

MEE Dubai Daily

Integrating renewable energy sources key focus of MEE 2020

ntegrating the rapidly increasing growth of renewable energy into the region's electricity sector formed a central point of discussion on the second day of Middle East Energy (MEE) 2020, which is being held from 3-5 March in Dubai World Trade Centre (DWTC).

Meeting power demand during the energy transition towards new and cleaner sources of power generation is the central theme of MEE in its 45th year, and the challenges of integrating increasing capacities of clean energy into networks formed a hot topic of debate for the plenary session on 4 March.

While the Mena region's push for renewable energy is still in a nascent stage, with about 7GW of installed wind and solar capacity in 2018, the move towards energy diversification into cleaner resources will have a major impact on grids in the coming years, with almost every country in the region having set a renewable energy target of some sort.

CAPACITY GROWTH

Speaking during at an Intersolar session on 4 March, Taher Diab, senior director strategy & planning, Dubai Supreme Council of Energy (DCSE) revealed that Dubai was on target to exceed the 7 per cent renewable target for 2020.

"We will achieve 10 per cent this year," he announced, adding that the emirate is on track to hit its target of 5,000MW of installed solar capacity by 2030.

In the next couple of months, about 300MW of additional solar PV capacity will be brought online in Dubai, taking its total installed solar capacity to more than 1,000MW. Speaking later, Turki al-Shehri, CEO for Engie in Saudi Arabia, said that some 7 per cent of global PV solar capacity additions between now and 2030 could be installed in Saudi Arabia, with the kingdom planning to develop 58.7GW of renewable energy in this period.

FALLING COST

In addition to targets for reducing carbon emissions, the rapidly falling costs of developing renewable energy is driving such substantial clean energy programmes.

Presenting during the 'Effective Renewables Integration' plenary session, Reem Korban, associate professional, Irena, revealed that since 2010 the cost of delivering photovoltaic (PV) solar projects had fallen 77 per cent, with the price of developing wind energy projects during this



if the 2050 Paris Climate agreement targets are met, then 60 per cent of the world's installed power could be variable renewable energy (VRE) sources.

EFFECTIVE RENEWABLES INTEGRATION

"One of the biggest innovation challenges today is integrating high shares of PV solar and wind at a low cost into power systems."

Korban told delegates that increasing flexibility of the grid and developing cost efficient energy storage capabilities would form key challenges in the transition from traditional power generation resources to renewable energy sources.

Brendan Cronin, head of Middle East for Afry, said that thermal power resources will need to become more flexible to cope with the variations in renewable generation, with both wind and solar resources exhibiting large variations during the day.

"Effective system integration is the key challenge to the deployment of renewable generation in the coming five to 10 years," he told the conference. "Operating systems will become much more challenging."

REGULATORY CHALLENGE

One thing that speakers were unanimous in their agreement about was that the successful development of renewable energy across the region would require significant regulatory change.

It is vital that regulation keeps apace with the developments of technology to allow the region to benefit from the improvements in efficiency and reduction in carbon emissions that digitalisation of networks can bring, Talal Eskandar, senior director for the Menat region for GE Digital Grid, told the conference.

"Change is happening fast [for the region's electricity grids], with renewables penetration, for example, having a direct impact on the way networks are operated," said Eskandar.

"The impact needs to be analysed and taken into the account to improve the operation and prevent corruption of the networks – developments are moving fast, but the thing that is not moving as fast is regulation."





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Q&A: Franco Atassi

Head of Smart Infrastructure for Siemens in the Middle East

WHAT IMPACT ARE DIGITAL TECHNOLOGIES HAVING ON THE SUPPLY OF ELECTRICITY? WHAT ADVANTAGES CAN THEY BRING TO THE REGION'S GRIDS?

Our energy systems are becoming increasingly complex. Decentralized, renewable energy is adding volatility. Future grids will be distributed, digital and highly decarbonized, and the rise of prosumers and grid-edge users like electric vehicles means bidirectional power flow will become the norm. Digitalization is the key to managing these complex energy systems, and the data they generate.

A digitalised grid will allow for more efficient management and greater stability, paving the way for predictive maintenance and better, more efficient use of assets. An increase in connectivity will also create opportunities for new demand response systems and grid balancing services, providing a platform for utilities and operators to create new business models.

When we use digital technologies to determine, for example, energy resources and their likely future output, the condition of the grid and demand use, we will be able to optimize energy flow, improve utilization, reduce demand for power and enhance flexibility. Ultimately the way we capture, analyze and use data will underpin our future energy systems.



WHAT ROLE WILL DIGITAL TECHNOLOGIES PLAY IN INTEGRATING INTERMITTENT AND DECENTRALIZED RENEWABLE POWER GENERATION INTO THE REGION'S GRIDS?

Integrating renewables into the Middle East's grids is a challenge which can only be effectively met with digital technologies. The volatile, decentralized nature of renewables means that the network's data becomes more complex to exchange and manage, often creating challenges that are outside the conventional sphere of influence for utilities.

At Siemens we are merging the physical and virtual worlds to meet these challenges. Virtual power plants will help to intelligently incorporate and balance connections to microgrids, integrating renewable energy and storage. Digital substations can manage multidirectional power flows, ensuring the grid is reliable. Self-optimizing grids can combine automation and decentralized applications to monitor and remotely control the network, and we've even proved the potential to use algorithms for self-healing.

