tropicalised radiators with double varnish and anti-condensation resistance. The alternator air filters are specially treated to prevent dust from entering and to ensure uninterrupted power supply.

"We are prepared to work in extreme conditions, withstanding temperatures of 50°C. Desert areas require special working conditions, as at certain times of the day it can be humid but always dusty, factors that could damage the generator set's filters and therefore affect its operation," said Gracia.

The customisation seems to be working for the company. Having been in the Saudi Arabian market for only about 19 months, HIMOINSA already has seven per cent share of the total generator sets market in the country. In the same period, 33 per cent of the company's generator sets sold in the Middle East have been in Saudi Arabia.

Some of the prominent projects in Saudi Arabia where HIMOINSA generator sets have been employed include the construction of the bridge linking Saudi Arabia with Bahrain and the construction of the Mecca-Medina high speed railway. Most



HIMOINSA designs its generator sets to prevent dust and humidity from affecting performance. (Image: HIMOINSA)

generators that the company has sold in Saudi Arabia have been distributed to rental companies. While the construction sector has been one of the most important for HIMOINSA, the company is now focusing its attention on the telecommunications, residential and industrial sectors. More than 1,000 of the company's generator sets are already operating in Saudi Arabia.

Lighting towers is another segment that HIMOINSA is aggressively targeting in Saudi Arabia. In the past two years, the company

has sold more than 600 lighting towers in the Middle East, of which 30 per cent have been in Saudi Arabia alone. In the first eight months on 2015, that figure goes up to 70 per cent, said Keith Webb, general manager for HIMOINSA Middle East.

Citing regional adaptation as the company's formula for success, Gracia said, "Our added value over the competition is that we are a vertical manufacturer and customise the product when the market requires it." ■

## New Middle East project manager at HIMOINSA

In recent years, HIMOINSA has undertaken large projects in Saudi Arabia and the UAE, and sees Oman as an emerging market. It also expects huge opportunities to come up in Qatar, as the country gears up to host the FIFA World Cup in 2022. In anticipation of an increasing number of large projects in the region, the company has brought in Daniel Crossan as project manager at HIMOINSA Middle East. With a long career in the development, installation, commissioning and maintenance of SCADA and control systems for multi-megawatt projects, he will work on special projects being undertaken in the Middle East and East Africa.

Crossan will "undertake projects from the very start, providing advice to consultants and engineering companies from the moment they decide which generation sets are needed, not only as regards power required, but also taking into account the optimal requirements needed for subsequent installation," explained Guillermo Elum, director for sales and marketing at HIMOINSA.

Over the last 10 years, he has worked for highly-reputed power generation companies, directing large intering power plant (IPP) projects.

Commenting on the new addition to the team, Keith Webb, General Manager at HIMOINSA Middle East, said, "This will enable us to enhance our capacity to address complex and special projects and reinforce our growth in the region."



# On the road to growth



Addressing unique challenges across the whole supply chain will be the focus of the Transport Solutions Middle East exhibition, according to Fadi Saad, the event's managing director.

*Delegates from across the region will be out in force at Transport Solutions Middle East. (Photo: berna namoglu)*

**Technical Review Middle East: As a brand new show, what will make Transport Solutions Middle East (TSME) stand out among similar transport industry events in the Middle East?**

**Fadi Saad:** TSME is the only international exhibition in the region covering the entire supply chain of the wider region's transport industry, showcasing the world's leading manufacturers and service providers. Our aim is to focus primarily on the commercial vehicles industry in the GCC by providing them with a platform to meet relevant buyers and suppliers of spare parts, accessories and vehicles.

Additionally, there is certainly a gap in the market for an event for the commercial vehicles sector, and this presents an exceptional opportunity for the industry to converge on a single platform which benefits everyone involved.

**TRME: Where did the inspiration to establish this new event in Dubai come from, and is the transport solutions market currently underserved on the region's trade show circuit?**

**FS:** TSME has been launched by Comexposium, the same organisers of Solutrans in France. This Dubai event is perfectly positioned to showcase the entire supply chain of road haulage and urban transportation. The transport industry has been growing in the GCC and this has created an ideal platform for Comexposium to bring a dedicated show for the road haulage and commercial vehicles sector.

The transport solutions and commercial vehicles market is certainly lacking an appropriate platform to meet and network. With the Solutrans event being an excellent model, Comexposium has just the right expertise and knowledge to execute a top-notch event in shape of Transport Solutions Middle East.

**TRME: What can you tell us about the profile of the manufacturers and services providers who will be exhibiting at the event in March?**

**FS:** TSME is a dedicated event for commercial vehicles, trailers, vehicle body builders, auto parts, accessories, batteries, tyres and handling. The event will give industry experts an opportunity to explore new innovations in the road transport vehicles sector. The show will consist of new product launches and product

demonstrations from leading and new companies, and government authorities.

**TRME: How does the regional Middle East transportation market differ to markets in other regions and how will this new event help address these unique concerns and challenges?**

**FS:** The Middle East transport market differs from other regions from the point of view of it being a re-export hub. Essentially, this means there are even more opportunities for freight movement. This eventually results in a total load movement, which is pretty much the equivalent load movement of developed economies. Additionally, the busy ports in the region add to the growing transportation market.

One of the aims of the event is to facilitate knowledge transfer. While the region has faced longstanding issues, such as long lines at border customs clearance and road safety, this conference will address these in detail.

The conference will ensure the presence of government and private sector institutions to talk about these issues and find or recommend solutions.

**TRME: How big will the outdoor demonstration area at TSME be, and how will the platform enable exhibitors to demonstrate the capabilities of their trucks and urban transport vehicles?**

**FS:** The outdoor demonstration area will be around 8,000 sqm. This area will enable exhibitors to conduct live demonstrations of their vehicles onsite to showcase functions, capabilities and usage instructions for buyers and users of urban transport. It will be a perfect meeting place, allowing visitors and buyers to test and view vehicles and accessories outdoors.

**TRME: What can delegates who attend the supporting Transport Solutions Conference expect to learn about Middle East industry trends?**

**FS:** TSME will be an interactive summit that addresses the changes and challenges in the industry. In addition to this conference, the Transport Solutions Innovations Awards will be held. These awards will recognise the most innovative products, projects and visionaries. ■

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## Ortea products offer reliable and stable power supply at new Jeddah airport

AS THE WORLD becomes ever more reliant on digital and futuristic technology, Ortea, the Italian electrical equipment manufacturer, has been providing electrical equipment to a number of project in need of high-quality energy.

As mobility requirements continue to rise and aircrafts become among the most used means of transport, the care for quality lifestyles involve safety and security while travelling. As business and leisure travellers become less tolerant of delays, inaccuracy of information and accidents, Ortea's solutions provide very high-quality energy systems that prevent potential operational failures and the relevant consequences on human life.

Among the largest airport projects throughout the Gulf and the Middle East, is the new King Abdulaziz International Airport in Jeddah, where authorities have selected some of the best options in regards to infrastructure, resources, facilities and protection systems.

Voltage stabilisers and transformers from Ortea have been selected by the authorities over seeing the project in order to

ensure reliable and stable power supply to the project.

Ortea voltage stabilisers (Orion, Orion Plus and Sirius) with the addition of customised solutions specific to the project, have acted to ensure a steady stable voltage, therefore allowing for radar and security equipment continuity of service and correct operation.

According to Ortea, high-quality stabilisers and the company's flexibility in providing customised solutions have been the meeting point between Ortea and the project leaders. The result helps ensure maximum safety and best service for people working on this technologically significant project.

As energy demands are intrinsically linked to all communication systems, data centres, information processing and security, in particular, and as security systems are increasingly moved online for home automation

and industrial or public applications, Ortea has a number of solutions available that offer safe and reliable operations at transport and infrastructure projects big and small.