As renewables become more prevalent, grid operators will also need to consider how they integrate incoming data into a comprehensive software modeling system, if they are to ensure reliability and robustness. At Siemens we have worked with customers to build a 'Digital Twin' of a grid, which enables utilities to simplify this data exchange process.

By building a digital twin of a grid, operators can model data to simulate planning, operation and maintenance in the virtual world, leading to a reliable, efficient and secure electrical system.

WHAT ROLE WILL DIGITAL SOLUTIONS AND AI PLAY IN FUTURE BUILDINGS IN THE REGION? ARE YOU SEEING AN UPTAKE IN DEMAND FOR THESE IN BUILDING DESIGN AND BUILDING MANAGEMENT SYSTEMS?

We only have to look at the global rate of

urbanization to understand how important digitalisation is to buildings. Projections suggest that by 2050, 70 percent of the world's population will be living in urban areas. We already spend 90 percent of our lives in buildings and globally they are responsible for 40 percent of energy use. It's therefore imperative that we use digital technologies to make our infrastructure smarter, ensuring it plays an active rather than passive role in empowering people and business, and reducing environmental impact.

Our work with Expo 2020 Dubai to develop a blueprint for smart cities is a great example of where digitalization can take us in the context of a city. Using a cloud-based operating system like MindSphere enables us to collect and analyze the data from hundreds of thousands of data points across a city, using it to make intelligent decisions about energy and water use, for example. If connected with external data sources such as weather stations, we also have the potential to use AI and Machine Learning to predict how a city will react in certain conditions, and take action accordingly.

From a grid perspective, these types of technologies – from building management systems to the cloud – will also help us to manage the demand side and integrate infrastructure into a city's energy ecosystem, making it more efficient, safe and robust.

India aims to strengthen energy ties with Middle East

WHAT DO YOU EXPECT TO BE THE KEY TRENDS IN THE POWER SECTOR IN 2020?

The electrical industry will continue to grow in the coming years backed by proper industrial and sector-specific policies which will not only bring in investments in this sector but also transform it with latest technology and products. Digital and power electronic- supported technologies will prove to be a game changer for the energy management and power sector in India. It will help the consumer take centre stage. The smarter, more decentralised, and yet more connected power system will help in achieving objectives like security, environmental sustainability, better asset utilisation and open new frontiers for businesses.

HOW IMPORTANT IS THE MIDDLE EAST IN GENERAL AND THE GCC REGION IN

PARTICULAR TO THE INDIAN ELECTRICAL INDUSTRY?

Economically, India and the Gulf are more connected today than ever before. The UAE and Saudi Arabia are India's third and fourth-largest trading partners respectively, and the total bilateral trade of the GCC countries with India for the year 2018-19 stood at \$121.34 billion. UAE also features in the top 10 sources of FDI inflows into India.

HOW MUCH ARE INDIAN COMPANIES INVESTING IN RESEARCH AND DEVELOPMENT?

Investments in research and development (R&D) is essential for economic growth of a country. Investment in R&D in India has risen steadily in recent years, however it is still only a fraction of India's GDP, about 0.6 to 0.7 per cent. This is below the expenditure of countries like the US (2.8 per cent), China (2.1 per cent), Israel (4.3 per cent) and South Korea (4.2 per cent). India needs to double its efforts to improve its ranking in the science and research ecosystem by increasing the national expenditure on R&D. The growth in R&D expenditure should rise in line with GDP growth, and should reach at least two percent of GDP by 2022.

WHAT IMPACT IS THE ENERGY TRANSITION TOWARDS RENEWABLE ENERGY AND LOWER CARBON EMISSIONS HAVING ON THE POWER INDUSTRY IN INDIA?

The global energy transformation is happening, driven by the dual imperatives of limiting climate change and fostering sustainable growth. An unprecedented decline in renewable energy costs, new opportunities in energy efficiency, digitalisation, smart technologies and electrification solutions are some of the key drivers behind this trend.

In the last few years the energy sector has started changing in promising ways. Renewable energy technologies are dominating the global market for new power generation, the electrification of vehicles is showing early signs of disruptive acceleration, and key enabling technologies such as batteries are experiencing rapid reductions in costs

Despite these positive developments, deployment of renewable solutions in energy-consuming sectors, particularly buildings and industry, is still far below the levels needed and progress in improving levels of energy efficiency is lagging behind where it should be.

Investment in infrastructure needs to be focused on low-carbon, sustainable and long-term solutions that embrace electrification and decentralisation.



MEE Day 2 Highlights









dal Eskandar, Senior Director (MENAT), GE Digital Grid med Fateen, Power Systems VP Gulf, Power Systems Division, Schneider Elect II de Sousa, Principal, Industry & Value Advisor – Energy & Natural Resources, SAP

e challenge of integrating new technologies with legacy enterprise systems ris Blakeman, Senior Implementation Engineer, Enerlyth



ANNANN



Prospects for the Gulf's water sector in 2020

By Bob Bryniak



here is no doubt about it that 2019 was a stellar year for the water industry throughout the GCC. Led by a surge of activity in Saudi Arabia, both engineering, procurement and construction (EPC) contractors and developers were kept busy chasing a number of independent water producer (IWP) and sewage treatment projects (ISTP), as well as design build operate (DBO) and EPC contracts throughout the Region.

A total of nearly 6.2 million cubic metres a day (m3/d) of desalinated water capacity was either tendered or awarded in 2019. This compares to only 250,000 m3/d for sewage treatment plants. Most projects are structured as public-private partnerships (PPP), either as build-ownoperate (BOO) or build-own-operatetransfer (BOOT). Water desalination plants tend to be structured as BOO while sewage treatment plants are BOOT. This trend is expected to continue throughout 2020, though there are likely to be a few EPC and DBO type projects to be announced as well.

Saudi Arabia issued tenders or awarded nearly half of these plants for a total capacity of about 2.9 million m3/d. This is equivalent to nearly double Oman's entire roster of seawater desalination plants. The massive pipeline of desalination plants is intended to not only meet the growing demand for potable water in the kingdom, but also to permanently replace ground sources of water supply which have been severely depleted over the years, and to offset the water supply from older plants being decommissioned.

Very little action took place in Kuwait, though a number of new projects are

planned for 2020 and beyond. Whether these will materialise or not remains to be seen, as the country stalled progress on the PPP front in 2019 with the cancellation of advisory services for Al Zour North 2 & 3 and Al-Khiran IWPPs in October. The country's commitment to these projects is questionable. It was also fairly quiet in Bahrain, though there are plans for a new ISTP in the Southwest area, though plant capacity and overall structure have yet to be confirmed.

Oman had a few IWPs tendered in 2019 and issued an Expression of Interest for Wadi Dayqah, a surface water treatment plant, though tender documents have yet to be issued. These are expected in early 2020. Qatar was also active with 2 desalination plants as part of larger IWPPs, along with an ISTP. Dubai finally entered the PPP foray with Hassyan, its first attempt at an IWP. The contractual structure of the 545,000 m3/d desalination plant mirrors the Abu Dhabi PPP model, with DEWA taking a 60 per cent ownership of the project. And after much consternation and deliberation, the Taweelah IWP finally reached financial close.

WHAT'S IN STORE FOR 2020?

Another active year is expected with Saudi Arabia continuing to lead the charge, as it launches new plants in both water and waste water. Although new plants are also planned for Oman, Bahrain and Kuwait, their numbers dwindle in comparison to what is planned for Saudi Arabia. In addition to somewhat smaller capacity plants being tendered by the mega projects such as NEOM and the Red Sea Development, expect Saudi Water Partnership Company (SWPC) to announce new PPP initiatives for major water transmission pipelines, strategic reservoirs and smaller ISTPs throughout the Kingdom. At least 11 new water desalination projects are planned by SWPC, along with another 11 major sewage treatment plants. At least another 150 small STPs are also planned across the Kingdom over the next few years. Add another 10+ strategic reservoirs and at least 8 water transmission pipelines to the mix, and we have a massive pipeline of projects planned in Saudi Arabia.

One of the challenges facing SWPC, and other procurers throughout the region, is whether the private sector can absorb the flood of new projects over the next 5 years, especially those structured as PPPs where access to project financing is critical in achieving success. On the positive side, interest rates remain low and there appears to be sufficient liquidity in the market to finance these projects. Financial markets witnessed 3 interest rate cuts by the US Federal Reserve last year, the first time interest rates were lowered since the financial crisis back in 2008, and, if Trump has his way, rates are likely to remain low for some time. This bodes well for developers seeking financing at attractive rates.

Manufacturers and suppliers also appear to have sufficient spare capacity to meet major equipment and consumable demands, including the supply of membranes and chemicals. However, the challenge, for developers and particularly major EPC contractors, will be whether they can take on these projects without facing serious cost increases. As more and more projects enter the construction phase, there is likely to be greater pressure for both specialised labour and material prices to rise.

There is also evidence to suggest that developers are now fine tuning their bids and targeting which projects to go after. Back in 2018, it was not unusual to see 5-to-8 bids submitted per project. In other words, there were 4 or 7 losers for each project – which all would have spent serious sums of money on working on a proposal – especially for projects with large capacities and other unique features such as early water requirements or fast track delivery schedules. More recent projects in both Saudi Arabia and Oman are experiencing fewer bidders. For instance, there were only 2 bidders for Barka 5 IWP (GS Inima and Veolia) in Oman and 4 bidders for Taif ISTP in Saudi Arabia, even though a much higher number of developers had been qualified to bid.

It is too early to tell whether this will result in cost pressures and higher tariffs, though 2019 saw records being shattered with each new IWP and ISTP, especially in Saudi Arabia and UAE. There is still room to improve energy efficiency in water project, and with interest rates at low levels, we could still see lower tariffs submitted in 2020, especially when procurers allow developers to include renewables as part of their bids. As a result, we can expect to see lower tariffs at the start of 2020, but don't be surprised to see them starting to edge up as the year closes.