*Ortea has provided high-quality voltage stabilisers to King Abdulaziz International Airport in Jeddah.*

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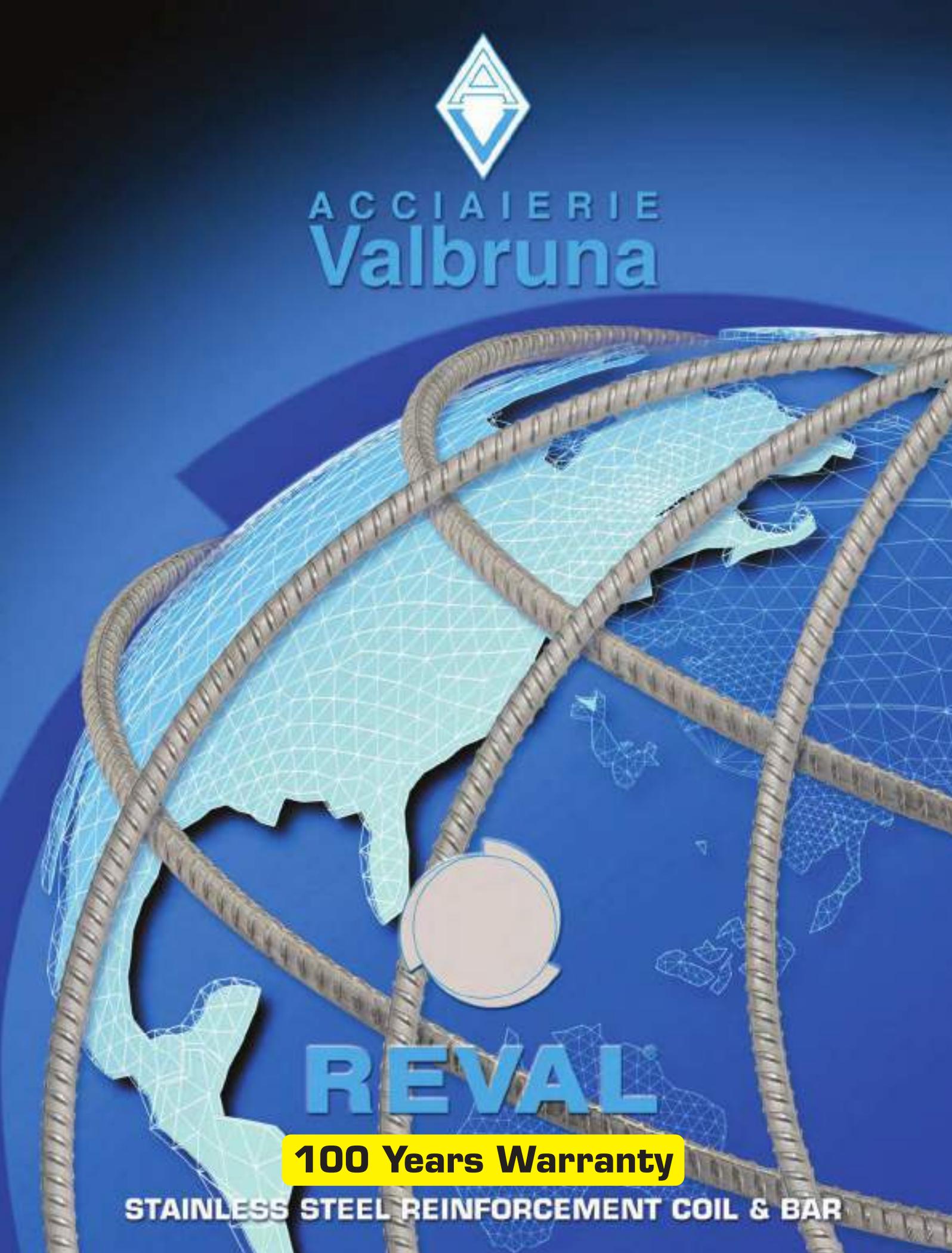
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# The rigid truck gets better

Hitachi has made improvements to its heavy hauler, with upgrades and better technology.

**H**ITACHI CONSTRUCTION MACHINERY'S new EH1100-5 truck is loaded with cutting-edge technology, just like its excavators.

The rigid drive hauler is designed to develop low cycle times and extra efficiency in heavy duty applications like quarrying and mining, along with low operating costs, enhanced productivity and overall quality through superior structure and systems design, says the company.

It uses an 18 mm floor plate and eight mm side plates made of 400 BHN high-tensile steel. This provides high resistance to wear and impact. A low loading height and large target area allow easy, quick loading by a variety of loading tools. The hauler's frame rails are tapered from front to rear to distribute the load evenly over the entire length of the chassis and the castings has been replaced by hot rolled steel, which is more homogeneous and easier to repair. The weld joints are oriented longitudinally to the principal flow of stress for strength and long life.

**The EH1100-5 rigid dump truck has a nominal payload with standard equipment of 63.5 tonnes.**

The high-quality truck also comes with state-of-the-art ultrasonic testing.

To make dumping easier, a single sloped floor evenly distributes material shedding and the horizontal floor and side rail stiffeners distribute load shocks evenly over the entire body length, minimising stress concentrations in any one area. Closely spaced floor stiffeners reduce wear due to

*The hauler is the perfect match for large construction sites and small- to mid-size quarry and mining operations. (Photo: Hitachi)*



impact loading. Moreover, the hauler is narrow at the rear to support the load and wider at the front to allow stability and easier engine access for servicing.

The dump truck has large radii at frame junctions to minimise stress concentrations as well as the weld joints are oriented longitudinally to the principal flow of stress for greater durability and more strength. The frame is made up of 345 MPa tensile yield strength low alloy steel that is robotically welded to ensure consistently high quality welds.

Equipped with a Lincoln Auto-Lubrication system, the lubricant is delivered in time-controlled and metered quantities to all connected lube points in the truck and a ground level accessible grease pump assembly automatically feeds lubricant to grease points throughout the truck via plumbing. Additionally, the Hitachi ACCU-TRAC suspension system delivers excellent maneuverability, even at higher speeds. The NEOCON strut, used with the ACCU-TRAC suspension, improves operator and component isolation,

providing better hauler stability and predictable operational control.

The suspension system features independent trailing arms for each front wheel with NEOCON struts, containing energy absorbing gas and compressible NEOCON-ETM fluid (silicon-based, non-petroleum), mounted between the king pins and the frame. This arrangement allows a wider front track that provides a better ride, improved stability and a reduced turning circle. It also responds favourably whether traveling empty or with payload in a wide range of ambient temperatures. The rear NEOCON struts are mounted in a more vertical position, which allows more axial loading and reduces the tractive and braking forces transmitted to the nose cone.

The diesel-powered engines bring both strength and reliability, along with EPA Tier 2 emission certified engines that maintain a low fuel consumption level. Hitachi's truck monitoring and control is performed by Hitachi electronic components and software, resulting in increased machine reliability and operator comfort. ■

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*There is a substantial mineral resource base in Oman, predominantly contained in the mountains, which span 700 km by 150 km. (Photo: Dmitry Kalinovsky/Shutterstock)*

# Rethinking mining strategies

The slump in commodity prices globally, and the efforts to rise above that, was the focus of the MENA Mining Show 2015, helping to create a lot of avenues for local and international players in the Middle East and Africa region.

**In the last decade, increased demand from countries such as China and other emerging economies pushed the price of many metals and minerals upward, which stimulated investment in the mining industry.**

**T**HE MIDDLE EAST and Africa's mining industry is facing a big impact from China's economic slowdown, according to analysts.

A report by Moody's Investor Services said that the mining sector in Europe, the Middle East and Africa (EMEA) is the industry most exposed to China's economic woes, since between 20 and 30 per cent of revenues from mining output is exported to China directly or indirectly.

EMEA commodities producers are, therefore, most likely to take a hit in the coming months.

Moody's report said, "Metal and mining companies are most exposed both in terms of export volumes and the knock-on effect of lower prices."

The report expects no significant rise in prices for energy, metal and mining commodities in the next two years. For commodity producers, the economic effects of low prices will spill over into other sectors

through supply chains and weaker growth in household income, it added.

Therefore, to address the challenges in the sector, the MENA Mining Show, held on 6-7 October 2015 at Dubai International Convention and Exhibition Centre, brought together ministers, mining companies, investors and key solution providers to promote investment, optimise operations and build relationships in the Middle East and Africa's trillion-dollar mining industry.

Touted to be the largest mining exhibition in the Middle East and Africa, MENA Mining has, over the past eight years, become a popular marketplace to buy the latest mining equipment, technologies and services. From exploration and investment opportunities to best practice methods and practical examples of technology and machinery for operating mining companies, the show proved to be a catalyst of innovation for the mining sector, according to event organiser Terrapinn.

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Willem Middelkoop, one of the speakers at the show and co-founder of Commodity Discovery Fund, said that the mining sector is currently experiencing a downturn across the globe with China slowing down its buying. He added that companies need to restructure the mining strategies and look into more options of efficient production.

“We need recapitalisation of the financial system. This is the endgame across the globe and debt restructuring with regards to the mining is required.”

### Challenges for the sector

One of the core features of the show was panel discussions where capital challenges for mining sector in present times were discussed in detail.

Mark Parker, chairman of Andiamo Exploration Limited, noted that the sector needs to get mechanism into place for small-scale operators to function efficiently so that the long-term prices of commodities are secured.

“The five-year period to achieve targets is very realistic. So the question is what could small-scale operators do to expand their capital spending? I must say that the situation is tough and we need to take small steps to get out of the downturn,” he remarked.

Lhou Maacha, general manager, exploration and development at Managem, was of the opinion that the mining sector should look into creating domestic players. He noted that from 1979 to 2000, during the last boom, junior companies made a lot of advances in Africa, thereby contributing to the economy significantly. “They are the key to the business. In Africa, local miners made more than 40 per cent of discoveries in the past. We must look at encouraging the local workforce of drillers and mid-sized companies to make discoveries for the future,” Maacha said.

Reyno Scheepers, CEO at Handeni Gold said that the industry has to re-invent its exploration processes with regards to efficient production and optimising costs. “We now need to think out of the box and I think the time is now.”

Another issue that was tapped into was small scale or artisanal miners, who contribute to 25 per cent of the industry for excavating a significant portion of select minerals such as tin, tantalum and precious stones, mainly in the African continent.



The MENA Mining Show hosted more than 2,000 visitors along with 100 government officials and 150 mining companies. (Photo: Terrapinn)

**To lay a strong foundation for the next mining cycle, companies need to accelerate their efficiency programmes and invest more significantly in innovation.**

Scheepers revealed that such miners could lead to further losses to the sector because of the lack of basic infrastructure knowledge, high utilisation of rudimentary mining equipment, lack of geological information of the ore bodies, unskilled labour force, scarce financial support, lack of collateral, engagement of child labour and compliance to legislative issues.

However, Parker said that artisanal miners have the skill set to mine in difficult terrain where it is tough to find big deposits.

“But over the next decade, the problems associated with these miners are going to increase exponentially. It is a challenge for all of us to control artisanal mining for the benefit of the sector, including the environment,” he remarked.

### Becoming tech-savvy

Although large and mid-sized miners are working to control expenses, declining grades will put continual pressure on costs. To regain momentum and lay a strong foundation for the next mining cycle, companies need to accelerate their efficiency programmes and invest more significantly in innovation, a Deloitte report stated.

With the mining sector becoming more challenging with complex ore bodies, rising energy costs, infrastructure shortages and resource nationalism, companies are constantly under pressure to control costs, improve efficiency and safety performances. Therefore, technology is becoming increasingly important for companies.

The companies exhibiting at MENA Mining 2015 showcased their latest technologies that included data analytics solutions, crushers and grinders and advanced control systems.

Scheepers said that it is quite attractive to look into new techniques and small and mid-sized companies across the region can benefit from such technologies.

With mining executives sharpening their focus on achieving sustainable productivity improvements, over the last one year, companies have undertaken substantive cost reductions and are now moving forward with more streamlined cost structures.

Maacha said, “We are looking for opportunities. It is common today for all major companies to finance advanced projects and most producers are still looking for quality projects. Most of us continue to invest in brownfield projects as well as looking for developing new fields. Due to prices of gold, the cut-off costs for projects are very high. This has affected the rate of conventional metals in general as well as operations. Yes, we need to reinvent the industry.”

Hosting more than 2,000 visitors along with 100 government officials and 150 mining companies, the event provided a platform for mining companies to attempt to raise capital, win exploration licenses and buy world-class solutions. Leading equipment and service providers also demonstrated the latest solutions for mining projects in the region. ■



Gabriel Harder  
Software Developer

## IEC 61850 is my topic ...

... and as a software developer in the Power Utility Communication field, I work on exciting and trend-setting products. Through our developments we are able to offer efficient IEC 61850 testing tools for protection and SCADA engineers. One example is DANEO 400, which uniquely records and analyzes all conventional signals, as well as GOOSE and Sampled Values on the substation communication network.

## Phoenix Contact's coated power solutions for explosive areas

THREE POWER SUPPLIES and three DC/DC converters in Phoenix Contact's Quint Power series have been approved for use in potentially explosive areas. The power supply units, with coated PCB, conform to standard EN 60079-15, according to the company.

The IECEx-approved devices are suitable for use in Class I, Division 2, Groups A to D or A to H. Due to the PCB coating, all modules provide optimum protection in extreme ambient conditions such as dust, corrosive gases and humidity.

In addition, they also fulfil the requirements of railway standard EN 50155 that covers aspects including temperature, humidity, shock, vibration and other parameters.

The single-phase power supplies are designed for 24V DC output voltage and currents of 5A, 10A, and 20A.

Meanwhile, the DC/DC converters provide a constant voltage of 18 to 32V DC with output currents of 5A, 10A, and 20A, even at the end of very long cables.

For maximum availability of the connected loads, selective fuse breaking (SFB) technology ensures reliable tripping of circuit breakers. Faulty current paths are, thereby, switched off selectively and the fault is located immediately with important system parts remaining in operation.

For magnetic tripping of circuit breakers, the 20A modules supply a peak current of 120A for 12 milliseconds, for instance. Preventive function monitoring of voltage and current can spot critical operating states beforehand, indicating any issue to the controller



*For maximum availability of the connected loads, SFB technology ensures reliable tripping of circuit breakers. (Photo: Phoenix Contact)*

via the active switching output or the floating relay contact, thus preventing errors.

This comprehensive range of functions increases the availability of the supplied loads.

The Germany-based company manufactures products that can be used in industrial production facilities, for renewable energies, in infrastructure and for complex device connection.



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Many industry stakeholders from across the region participated in GulfSol 2015.  
(Photo: Solar Promotion International GmbH)

# Pushing for solar power growth

GulfSol 2015 event recorded a 52 per cent growth this year, highlighting the potential of solar and the PV industry in the Middle East and North Africa.

**The MENA region is expected to attract more than US\$50bn investment in solar power over the next five years.**

**T**HE SECOND EDITION of the international solar and PV exhibition GulfSol took place from 14-16 September 2015. Hosted at the World Trade Centre in Dubai, the show witnessed the participation of 35 brands within a 1,800 sq m stand space.

GulfSol also launched the high level Global Solar Leaders' Summit on Day One. Officially inaugurated by Saeed Mohammed Al-Tayer, CEO of Dubai Electricity and Water Authority (DEWA), the summit brought together over 370 global influencers, senior government officials, academia, private sector CEOs and global institutions to discuss the opportunities and challenges for the solar energy market as the region works towards achieving diversified and sustainable energy portfolios through ambitious renewable energy targets.

Al-Tayer said, "Renewable energy is a key strategic objective for DEWA, which is

working to expand the Mohammed bin Rashid Al Maktoum Solar Park to generate 2,600MW from renewable energy by 2030."

CPD-certified workshops were also scheduled at the show, with 800 delegates attending to learn from industry experts on new developments and information from the region's solar market sector.

With high solar irradiation, large open spaces and growing energy demand, the GCC nations are ideally located for generating renewable energy from sunlight.

In order to lay the foundation for expanding solar energy, GulfSol will merge with Intersolar to form Intersolar Middle East that will take place for the first time from 19-21 September 2016. The organisers of the current GulfSol, dmg events, Solar Promotion International and Freiburg Marketing Management International (FMMi) have come together to launch the new event. ■

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Excon 2015 will have more than 850 exhibitors. (Photo: CII)

# Excon: Growing with India's construction industry

With the government's focus on infrastructure development in this fast-growing economy, India's construction sector is seeing unparalleled growth. Excon 2015 brings together the industry players to network and find opportunities.

**Construction accounts for almost two-thirds of the total investment in infrastructure in India, and is the second biggest economic activity.**

**I**NFRAStructure HAS A significant role to play in India's growth story, and according to estimates by the country's Planning Commission, the sector will see investments to the tune of US\$1 trillion in the five-year period of 2012-2017. A direct beneficiary of this spending is the construction industry, whose players come together in the biennial event, Excon.

Organised by the Confederation of India Industry (CII), Excon 2015 is the eighth edition of the event, and will be held in Bangalore from 25-29 November. The show, spread over 220,000 sq m of display area, is the largest construction equipment exhibition in South Asia. This year, the event will host various country pavilions and more than 850 exhibitors, including about 300 from outside the country, and between them, they will launch more than 200 new products for upwards of 32,000 business visitors. The exhibition will showcase a wide variety of equipment,

technology and products with specific emphasis on efficiency, productivity, environment and safety.