Country	Project	Client	Structure	Capacity – m3/d
Saudi Arabia	Yanbu 4	SWPC	IWP	450,000
	Jubail 3a	SWPC	IWP	600,000
	Taif	SWPC	ISTP	100,000
	Jubail 3b	SWPC	IWP	570,000
	Floating Desal Stations	SWCC	EPC	150,000
	Shuaiba 5	SWCC	EPC	600,000
	Shuqaiq 4	SWCC	EPC	400,000
	Tanajib	Aramco	EPC	24,000
Qatar	Facility D Expansion	Kahramaa	IWPP	280,000
	Wakra & Al Wukair	Ashghal	ISTP	150,000
	Facility E	Kahramaa	IWPP	455,000
Bahrain	SouthWest	TBA	STP	ТВА
UAE	Umm Al Quwain	FEWA	IWP	682,000
	Taweelah	EWEC	IWP	909,000
	Hassyan	DEWA	IWP	545,000
Kuwait	NA			
Oman	Ghubrah 3	OPWP	IWP	300,000
	Wadi Dayqah	OPWP	IWP	125,000
	Barka 5 IWP	OPWP	IWP	100,000
	Total Desalination Water Capacity (m3/d):			6,190,000

EWEC – Emirates Water and Electricity Authority

DEWA – Dubai Electricity and Water Authority

FEWA – Federal Electricity and Water Authority

OPWP – Oman Power and Water Procurement Company

SWPC – Saudi Water Partnership Company, formally the Water and Electricity Company

SWCC – Saline Water Conversion Company

TBA – to be announced

NA – None Available

Riyadh Cables secures approval for 400 kV EHV cable system

lobal leading cable manufacturer Riyadh Cables has recently opened power transmission and distribution market opportunities, by investing in new production and testing facilities for Extra High Voltage cable systems.

Riyadh Cables recently signed a

technology know-how transfer agreement with Brugg Cables, to start producing two new 400 kV EHV cable systems, conforming with specifications set by Riyadh Cables' client Saudi Electricity Company.

KEMA Laboratories in the Netherlands completed the System and PQ tests as per IEC 62067 standard for power cables with extruded insulation and their accessories for

HIGH VOLTAGE, INC.

rated voltages above 150 kV and up to 500 kV. Initial systems tests finished at the end of 2018, while the PQ tests finished at the end of 2019. Final approval for the system from Saudi Electricity Company finalised February 2020.

The two 400kV systems included two joints, one directly buried and the other installed in a tunnel; two SF6 terminations, one plugin dry type, and the other a wet type; and two outdoor terminations. All of the accessories were nearly identical for both systems.

The two cables, installed in series, were both 2500 mm2 however the cable construction varied with different sized insulation thickness, metallic screening and outer sheathing.

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Our initiatives for 2020

- Recyclable lanyards
- Limiting on-site waste by reducing the number of paper forms, plastic bottles and exhibitor packs
- $\cdot\,$ Using show-ready stands for features

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Economical



Environmental



Social

Renewable energy costs to drop more than 60 per cent by 2050

This excerpt is from DNV Energy Transition Outlook, 2019

he main enabler for rapid solar PV growth will be its continued plunging costs, set to drop to less than 60% of today's levels by mid-century. Compared with nuclear, hydropower and wind, solar PV installations also tend to attract less opposition from environmentalists. Once adjusted for capacity factors, installed capacity will be some 12 TW by 2050, generating 33% or 19 PWh, of the world's electricity. Variability will complicate but ultimately not hinder solar PV's deployment, owing to a host of flexibility options, notably cheap and efficient battery storage, increased connectivity and demand-side response.

However, solar will receive the lowest market price of all generation technologies



owing to its variability, and that price squeeze will intensify as the share of solar grows and it starts to compete with itself. That, combined with storage costs, explains why gas retains a considerable share of power generation through the 2040s. By 2050, Greater China will have a 40% share of global installed PV capacity, followed by the Indian Subcontinent at 17%. We forecast electricity generation from wind to increase from 1.1 PWh/yr in 2017 to 17 PWh in 2050, delivering 29% of the world's electricity, with Greater China, North America, Europe and Indian Subcontinent providing the largest output. We foresee onshore wind to be more cautiously supported in some developed countries, while offshore wind will receive strengthened support in countries with limited land areas. Thus, the global share of offshore in total wind electricity generation will increase steadily from 4.5% in 2017 to 40% of global wind in 2050, with 1.5 TW installed.

At present, the capacity factor of all onshore wind turbines in the world is 21%. With continued increase in turbine, blade and tower size, we expect this to increase to 34% by 2050, making total installations 3.4 TW. For offshore wind turbines, the average capacity factor is already at 29% due to more favourable wind conditions offshore. We expect this to rise to 51% because of the factors listed above and the introduction of commercially-viable floating offshore wind.

Middle East & North Africa smart grid investments to reach us\$ 17.6 bn by 2027, says Informa Markets report

'Growth of renewables regionwide will have immense impact on smart grid market' – industry expert

mart grid investment in the Middle East and North Africa (MENA) is on track to reach US \$17.6 billion over the next seven years, according to the Energy & Utilities Market Outlook Report 2020, a surge driven by greater attention to renewable energy sources across the region.

The growth forecast emerged from the report by Informa Markets, organiser of Middle East Energy, global energy event which returned for 45th edition at Dubai World Trade Centre (DWTC) from 3-5 March, which will showcase the latest technologies and solutions for integrating renewable energy into the region's electricity grids.