Supported by the Builders' Association of India and Indian Construction Equipment Manufacturers' Association (ICEMA), the event is an opportunity for global players from the construction equipment industry to exploit the huge opportunity that India's fast-growing infrastructure sector has to offer. Construction accounts for almost two-thirds of the total investment in infrastructure in the country, and is the second biggest economic activity after agriculture. Excon 2015 will emphasise improvement of infrastructure in rural areas of the country, an area with tremendous potential.

## Conference on Rebooting Infrastructure

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GROWING TOGETHER

organised by ICEMA, will be held on 26 and 27 November at the same venue. With the theme of 'Build India for a Better Tomorrow', the conference will focus on tabling the challenges faced by the construction industry and discussing ways to achieve accelerated growth and utilise the opportunities that lie ahead.

The conference will be split into five sessions of panel discussions, each of which will have distinguished panellists from different fields, such as transportation, construction, financial institutions and relevant government departments. The aim

will be to discuss opportunities and problems, such as bottlenecks, regulatory frameworks and policies and financing.

The boom in construction activity in India is a chance for international construction companies to grab a piece of this very sizeable pie. The country has numerous big-ticket projects that are in progress or are planned for execution in the near future (refer to the box below for a list that is only illustrative, and by no means exhaustive). A minister in the central government has recently said that he would like to see the world's tallest building in India. While that



More than 200 new products will be launched at Excon 2015. (Photo: CII).

specific project may be nothing more than wishful thinking at the moment, work had started in 2010 on India Tower, a 720 m tall skyscraper in Mumbai. Construction had to be stopped a year later due to a dispute over payments between the builder and city's regulatory authorities. However, it still serves as an example of the huge appetite of the Indian construction market, and international players should make the most of it. ■

## The boom in construction activity in India is an opportunity for international players from the construction industry to make inroads into the sizeable market.

### Major infrastructure projects in India

- Delhi-Mumbai Industrial corridor – Almost 1,500 km long and to be built at a cost of US\$90bn, it will be the biggest infrastructure project ever undertaken in India. The country has already signed an agreement with Japan to set up a project development fund.
- Gujarat International Finance Tec-City – Being built at a cost of US\$20bn, the 'smart city' will be a financial hub with world-class infrastructure for the Indian financial industry. It is expected to be completed by 2018.
- Delhi Metro – The world's 12th largest metro system in terms of track length and number of stations, the Delhi Metro serves the country's capital and its satellite cities. Expansion plans for another 100 km of track and many more stations have already been drawn up.
- Pir Panjal Railway Tunnel – Also called the Banihal-Qazigund tunnel, it is India's longest railway tunnel and Asia's third longest. It covers 11.21 km and reduces the distance between the two towns in the Kashmir valley by 17 km. It became operational in mid-2013.
- Chenab Bridge – A 1.3 km long rail bridge over the river Chenab in the mountainous region of Jammu and Kashmir, expected to be completed in early 2016, will be the world's highest rail bridge, standing 359 m above the Chenab.
- Bandra-Worli Sea Link – Officially called the Rajiv Gandhi Sea Link, with a length of 5.6 km and costing US\$240mn, is the longest bridge over water in India. It connects Worli in south Mumbai to the suburb of Bandra.
- Yamuna Expressway – The 165 km six-lane controlled access expressway connects Greater Noida and Agra is India's longest such road, was completed in 2012 and cost US\$1.9bn to build.
- Eastern Freeway, Mumbai – It is a controlled access 16.8 km long highway in Mumbai made up of three segments, one with twin tunnels, and 13 km of elevated road. Opened fully to the public last year, it was built at a cost of US\$220mn.



Extensive work on digging tunnels to expand Delhi's metro network is currently under progress. (Photo: PI/Shutterstock).



The Bandra-Worli Sea Link has become an iconic landmark of Mumbai. (Photo: Joe Ravi/Shutterstock)



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في عمليات التشغيل الطبيعية، إلا أنها لا تعتبر مؤشراً لما قد تكون عليه هذه القيمة في سيناريو لأسوأ الحالات.

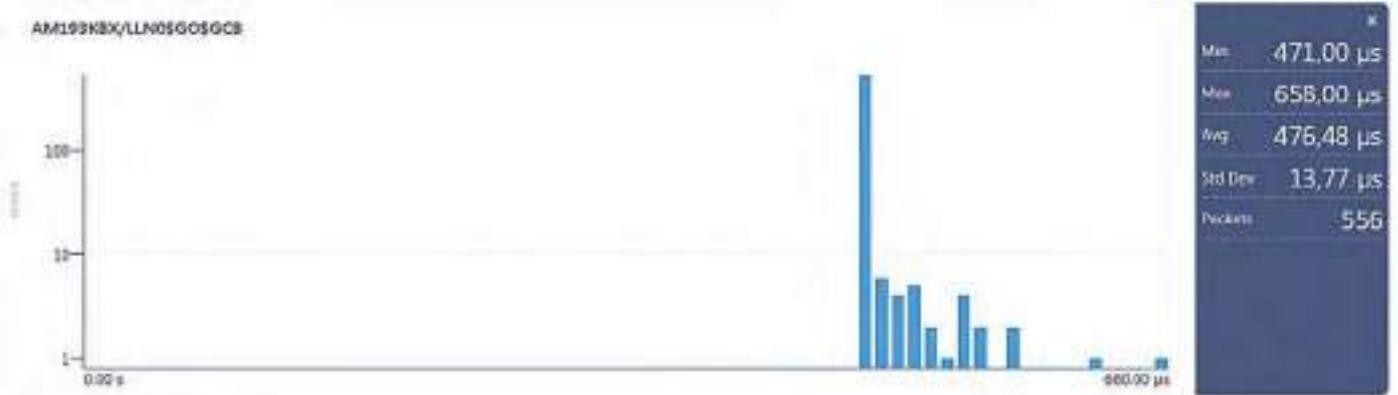
**سيناريو محاكٍ لأسوأ الحالات**

ما يهمنا هنا هو بالطبع نتيجة القياس في سيناريو لأسوأ الحالات. ومن أجل محاكاة سيناريو لإحدى أسوأ الحالات، تم إجراء تحليل تأخر الانتشار باستخدام جهاز DANE0 400. ويشتمل هذا الاختبار، بشكل أساسي، على مئات القياسات المترتبة تلقائياً حيث تُعرض نتائجها في النهاية في مدرج تكراري.

ولمحاكاة موقف خطير، أو إنشاء موقف مشابه جداً، قام التقنيون لدى مزود خدمات الطاقة بفتح أحد اتصالات الشبكة المتكررة باستخدام بروتوكول Rapid Spanning Tree

Protocol) بين المحطات. وقد نتج عن ذلك أن تتخذ حزم بيانات الشبكة مسارات غير مباشرة عبر المحطات الفرعية الأربع قبل وصولها إلى الوجهة المحددة. وكانت المسافة اللازمة لذلك تقدر بحوالي 75 كيلومتراً. وقد أظهرت نتيجة هذه القياسات متوسط تأخير حوالي 476 نانو ثانية بإجمالي 556 حزمة بيانات. وكانت القيمة القصوى 658 نانوثانية، بينما كانت القيمة الدنيا 471 نانوثانية، حيث كانت القيمة الدنيا هي الأكثر شيوعاً في نتائج عمليات القياس (انظر الشكل 4).

هذا القياس أثبت لتقنيي الحماية أن أزمدة التأخير أكثر من كافية من أجل التشغيل الآمن. وأن محولات الشبكة الوسيطة هي السبب في أزمدة التأخير على الأرجح. وكانت النتيجة هي أن الشبكة سريعة بدرجة كافية حتى في سيناريو لأسوأ الحالات، ويمكنها نقل الرسائل المهمة في الوقت المطلوب.



الشكل 4: تم عرض تحليل تأخر الانتشار (PDA) الذي تم إجراؤه باستخدام جهاز DANE0 400 كسيناريو لأسوأ الحالات في شكل مدرج تكراري يوضح أوقات التأخير للمسارات المتكررة.

## نبذة عن المؤلفين:



**أندرياس كلاين** ولد في النمسا عام 1986. درس هندسة الكمبيوتر في جامعة فيينا للتكنولوجيا ويعمل في OMICRON منذ عام 2005. وحالياً يدير فريق تطوير المنتجات ذات الصلة بمعيار IEC 61850 في OMICRON. وبصفته عضواً في مجموعة العمل 10 في اللجنة الفنية، TC 57، للمعيار IEC، فهو يساهم في تطوير سلسلة معايير IEC 61850.



**كريستيان وينك** ذهب إلى دورنبيرن لزيارة المعهد العالي للتكنولوجيا (HTL) من أجل دراسة الهندسة الصناعية في تخصص مجال علوم الكمبيوتر. وكان يعمل في OMICRON في الخمسة أعوام الأخيرة متخصصاً في تطوير البرامج لضمان الجودة والآلية.



**كلاوس جوتسه** درس هندسة الكهرباء في جامعة جورج سيمون أوم للتكنولوجيا في نورنبرج متخصصاً في مجال تكنولوجيا الطاقة الكهربائية، ثم أكمل تدريباً إضافياً في مجال إدارة الطاقة. عمل في مجال التسويق الفني لعدة أعوام وعمل كصحفي متخصص ومُعلّم متخصص. وكان يعمل في ORICON منذ عام 2014 مهندساً تسويقياً للاتصالات.

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وبانات باللون الأصفر، وهي القيمة التي تغيرت بعد فاصل زمني قصير. وأدت هذه القيمة بعد ذلك إلى تشغيل إنذار وحدة التحكم الطرفية (RTU). ومن المحتمل أن تكون وحدة RTU قامت بتشغيل الإنذار نظراً لعدم قدرتها على الاتصال بجهاز آخر. ولقد اكتشف التقنيون العاملون لدى مزود خدمات الطاقة السبب بعد إجرائهم فحصاً فورياً؛ واتضح أن السبب هو كابل شبكة بصري تالف وتم استبداله في الحال.

#### القياسات الموزعة لأوقات تشغيل الرسائل

بعد استخدام نظام DANE0 400 واحد فقط في محطة فرعية واحدة للحصول على القياسات الأولية، تكون الخطوة الثانية في اختبار المنشأة هي: القياس الموزع بين المحطات الفرعية باستخدام أنظمة القياس المتعددة. ولذا يتم تعيين عنوان IP ثابت لكل جهاز بما يمكن برنامج تحكم DANE0 من الاتصال بكافة وحدات DANE0 400.

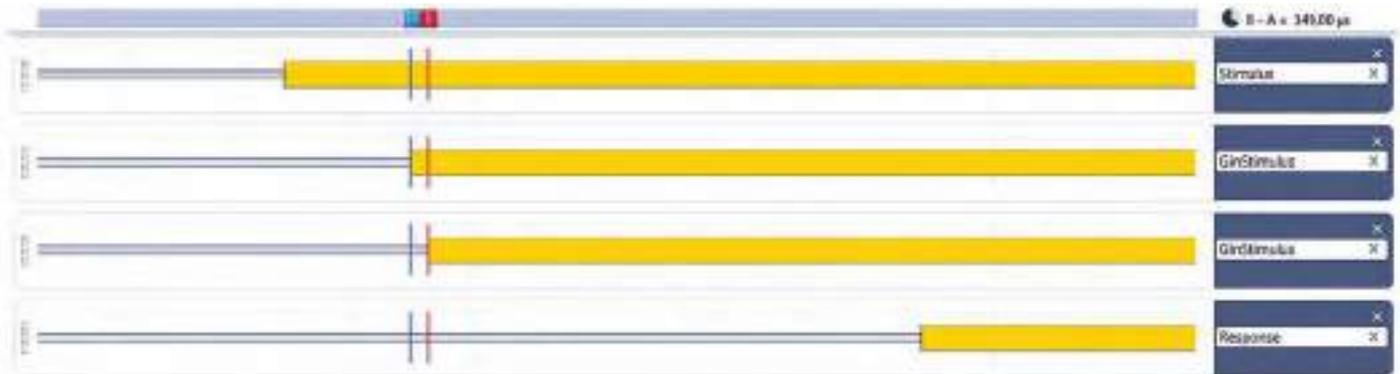
ويتم - حينئذ - وضع جهاز OTMC 100 على سطح بناء المحطة الفرعية الأولى لمزامنة أوقات الأجهزة على نحو دقيق. وهذا الجهاز يتوفر به بروتوكول دقة المزامنة Precision (Time Protocol) (PTP) مع هوائي مدمج، مما يتيح لجميع أجهزة القياس المتصلة إجراء المزامنة بدقة في غضون 100 نانو ثانية عبر GPS وبروتوكول PTP. ثم يتم بعد ذلك توصيل جهاز ISIO 200 أيضاً بنقاط الاتصال الثنائية بوحدة التحكم الطرفية التي يجب بدورها تحويل الإشارة الكهربائية الخاصة بنقاط اتصال وحدة التحكم الطرفية المشغلة عن بُعد إلى رسالة GOOSE (انظر الشكل 2). وهذا يمكن من استخدام إشارات اختبار GOOSE بدون إرباك عمليات المنشأة. وقد استمر عمل كل من نظامي القياس اللذين تم إعدادهما بينما تم تركيب جاهزي DANE0 400 و ISIO 200 آخرين في اليوم التالي ومزامنتهما وتشغيلهما في المحطة الفرعية الثانية. بعد ذلك، تلقى جهاز ISIO 200 رسالة GOOSE التي تم إنشاؤها يدوياً عن بعد، وقام بتحويلها إلى إشارة كهربائية مرة أخرى. ثم سجلت أجهزة DANE0 المستخدمة في الاختبار الإشارة الكهربائية وإشارات GOOSE من أجل المرحلة الأخيرة من التحليل. وكان الهدف من ذلك هو قياس الوقت المستغرق من أجل إرسال إشارة اختبار GOOSE بواسطة ISIO 200 الموجود في المحطة الفرعية الأولى، واستلامها في المحطة الفرعية الثانية بمسافة تعادل حوالي 18 كيلو متراً. ويمكن رسم قائمة بالارتباطات المشتركة المهمة من هذا القياس بخصوص واجهة المستخدم الرسومية للتحكم في DANE0 H أو واجهة ويب (انظر الشكل 3). الإشارتان أعلاه هما من المحطة الفرعية الأولى والإشارتان أدناه من المحطة الفرعية الثانية.

بإمكانك - عندئذ - أن ترى تبادل نقاط الاتصال الثنائية لوحدة التحكم الطرفية في التعقب الثنائي أعلاه (محفز). وبإمكانك أن ترى في الأسفل تشغيل تغير حالة GOOSE في المحطة الفرعية الأولى. بينما يمكنك أن ترى وقت وصول رسالة GOOSE إلى المحطة الفرعية الثانية في التعقب الثنائي الثالث. وأخيراً، يأتي تبادل الاتصال المرسل الذي يمثل الرد على رسالة GOOSE متأخراً عن رسالة GOOSE في المحطة الفرعية 2 على نحو ملحوظ. بإمكانك أن ترى بسهولة أن وقت التأخير في النقل بين المحطتين يقدر بعدد 149 مايكرو ثانية. إلا أن ذلك ما هو إلا نتيجة عملية قياس واحدة. ومع أن القيمة قد تكون قياسية

وأخيراً، كان ذلك ناتجاً عن رسائل لم تعد لازمة من أجل التشغيل حتى وإن كانت هذه الرسائل لازمة وقت بدء عمل المنشأة. ولضمان توفير الحماية، تم إزالتها من ملف SCD. وبعد الانتهاء من هذا الفحص الأول للاتصالات، تأتي بعد ذلك تقارير IEC 61850. وقد تم استخدام برنامج IEDScout لاختبار ما إذا كانت هذه التقارير تتوافق مع بيانات تكوين المنشأة. وهي أداة تحليل يتم استخدامها لتحليل الأجهزة الإلكترونية الذكية واتصالاتها، مما يساعد تقنيي الحماية على تشغيل النظام وفحصه من أجل رصد الأخطاء. وفي أثناء تشغيل إجراء الاختبار، أشار IEDScout إلى وجود عدم تناسق وعرض قيمة



الشكل 2: يمكن توصيل نظام DANE0 400 و ISIO 200 بشبكة اتصالات المحطات الفرعية بسهولة في خطوات بسيطة



الشكل 3: توضح النتيجة المعروضة هنا بواسطة واجهة المستخدم الرسومية للتحكم في DANE0 النقاط الزمنية لتغير الحالة الخاص بالإشارات في كلتا المحطتين



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# حول التعقب الدقيق لرسائل GOOSE

يحدد المعيار الدولي IEC 61850 قواعد الاتصال بين الأجهزة الفردية في المحطات الفرعية والمحطات الفرعية نفسها. ونحن هنا نلقي الضوء على معيار يستعرض نماذج البيانات المستخدمة وكذلك البروتوكولات والإشارات التي تستخدم الأجهزة الإلكترونية الذكية (IED) لتبادل المعلومات كما تُستخدم للعملية الهندسية ككل.