"Almost all MENA countries are establishing or planning renewable projects, including solar and wind," explained Claudia Konieczna, Exhibition Director, Middle East Energy. "The steep decline in the cost of photovoltaic solar has prompted regional utilities to progress some of the world's largest solar projects and analysts believe that by 2025, solar will amount to 37% of the region's clean energy output.

"The impact for the smart grid market is immense as utilisation of renewable energy cannot be efficiently progressed through conventional grid systems which are now rapidly becoming outdated." The trend towards renewables as the region's preferred energy sources will force a major MENA rethink on grid infrastructures, according to a UK energy services expert. Doug Waters, Director of Energy Services - Global, Uniper Energy Services says MENA grid transformation is integral to optimising renewable utilisation.

"As renewable penetration increases and is more decentralised and embedded, including new technologies and demands like electric vehicles, then the grid must adapt. Issues such as identifying demand and generation real time - even when deeply embedded - managing inertia, voltage control and other services will require the use of new grid technology and digitalization," explained Waters.

Waters addressed Middle East Energy's Renewables Conference on March 4 on the integration into the grid of significant renewables, the implications for fossil assets in energy transition and how digital technology can assist the process.

"As renewable penetration increases, the existing asset base, which is mostly gas fired in MENA, will move from baseload operation to running more flexibly. This means reducing minimum load but then moving to increased starts, increasing ramp rates and increasing provision of ancillary services," Waters explained. "This requires changes in both the market and on-site strategies to manage the new operating regime and the risks and opportunities available."

Renewable energy has formed the central focus at MEE, formerly known as Middle

East Electricity, as one of five dedicated product sectors, including Power Generation, Transmission & Distribution, Digitalisation & Energy Consumption & Management. More than 1,200 exhibitors from over 130 countries are due at the show which is expected to attract up to 48,000 attendees.



Installed global PV solar capacity could reach 5,500GW by 2040



The global total installed solar photovoltaic (PV) power capacity could reach about 5,500GW by 2040, Markus Hoehner, CEO, International Battery & Energy Storage Alliance told the Intersolar conference in Dubai on 4 March.

Worldwide, solar PV capacity has tripled over the past five years, rising from 224GW in 2015 to reach 620GW in 2019 on the back of falling technology prices. By 2040, it is predicated that solar PV will account for about 19% of the global energy mix, compared with about 2% today. Hoehner said this rapid uptake of solar

PV will drive demand for short-term storage capacity and seasonal storage solutions. As energy systems shift away from controllable power plants to fluctuating energy sources, there will be surplus energy generated around noon, and an excess of demand at night. Hoehner noted that the cost of

residential solar PV with storage is already financially competitive for the heaviest electricity consumers in Dubai, based on current tariffs.

Intersolar is being held as part of the Middle East Energy 2020 conference, which runs from 3-5 March at Dubai World Trade Centre.

More needs to be done to meet Paris climate target

The world could exhaust its carbon budget as early as 2028, Mohammed Atif, Area Manager Energy Middle East & Africa, DNV GL told the Middle East Energy (MEE) conference 2020 on 3 March.

Atif shared the highlights of DNV's latest World Energy Outlook, which concludes that the energy transition is affordable, but much more needs to be done if global warming is to be limited to 1.5 degrees Celsius.

On the current trajectory, the world will see 2.5 degrees of warming by 2050, which will have dire consequences for ecosystems and our lifestyles.

According to DNV, world energy will peak in 2033. Atif said between now and 2025 global oil demand will flatten as a result of the electrification of transport and an increasing focus on energy efficiency.

While global population and GDP will continue to expand in the future, there will be a decoupling of GDP growth and energy usage.

By 2032, half of all new passenger car sales are expected to be electric. Between 2019 and 2050, two thirds of new power generation capacity additions will be wind and solar, and by 2050, 44 per cent of the world's primary energy will come from non-fossil fuels.

At present, 3.9 per cent of global GDP is spent on energy, but by 2050 it is

estimated this will fall to 1.9 per cent. Atif said this proves that the energy transition is affordable.

However, the projected reduction in fossil fuel emissions under the plans that currently exist will not be sufficient to meet the targets of the Paris Agreement. Atif told the conference that carbon capture and storage must be part of the solution along with renewables and energy efficiency, and he added that carbon tax might also have a role to play.

Regulatory reforms required to facilitate technology advances in utilities sector

Regulators and utilities need to ensure that regulation keeps apace with the developments of technology to allow the region to benefit from the improvements in efficiency and reduction in carbon emissions that digitalisation of networks can bring, delegates were told at MEE 2020 on 4 March.

"Change is happening fast [for the region's electricity grids], with renewables penetration, for example, having a direct impact on the way networks are operated," said Talal Eskandar, senior director for the Menat region for GE Digital Grid, said during a 'Power of Digital' plenary session at MEE.

"The impact needs to be analysed and taken into the account to improve the operation and prevent corruption of the networks – developments are moving fast, but the thing that is not moving as fast is regulation." The increasing importance of digitalisation and data capture to the operation of grids was also discussed during the plenary session.

Amer Arafat, technical manager, Dubai Carbon, referenced a project undertaken by Dubai in the Hatta area, which involved the installation of solar panels on 350 villas. "There is a number of energy

applications there that allow us to monitor the villas and at the same time where the problems are."

"With the right technology, you can monitor every single mechanical or technical aspect you are looking for – and the amount of data from this is enormous," said Arafat. "And this data can make you aware of problems or opportunities you weren't aware of to make improvements to your solar production and network."

Abu Dhabi makes progress with sustainable finance sector



Abu Dhabi Global Market (ADGM) is committed to becoming a hub for sustainable finance for the region, Mercedes Vela Monserrate, Associate Director International Affairs told the Middle East Energy (MEE) 2020 conference.

In order to create a supportive ecosystem for sustainable finance, ADGM published in January the UAE's first set of guiding principles on sustainable finance, which addresses taxonomy, disclosure and governance. January also saw the launch of the Abu Dhabi Sustainable Finance Declaration, which has now been signed by more than 35 public, private, local and international entities.

Monserrate told the conference that other initiatives that ADGM has recently help to launched include the Abu Dhabi Climate Initiative to fast-track research and development in water and climate technology, a green bond accelerator programme, and a sustainable real estate investment trust in conjunction with Masdar.



Regulatory reforms required to facilitate technology advances in utilities sector

he GCC power sector needs greater flexibility if it is to effectively integrate renewables into its electricity generation infrastructure, according to one of the world's leading energy market consultants. Brendan Cronin, Head of Management Consulting Middle East, AFRY says wind and solar PV are now the cheapest source of electricity due to falling module and turbine prices, strong competition and low capital costs.

"There have been further falls in PV module costs and a shift to bifacial technology which has driven solar PV tender prices well below \$20/MWh in tenders in Dubai, Abu Dhabi and Saudi Arabia," he explained. Cronin pointed to the GCC's wind resources being largely focused on Oman and Saudi Arabia and added: "load factors of 40% are possible in some areas which is pushing prices down to levels comparable to solar PV."

Though wind and solar renewables look attractive from a cost perspective, their integration will require considerable flexibility within the GCC's existing electricity system. Cronin points to the need for ancillary service provision, an ability to curtail solar output during period of low system inertia and integrated

generation and network planning. He added: "New forecasting and communication tools will need to be developed. Grid codes will need to be updated. We are also very excited by the potential for greater demand-side participation to be used to better integrate of renewables"

AFRY contends that system operation challenges will be the major challenge in the GCC's development and deployment of wind and solar PV resources and experience from other markets suggests this will take time to overcome.

"Renewable integration will require an extensive program of change ... it will be a continuous journey of improvement rather than a one-off event," said Cronin. "The program will need to be developed over the next 10 years."

Cronin joined Paul McCusker, Vice President-EMEA of global energy storage and services company Fluence and Rasheed Sulaiman, Digital & MYA Leader, GE Steam Power at the plenary session where the trio explored the challenges that wind and solar PV bring to the GCC's system operation and the role that energy storage can play, how best to evaluate alternative options to add power system flexibility and the necessary regulatory changes required.



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UAE firm begins testing solar concentrator

Dubai-based Wahaj Solar has begun testing a prototype next generation solar concentrator at Masdar City.

The company's managing director Dr Ayman Al Maaitah told the Intersolar conference in Dubai that the protype is a beam-down solar concentrator of 10 metres in diameter that can generate temperatures of around 1,000°C.

This heat energy can be stored in basalt rock for 24-hour off-grid power production, or it can be used for industrial heat applications such as smelting metal and producing solar fuels such as green hydrogen.



Cost of storage for solar PV to drop rapidly

Fadi Maalouf, CTO, Dii Desert Energy expects the price gap between solar PV and solar PV with storage to halve in the coming years.

Addressing the Intersolar conference in Dubai, Maalouf said the price gap would be "cut in half fairly quickly within a year or two." Currently, the cost of solar PV is about 1.5 \$cents a kilowatt hour, while the price for solar PV plus storage is about 5 \$cents a kilowatt hour.

Maalouf told the conference that lithium ion and sodium sulphur batteries remained the best storage solutions for now.

Dubai to reach 10 per cent clean energy production in 2020

Dubai will exceed its 2020 target for clean energy to account for 7 per cent of its energy mix, Taher Diab, Senior Director Strategy & Planning, Dubai Supreme Council of Energy revealed at Intersolar on 4 March. "We will achieve 10 per cent this year," he announced, adding that the emirate is on track to hit its target of 5,000MW of installed solar capacity by 2030.

In the next couple of months, about 300MW of additional solar PV capacity will be brought online in Dubai, taking its total installed solar capacity to more than 1,000MW.

Diab attributed Dubai's success in adopting sustainable energy to what he called the Dubai Formula. This begins with strong government support, he explained, "When they like an idea, they move fast." It includes engaging and building relationships with all stakeholders, both public and private, and aligning interests. "We look after the private sector and make



sure they are happy with the commercial terms," Diab said.

The speed of execution of Dubai's renewables projects has also been important, along with having cost effective utility tariffs in place. "This is how we were able to secure the IPP principle," he noted. Diab acknowledged that Dubai had benefited from companies wanting to gain a foothold in the region's solar sector and this had helped to attract the record-low bids. But he said it has also been a massive learning curve for everyone involved, and there was still a lot to learn about how the technology performs in the field in terms of dust and extreme heat exposure.