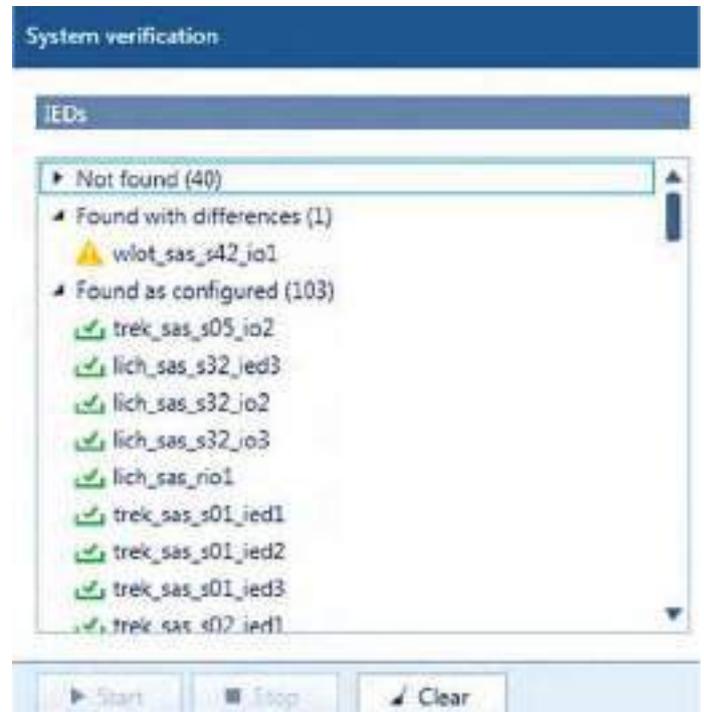
عبر الشبكة بالكامل، مما يسمح لكافة الأجهزة الإلكترونية الذكية المتصلة، أو أجهزة الاختبار، براءة هذه المعلومات. ومن الأوفق دائماً اختبار عمل نظام IEC 61850 بكامله كما هو موضح في المثال التالي. وبطبيعة الحال، إذا كان يتم إجراء اختبارات ذات صلة بشكل مباشر أثناء إجراء بدء التشغيل، فإن ذلك سيؤدي إلى الحصول على مستوى أعلى من الكفاءة. كما يتيح ذلك أيضاً إمكانية اكتشاف أي انحراف في عمليات التشغيل المنتظمة بسرعة في مراحل لاحقة، إذ قد تؤدي هذه الانحرافات إلى مشكلات خطيرة. وسوف يُوضح ذلك أخصائيو أنظمة OMICRON Power Utility Communications (PUC) الذين يعملون في جنوب غرب أفريقيا. فقد دعاهم أحد مزودي خدمات الطاقة الإقليميين لفحص تكوين اتصالات معيار IEC 61850 وإبداء ملاحظاتهم على أداء نظام الاختبار DANE0 400. ومزود الطاقة يستخدم أربع محطات تحويل فرعية مجهزة بأحدث تقنيات IEC 61850. وهنا يتم إرسال المئات من رسائل GOOSE عبر قنوات اتصال، كما يتم تبادل الإشارات بين الأجهزة الإلكترونية الذكية في المحطات الأربع. وتضمن كابلات الألياف البصرية العازلة أن هذه «الرسائل» سوف تصل على نحو موثوق إلى وجهتها في الوقت المناسب.

## لغة تكوين المحطات الفرعية (SCL) والشبكة

للتأكد من نقل جميع رسائل GOOSE بطريقة صحيحة، تم توصيل نظام القياس DANE0 بمحول الشبكة باستخدام كابل إيثرنت لتوفير إمكانية الوصول إلى شبكة الاتصال. وبعد ذلك، تم تكوين منفذ المحول المتصل به نظام DANE0 ليكون متصلاً بشبكة الاتصال المحلية الافتراضية (VLAN) التي يتم عبرها إرسال رسائل GOOSE مما يضمن نقل جميع حزم رسائل GOOSE إلى نظام DANE0. وقد أدى ذلك إلى تمكين نظام DANE0 من تحليل حركة نقل البيانات عبر الشبكة بشكل فوري، والتحقق من نقل كافة رسائل GOOSE في الحال عبر الناقل باستخدام ملف توصيف تكوين المحطات الفرعية (SCD). ولهذا الغرض يتم تحميل ملف SCD مسبقاً إلى برنامج التحكم DANE0. ويصف ملف SCD المحطة الفرعية بالكامل باستخدام لغة تكوين المحطات الفرعية. وبالإمكان إجراء هذه العملية في غضون ثوانٍ قليلة لكافة رسائل GOOSE عبر الشبكة. ويوضح الفحص التدقيقي للنظام، الذي يتم عرضه بشكل فوري، وجود مشكلتين في حركة نقل البيانات. فإحدى رسائل GOOSE التي يبلغ عددها 104 رسالة وضع عليها علامة تحذير صفراء (انظر الشكل 1) كإشارة إلى أنها غير متوافقة مع التكوين. ويمكن أن ينتج عن ذلك، استناداً إلى تكوين المحول، استلام رسائل GOOSE في موقع آخر، مما قد يؤدي إلى منع تفعيل قاطع الدائرة عند تشغيل مرحلة الحماية. وبالإضافة إلى ذلك، يوضح التحليل أنه لم يتم نقل 40 رسالة من رسائل GOOSE المحددة في ملف SCD عبر الشبكة.

لاشك أن المعيار IEC 61850 له تأثير كبير أيضاً على تقنيات الحماية. فهو يركز على أداء الأجهزة المستخدمة في هذا المجال ووظائفها الأساسية وقابليتها للتشغيل البيئي. ويشمل ذلك الوظيفة والتكوين الصحيحين لكل من الرسائل المتبادلة عبر شبكة الاتصالات والإشارات التقليدية (الفولتيات والتيارات وإشارات الحالة الثنائية التي يتم إرسالها عبر الأسلاك)، خاصة المعلومات التي تعتمد على دقة التوقيت؛ مثل أوامر تشغيل أجهزة الحماية التي تُعد أكثر أهمية. ولذلك فهي تتطلب اتصالاً أسرع.

وفي بيئات التشغيل التي تعتمد على المعيار IEC 61850، يتم نقل رسائل الحالة ذات الصلة عبر ما يسمى برسائل GOOSE (الأحداث العمومية الشبئية في المحطات الفرعية) التي يتم إصدارها بواسطة الأجهزة الإلكترونية الذكية (IED) على أنها رسائل يتم إرسالها من وإلى وجهات متعددة. ونظراً لعدم وجود مُستقبل محدد، فإن المعلومات يتم توزيعها



الشكل 1: التدقيق المزدوج لرسائل GOOSE الموجودة في الشبكة مقارنة بملف SCD مع DANE0 400 لكشف عدم التوافق على نحو سريع

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المولدات الكهربائية في السعودية تعتمد اعتمادا كاملا على الشبكة الكهربائية

سعر النفط الخام في تأجيل تنفيذ المشروعات الحكومية حفاظا على مستوى الاحتياطي النقدي بالبلاذ. وقال رافي: «في فترة التنبؤ، من المتوقع أن تؤثر مبادرات السعودية، من أجل الاستعانة بمصادر الطاقة المتجددة لتوليد الكهرباء، على تامين مولدات الديزل عند التأجير. لكن النمو سيظل حاضرا في قطاعات النفط والغاز والمواقع الإنشائية والمناطق التي تفتقر إلى شبكات النقل والتوزيع.»