Regulatory reforms required to facilitate technology advances in utilities sector

Regulators and utilities need to ensure that regulation keeps apace with the developments of technology to allow the region to benefit from the improvements in efficiency and reduction in carbon emissions that digitalisation of networks can bring, delegates were told at MEE 2020 on 4 March.

"Change is happening fast [for the region's electricity grids], with renewables penetration, for example, having a direct impact on the way networks are operated," said Talal Eskandar, senior director for the Menat region for GE Digital Grid, said during a 'Power of Digital' plenary session at MEE. "The impact needs to be analysed and taken into the account to improve the operation and prevent corruption of the networks – developments are moving fast, but the thing that is not moving as fast is regulation."

The increasing importance of digitalisation and data capture to the operation of grids was also discussed during the plenary session.

Amer Arafat, technical manager, Dubai Carbon, referenced a project undertaken by Dubai in the Hatta area, which involved the installation of solar panels on 350 villas. "There is a number of energy

applications there that allow us to monitor the villas and at the same time where the problems are."

"With the right technology, you can monitor every single mechanical or technical aspect you are looking for – and the amount of data from this is enormous," said Arafat. "And this data can make you aware of problems or opportunities you weren't aware of to make improvements to your solar production and network."



In Conversation with Galvacoat



WHICH LOCATIONS DO YOU SEE THE MOST OPPORTUNITIES FOR YOUR BUSINESS IN 2020?

We are a company deeply rooted in UAE and we are seeking major expansion in 2020 to emerging markets such as Saudi Arabia, Kuwait, Bahrain, and Oman. Also, we are exploring partnerships with potential key players in the central and south african market.

WHICH PRODUCTS DO YOU SEE THE MOST OPPORTUNITY IN 2020 AND THE COMING YEARS?

The market demand keeps on evolving through new technologies and innovative industrial design.

There is a current demand for environmental products such as smart poles (multifunctional poles), solar poles, transmission, telecom towers, monopoles, heavy steel structures, high protective crash barriers/guard rails and corrosion protection coating.

WHAT IMPACT IS THE MOVE TOWARDS SUSTAINABILITY HAVING ON YOUR BUSINESS?

We are in business for more than 40 years and we have cemented our brand and market share through a robust sustainability plan. The company's plan is to serve generations, we keep on updating our technologies and training our team to learn on new technologies and processes on how to conduct their work in the most effective way.

HOW IMPORTANT IS R&D YOUR BUSINESS?

As a result of the R&D, we are developing smart poles (multifunctional) products to

meet different functions in a single-pole, which can reduce our client's cost per item. This is a new functional change that could not have been there without R&D.

WHAT IS GALVACOAT'S STRATEGY FOR STAYING AHEAD OF THE COMPETITION?

Galvacoat is working closely with the local and GCC authorities as well as contracting companies to comply with their needs in well-studied projects, cutting-edge design, and a tight budget.

Putting our client first and focusing on quality is the key to our success.





Interview with Infusion Power Industries

WHAT DO YOU EXPECT TO BE THE KEY THEMES/TRENDS IN THE POWER SECTOR IN 2020?

The upcoming challenge is scaling up to the world's demand of supercapacitor modules. Supercap modules are evolution of a battery from chemical batteries. The world has already moved progressively towards this technology and we feel this year it's going to be the biggest thing in energy storage market.

WHERE (GEOGRAPHIC LOCATION) DO YOU SEE THE MOST OPPORTUNITIES FOR YOUR BUSINESS IN 2020?

Our group of companies has presence on all world's continents: America, Australia, Europe, Asia and Africa. Some countries in the list include: UAE, Saudi Arabia, Pakistan, Italy, South Africa, Nigeria, New Zealand, Australia, Canada, US, Japan, Malaysia, Philippines, Bangladesh and Mexica.

With the growing energy storage market we see imminent opportunities in the USA, Australia, the EU, GCC and South Asia.

HOW IMPORTANT IS THE MIDDLE EAST TO YOUR BUSINESS AND PLANNING FOR 2020 AND THE YEARS AHEAD?

Middle East region is an important region for us as we are based in Dubai, UAE. In 2016 when more and more orders followed we scaled our production by opening the factory on 2 acres of land in Jabel Ali. That was followed by further 5 acres in Dubai Industrial City. Today we have combined 7 acres of manufacturing space in the UAE. In 2019 Waseem set up Infusion Solar



Energy Systems and Infusion Power along his Emirati partner Salem Makrani facilitating market expansion throughout GCC region.

In fact, there are myriads of advantages for our products to win this market. It's worth mentioning that our energy storage has extreme temperature resilience, so unlike chemical batteries, it easily handles hot desert climate in GCC.

HOW IMPORTANT IS R&D AND TECHNOLOGICAL DEVELOPMENT TO YOUR BUSINESS? WHAT AREAS ARE YOU FOCUSING ON CURRENTLY?

Waseem Qureshi is the owner of 119 companies and the holder of numerous patents. Amongst these patents are Sirius supercap-based energy storage and Centauri energy server which have taken the world by storm. In the UAE he is the founder of Amber and Waseem which has the largest R&D in power electronics in the region.

Waseem Qureshi devoted his research into power and electronics – the area where he succeeded most and still continues conquering the market with his new inventions. Never giving up with his experiments, in 2013 the inventor launched the world's first supercapacitor energy storage module, unrivalled in the industry.