في سوق تأجير الطاقة بالسعودية، أن قطاعات المرافق والنفط والغاز والإنشاء والصناعة هي القطاعات التي تدر الربح الأساسي، وأنها ستظل قطاعات مساهمة بصفة أساسية خلال فترة التنبؤ». وأضاف رافي بهانداري، باحث مشارك في قسم البحوث والاستشارات في Wresearch 6 قائلاً إنه نظرا لانخفاض أسعار النفط الخام، فقد تشهد أعمال تأجير الطاقة تأثرا على المدى القصير والمتوسط في البلاد. وقد يتسبب انخفاض

«في المملكة العربية السعودية، تذهب الحصة الأكبر في سوق تأجير الطاقة إلى المولدات التي تعمل بالديزل. وقد حافظ توفر الديزل بسهولة وانخفاض سعره، على توازن النمو في تأجير مولدات الديزل بالدولة. لكن خلال فترة التنبؤ برزت المولدات الكهربائية والهجينة. ومن المتوقع أن تعزز المبادرات الحكومية لتقليل الانبعاثات الكربونية، زيادة الطلب على هذه المولدات داخل الدولة. إضافة إلى ذلك نجد،

## مفكرة رجال الأعمال

نوفمبر/تشرين الثاني

30 - 12/2 ..... المعرض السعودي للتركيبات السكنية والصناعية - MCE Saudi 2015

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معرض إلكترونيكس لمعدات وخدمات الطاقة - Electricx 2015 ..... القاهرة

معرض ومؤتمر الخليج لإدارة المرور - Gulf Traffic 2015 ..... دبي

الاستثمارية قائلاً: «معرض خرسانة الشرق الأوسط Middle East Concrete سيقدم عروضاً حية أكثر من ذي قبل، مما يتيح للشركات في هذا المجال التعرف على الحلول الحديثة. ومن الأشياء التي تجعل Middle East Concrete و PMV Live من الفعاليات ذائعة الصيت هو أن الحدثين يحضرهما أهم الشركات التي تمثل هذا القطاع».

Bus و Truck. وقال: «إنه من الرائع للشركات العالمية الكبرى حضور حدث مثل PMV Live إذ أن هذا الحدث سيساعدها على تكوين علاقات عمل في المنطقة». وإلى جانب PMV Live، يقدم Middle East Concrete منصة إقليمية للصناعات الإنشائية، حيث يتم مواصلة الاستثمار بكثافة في الاستدامة، وتوفير دافع مستمر للكفاءة والحلول الصديقة للبيئة. وأضاف مدير المحفظة

يتم منح عقد المرحلة الثانية من مشروع الاتحاد للقطارات بطول 628 كم في 2015 و 2016 وهذا العقد جزءاً من مشروع الاتحاد للقطارات. واستجابة للازدهار الحادث في سوق الإنشاءات في دول مجلس التعاون الخليجي، فإن معرض PMV Live، الذي سيقام بالتزامن مع معرض بيج فايف بدبي، سيستضيف بعض الشركات الكبرى في قطاع الإنشاء؛ منها MAN

## توقعات بنمو سوق تأجير الطاقة بالسعودية مع حلول ٢٠٢١

على مدار العامين أو الثلاثة القادمة، إلا أنه من المتوقع تطوير البنية التحتية، خاصة في جوانب البنية التحتية العامة والمرافق، والرعاية الصحية، والتعليم نظراً لوفرة الاحتياطي النقدي بالمملكة. وقال أفيشرانت ماني، أحد كبار المحللين في قسم البحوث والاستشارات في 6Wresearch:

الكهرباء، وذلك وفقاً لـ 6Wresearch. وإذا كان اقتصاد العديد من الدول قد تأثر نتيجة هبوط سعر النفط في السوق الدولية، فإن ذلك لم يؤثر على المملكة بدرجة كبيرة تجعلها تفرض قيوداً على استثماراتها في المشروعات الإنشائية المتنوعة. وعلى الرغم من احتمالية تأثر نمو الاستثمارات

من المتوقع نمو سوق تأجير الطاقة بالمملكة العربية السعودية بمعدل نمو سنوي مرگب بنسبة 12,6 في المائة خلال الفترة من 2015 إلى 2021 نتيجة النمو في قطاع الإنشاء، وقطاع التصنيع الناشئ، وازدياد الحاجة إلى الكهرباء، والحاجة إلى توفير الطاقة في المناطق الخارجة عن نطاق شبكة

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تمت إضافة إمكانيات خاصة للحفار الآلي EW145B PRIME لتوافق أسواق الشرق الأوسط وأفريقيا

المقصورة إمكنانية رؤية شاملة، ويكون ضغط الهواء داخلها مضبوطاً ومفلتراً من خلال نظام آلي للتحكم في الطقس مزود بـ 13 فتحة تهوية. وتم أيضاً تزويد هذا الحفار بنظام سريع لتكيب الملحقات لتغيير الأدوات بسرعة. كما أنه يتميز بسهولة إجراء الصيانة من جانب الشركة.

نظام المسار المشترك لحقن الوقود، ونظام إعادة تدوير غاز العادم الداخلي (IEGR)، مما يقلل من الانبعاثات ومستوى الضوضاء. كما توفر العجلات المزدوجة، الثبات والقيادة السلسة، مما يجعل هذا الحفار مثالياً للاستخدام في المناطق الحضرية. ويستطيع الحفار التنقل بين مواقع العمل بسرعة 37 كم/ساعة مما يعني عدم الحاجة إلى وسيلة نقل إضافية، حسبما صرحت فولفو.

وبالإضافة إلى وحدات الحفر، فإن الأداء الفائق للمكونات الهيدروليكية للحفار EW145B PRIME يتضمن أحدث التقنيات، مما في ذلك نظام إعادة توليد الدفع، ونظام الأولوية التلقائية، وهما نظامان يتيحان للآلة تحقيق أفضل أداء في مختلف ظروف العمل. كما تعمل المكونات الهيدروليكية المتطورة كذلك على تقليل استهلاك الوقود أثناء التنقل، وتتضمن وضع العمل «البطيء» ووظيفة التحكم بالرحلة. وتم تزويد الحفار EW145B Prime بأوضاع معينة للمشغل، ووضع الجيل الخامس لتوفير الوقود للحصول على تشغيل اقتصادي عند تنفيذ مهام عمل بسيطة.

وتتميز مقصورة المشغل بأنها مريحة للغاية، كما تم تصميمها لتقليل شعور المشغل بالإجهاد، مع تزويدها بميزات مثل المقاعد متعددة خيارات الضبط، ومثبتات الوسادات الهيدروليكية التي تمتص الصدمات. كما توفر

## دول التعاون الخليجي تجذب استثمارات ضخمة في قطاع الإنشاءات

جاء في تقرير صادر عن dmg events، أن الاستثمار الضخم في مشروعات البنية التحتية في دول مجلس التعاون الخليجي يجذب بعض أكبر الشركات العالمية في قطاع الإنشاءات. وقال ناثن وو، مدير المحفظة الاستثمارية لشركة Middle East Concrete و PMV Live: «من المتوقع منح عقود إنشاء بقيمة 193 مليار دولار أمريكي في عام 2015 وحده. وكافة الشواهد تأخذنا إلى تحقيق هذا الرقم المتوقع أو تجاوزه». وذكر تقرير أصدرته BMI Research، أن قطر لديها أعلى معدل استثمار بقيمة 17,5 نقطة، ويتم حساب هذا المعدل عن طريق قسمة القيمة الإجمالية لدورة المشروعات الإنشائية على القيمة الإجمالية للصناعة الإنشائية. أما الإمارات العربية المتحدة فهي الدولة المرشح فوزها باستثمارات شركات الإنشاء العالمية خلال فترة الإعداد لمعرض إكسبو 2020. وفي هذه الأثناء، نجد أن شبكات الاتحاد للقطارات وقطارات الخليج تتصدر - وفقاً للتقارير - قائمة المشروعات. ومن المقرر أن



معرض بيج فايف سيقام في مركز دبي التجاري العالمي خلال الفترة من ٢٣ إلى ٢٦ نوفمبر/تشرين الثاني ٢٠١٥

## زيادة عقود إنشاءات الرعاية الصحية في مجلس التعاون الخليجي



حوالي 70 مشروعاً قيد التنفيذ لبناء مستشفيات عملاقة في منطقة مجلس التعاون الخليجي

وتقدر قيمة كل منها بما يزيد على 100 مليون دولار أمريكي، كما ذكر التقرير أن هناك 280 مشروعاً قيد الإنشاء لتشييد مستشفيات أصغر». وكان هذا التقرير قد صدر قبيل أكبر فعالية في مجال الإعمار بالشرق الأوسط وهي معرض بيغ فايف الذي سيقام في مركز التجارة العالمي بدبي خلال الفترة من 23 حتى 26 نوفمبر/تشرين الثاني 2015. ومن المتوقع حضور 85000 مشارك لهذا الحدث الذي سيكون به 30 عرضاً تقديمياً في عرض مباشر و 75 ندوة حرة يقدمها خبراء في مختلف المجالات. ومن المتوقع أن تعرض أكثر من 3000 شركة عارضة مجموعة من أكثر التقنيات تطوراً في العالم، وكيفية تطبيقها في أسواق دول مجلس التعاون الخليجي.

بنسبة سبعة في المائة، لتسجلاً بذلك أسرع معدل نمو، وذلك لسعي كلا البلدين إلى الاستثمار في مجال السياحة العلاجية، وهو مجال أخذ في النمو بالمنطقة ووفقاً للتقرير الذي أصدرته بيغ فايف، فإن دولة الإمارات العربية المتحدة تشيئ أكثر من 20 مستشفى لتقديم خدمات الرعاية للنصف مليون سائح علاجي المتوقع قدومهم بحلول عام 2020، مع هامش ربح يصل إلى 300 مليون دولار أمريكي بحلول عام 2016. كما أوضح التقرير في الوقت ذاته أنه من المتوقع أيضاً لكل من البحرين وعمان والكويت تسجيل ارتفاع ملحوظ في إكمال المشروعات في عام 2015. وقال هايمانز: «يوجد ما يقرب من 70 مشروعاً قيد التنفيذ لبناء مستشفيات عملاقة،

كشفت تقرير جديد أن قيمة عقود مشروعات إنشاءات الرعاية الصحية بمجلس التعاون الخليجي ستزداد 1,45 مليار دولار أمريكي في عام 2015. فوفقاً لتقرير حول مشروعات الشرق الأوسط Ventures Middle East Onsite، الذي تضمن نظرة مستقبلية حول سوق مشروعات إنشاءات الرعاية الصحية بمجلس التعاون الخليجي، نجد أنه قد تم منح عقود بنحو 5,9 مليار دولار أمريكي في عام 2014، ولكن من المتوقع أن يرتفع هذا الرقم ليصل إلى 7,3 مليار دولار أمريكي في عام 2015، وذلك نظراً للنمو السكاني، وارتفاع الناتج القومي للفرد، علاوة على زيادة معدل مأمول الحياة، مما أدى إلى ازدياد الطلب على خدمات الرعاية الصحية.

وقال جوسين هايمانز، مدير الفاعليات في dmg events و بيغ فايف: «إن أعداد السكان تتزايد في دول مجلس التعاون الخليجي، كما يرتفع أيضاً صافي الدخل ومُط الحياة للأفراد. وقد أظهر التقرير الأخير أن ارتفاع معدل المواليد، ومأمول الحياة يؤدي إلى زيادة الطلب على المستشفيات والمراكز الصحية وخدمات رعاية الأمومة والأطفال وكبار السن».

هذا ومن المقرر أن تظل خدمات الرعاية الصحية في المملكة العربية السعودية هي الأعلى قيمة في المنطقة، حيث تسجل معدل نمو سنوياً مركباً بنسبة 9,2 في المائة خلال الفترة من 2015 حتى 2020. كما ستشهد كل من الإمارات العربية المتحدة وقطر معدل نمو سنوياً مركباً

## فولفو تطرح الحفار الآلي في أسواق أفريقيا والشرق الأوسط

الطرق. ومع ذلك، فستتم إضافة إمكانات خاصة للحفار الآلي EW145B PRIME المزود بعجلات عند طرحه في الشرق الأوسط وأفريقيا. فقد تم تزويده بإمكانية التبريد في الأجواء الاستوائية التي تتيح لمحركات D6E سداسية الاسطوانات أن تعمل في أجواء عالية الحرارة تصل إلى 47 درجة مئوية. كما تم تطوير المحامل السفلية لهذا الطراز أيضاً وتزويدها بمحاور جديدة يمكنها تحمل أوزان معدات أكبر، وتوفير قدرات حفر أعلى. إذ أن المحرك ستظل لديه القدرة على توفير طاقة عالية وعزم شديد من خلال

طرحت فولفو الحفار الآلي EW145B PRIME في أسواق أفريقيا والشرق الأوسط. فبعد النجاح الذي تحقق عند طرح الحفار في الأسواق عام 2009، سيتم طرح هذه الآلة، ذات الفاعلية في استهلاك الوقود، في الشرق الأوسط وأفريقيا مع إضافة بعض الميزات إليها. وقد صرحت فولفو بأن وكيل معدات الإنشاء المعتمد من فولفو سيكون هو المسؤول عن بيع هذا الحفار. ويتميز هذا الحفار بكفاءته المعروفة من حيث استهلاك الوقود، وقدرته العالية على الحفر، وأدائه الذي لا يسبب إعاقة لحركة



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## زيادة فرص الاستثمار في الطاقة المتجددة في الشرق الأوسط وشمال أفريقيا

مع شريكين من الزويج هما Statoil و Statkraft. كما أنها تمتلك حصة بنسبة 20 في المائة في مصفوفة حقول طاقة الرياح البحرية بلندن التي تنتج طاقة بقدرة 600 ميغاواط، وهو أكبر حقل لطاقة الرياح البحرية في العالم. وقال بالهول: «تستهدف استراتيجيتنا، على مدار السنوات الخمس المقبلة، منطقة الشرق الأوسط وشمال أفريقيا، بالإضافة إلى استثمارات محددة في الأسواق الناشئة» مضيفاً بأن الإمارات العربية المتحدة لها الأولوية في ذلك.

وقال الرئيس التنفيذي: «إذا نظرنا إلى مدى التطور في قطاعات الطاقة المتجددة نجد أن الأسعار تكتسب تنافسية بمعدلات متزايدة. فعلى سبيل المثال، نجد أن الخلايا الشمسية لديها قدرة تنافسية للغاز حتى في دولة الإمارات العربية المتحدة التي تعتمد على إنتاجها المحلي من الغاز». وقال إن دولة المغرب أيضاً تجذب الانتباه والاستثمارات إليها جذبا شديدا. فقد وضعت الحكومة المغربية هدفا لها وتتابع التقدم نحوه بمنهج نظامي، فلديها سوقٌ ناضجة للغاية، ولديها قدرة تنافسية كبيرة. ونحن نراقبها عن كثب». مضيفاً بأن مصدر قدمت عطاءً لمشايخ في المغرب.

وقد لاحظنا في العامين المنصرمين اهتماماً ملحوظاً بالطاقة المتجددة من جانب العديد من الحكومات. كما شهدت سياسات العديد من الدول تغيرات لجذب الاستثمارات إليها».

وكانت شركة مصدر، المملوكة لصندوق الاستثمار الائتماني «مبادلة»، قد تأسست بإمارة أبو ظبي بتعهد استثمار 15 مليار دولار أمريكي في الطاقة المتجددة. وقال بالهول إن شركة مصدر استثمرت ما يزيد على نصف مليار دولار في مشاريع الطاقة المتجددة محفظة قيمتها تعادل 4,5 جيجاواط من الطاقة المتجددة، وهو ما يعادل تقريبا أربعة مفاعلات نووية، وذلك من خلال ذراع الاستثمار الخاصة التي تدير صندوقين استثماريين اثنيانين. وأضاف بأن مصدر كانت تتطلع إلى إنشاء صندوق استثماري ائتماني ثالث. وتتضمن الاستثمارات سندات بنسبة 35 في المائة في حقل Dudgeon لطاقة الرياح البحرية الواقع في بريطانيا، بالتعاون

قال رئيس شركة مصدر الإماراتية للطاقة المتجددة إن سياسات الدول تتغير بمعدل يفوق التغيرات المناخية، وذلك نظرا لسعي هذه الدول إلى تنويع مصادر الطاقة، مما أدى إلى توفير فرص استثمار جديدة في مجال مصادر الطاقة المتجددة في منطقة الشرق الأوسط وشمال أفريقيا.

وقال الدكتور أحمد بالهول، الرئيس التنفيذي لشركة مصدر، إن تزايد قيام دول المنطقة بوضع أهداف بخصوص الطاقة المتجددة، في سياق تنويع مصادر الطاقة لديها لتلبية احتياجاتها المتنامية، كان حافزاً تشجيعياً للاستثمار في الطاقة الشمسية وطاقة الرياح. وأضاف بالهول: «منذ سنوات قليلة، عندما وضعت أبوظبي هدف الاعتماد على الطاقة المتجددة بنسبة سبعة في المائة بحلول عام 2020، لم تكن لدى أي من دول المنطقة أهدافٌ بخصوص ذلك. أما اليوم، فقد بدأت الأردن والمغرب في وضع أهداف لهما بشأن الاعتماد على الطاقة المتجددة.

# المحتويات

## القسم العربي



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### تحليلات:

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التصميم والإخراج الفني: محمد مسلم التجار، alnajjar722@gmail.com

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