Our company consistently makes a breakthrough by producing devices and solutions with a small physical and environmental footprint, perfect protection functions, strong compatibility and safety features that guarantee reliability. Recently a new entity "BGT Generators Trading" was formed to enable commercialization of our new product -Digital generator.

Experts in the market say: We are at least 10 years ahead of other supercapacitor based technologies.

WHAT IMPACT IS THE ENERGY TRANSITION TOWARDS RENEWABLE ENERGY/LOWER CARBON EMISSIONS HAVING ON YOUR BUSINESS? WHAT CHALLENGES/OPPORTUNITIES DOES IT BRING?

One of the company's slogan "Solving energy problems one watt at a time" truly reflects the philosophy and vision of the entire group and implies ambitious perspective into the future. This would not be possible without Waseem's solid scientific expertise that came throughout the years of research and development and his confidence in success of the patented products. In fact the company strategy stems from forward thinking enginnovator's own vision.

Sirius supercapacitor-based energy storage and Centauri energy server promise a new energy revolution. In fact, energy storage is a tipping point for a quick adoption of renewable energy. These products are truly a breakthrough in the world of energy storage and can change lives of millions of underprivileged people around the world with no access to electricity. These products have proven to significantly cut financial costs and carbon emissions, in addition they provide advanced power management system.

WHAT IS YOUR COMPANY'S STRATEGY FOR ACHIEVING SUCCESS AND STAYING AHEAD OF THE COMPETITION

The group aspires to lead the world with innovative technology and imperative sustainable energy storage solutions in the 21st century to make this world a better place.

Soon we will be expanding our assembly lines in South East Asia, and it's part of our strategy now, to enable the business to greatly enhance its production capacity. As a result we are expecting more businesses to realize cost savings and energy efficiencies based on our technology.

CEO's message: "Let's enginnovate!"

"I didn't just become an engineer for the sake of it, I followed a different track, from hobbyist to amateur professional...Green energy storage is the future and we are the only guys who provide green energy storage."





Stay up-to-date with the region's rapidly evolving energy sector



energy-utilities.com

Middle East will be primary focus in 2020

Kunal Banka, Managing Director, Sharda Merchandise Private Limited (SMPL) discusses the key markets in the Middle East and SMPL's strategy for 2020

HOW IMPORTANT IS THE MIDDLE EAST TO YOUR BUSINESS AND PLANNING FOR 2020 AND THE YEARS AHEAD?

We are innovators, manufacturers and exporters of tamper-resistant security seals. We are specialists in meter security seals for utilities (electric, water and gas) and oil tanker security seals. We foresee the most opportunities in the Middle East and North African (Mena) countries. Most of the countries in these regions are replacing old meters with new advanced metering infrastructure (AMI) prepaid smart meters, and every meter needs Tamper Resistant Meter Security Seals for physical security to prevent tampering and malpractice for energy theft. The Middle East, and especially Saudi Arabia, is our primary focus for the year 2020 and ahead.

WHICH PRODUCTS AND SERVICES ARE YOU SEEING THE MOST DEMAND FOR?

Though security seals are low-value products, they play a vital role to prevent theft and adulteration. We are professional manufacturers and research-based company, and we supply our customers with zero-defect products. This itself speaks volumes about our performance. Utility meter seals, oil tanker seals and container security seals have the largest opportunities besides plastic security seals in 2020 and beyond.

WHAT ROLE DOES RESEARCH AND DEVELOPMENT PLAY IN DEVELOPING PRODUCTS?

A focus on R&D and technological developments have been critical for our success over the last three decades. We have our own designs, and many of our security seals are patented. We insist and recommend to our customers to always use unique security seals so that duplicate and fake seals cannot be used for malpractice.

Our range of meter security seals are unique and are not available in the market. For example, many of the meter seals that are popular with many electric utilities are easily available in the market, and the counterfeiters have very easy access to make duplicate seals. This enables them to tamper with the meters and replace the seal with an identical fake seal very easily, and hence tampering remains undetected. This is one of the primary reasons why many of the customers believe that meter security seals do not work. However, if the right meter security seals are procured from the right manufacturers, it can prevent meter tampering and save substantial revenue losses.



WHAT IS YOUR COMPANY'S STRATEGY FOR ACHIEVING SUCCESS?

Our principle strategy is to provide the customer with quality and unique security seals at cost-effective prices. We suggest to our customers that they should not always opt for the L1 price as they end up procuring cheap and non-performing security seals. They should invest a little for quality which can save them millions of dollars by preventing revenue losses. Our most important strategy is to serve our customers with the right products.

WHAT ARE YOU SHOWCASING AT MEE 2020?

We are launching our newly developed Tamper Resistant RevGuard Meter Security Seal and Smaat Security Seal for Electric meters, water meters and Smart meters. RevGuard Security Seal has the following unique features to make the Smart Meter Smarter and provide the highest protection level. It is next to impossible to defeat this seal and thus save revenue losses.

Smaat Utility Meter Seal is a versatile security seal suitable for all utility meters. The Smaat seal is ideal for water meters as water meters require different lengths of wire and our seal is designed accordingly. The Smaat Security seal is provided with barcode and customers' ID and unique serial numbers on both parts (Seal housing and locking inserts). The seal can be used on other electrical, electronic, test and measuring equipment.





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