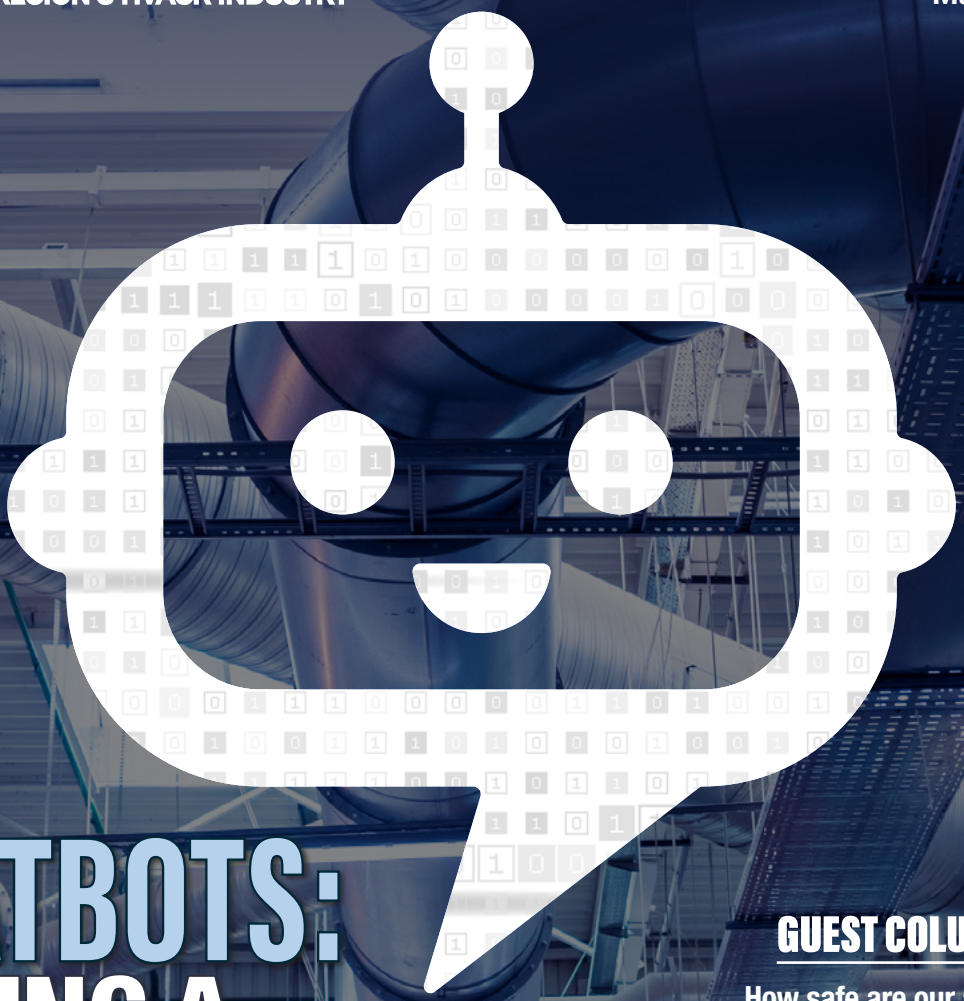
TABREED ANNOUNCES AN EBITDA OF AED 1.23 BN IN 2022

ARMSTRONG FLUID TECHNOLOGY WINS 'SMART PROJECT OF THE YEAR 2023 AWARD'

climate control MIDDLE EAST

KEY PERSPECTIVES ON THE REGION'S HVACR INDUSTRY

March 2023



PERSPECTIVE

District Cooling, CaaS or...?

Larbi Behloul, Head of Facilities Management, Dubai Developments

AI CHATBOTS: SCRIPTING A NEW NARRATIVE?

WHAT IS THE EXTENT OF INFLUENCE OF AI-GENERATED CONTENT ON THE HVACR INDUSTRY?

GUEST COLUMNS

How safe are our airports?
Dr Iyad Al-Attar, independent air filtration consultant

Unmanned District Cooling plants the way forward
Omnia Halawani, Co-Founder & Co-CEO, GRFN Global

EDITORIAL CAMPAIGN

COP28: Why the hullabaloo over the UAE hosting the event?
Dr Rajendra Shende, Former Director, UNEP

LICENCE TO CHILL

Cx in chilled water plants
Dan Mizesko, President, Dalkia US Chiller Services

Q&A

'Budgets are increasing, opening up government investments'
Stefan Leitl, Managing Director, BITZER Middle East

+ Airius launches new DeltaT line of controllers

Belimo releases new BACnet remote inspection modules

AESG achieves NCEC Government Certification

Danfoss highlights value of Excess Heat in whitepaper

CPI INDUSTRY

PUBLICATION LICENSED BY IMPZ

US$15

DUNLI FANS–
AIR MOVEMENT EXPERTS!

X-Pro Axial Fan with EC motor

Dunli series of X-Pro axial fans are developed for high-end HVAC unit applications. The range covers a variety of impeller diameters from 500mm, 630mm, 710mm, 800mm, and 910mm.

Dunli X-Pro Fans are reliable, easy installation and maintenance, and convenient to control. Dunli X-Pro axial fans are your ideal choice for HVAC and Refrigeration industry applications.

Dunli Fans(Middle East)
Mob:+971-58 271 6088
E-mail: dqsale98@dunli.com
www.dunlielectric.com

Dunli Fans (Factory)
Tel:+ 86-571 8630 2570
Fax:+86-571 8630 0200
E-mail: fan@dunli.com

DUNLI GROUP

contents

VOL. 18 NO. 3 ◆ MARCH 2023

PAGE 22

COVER STORY

AI chatbots: Scripting a new narrative?

What is the extent of influence of AI-generated content on the HVACR industry?

Surendar Balakrishnan
Editor
@BSurendar_HVACR

The context of COP28

In this year of COP28, scheduled to take place in the last quarter, in the UAE, it is but only natural that we focus abundantly on the recent iterative history, personalities and the sub-events planned in the lead-up to the mega-event.

This intense focus is essential for understanding the expected direction, context, front-channelling and back-channelling efforts, the tone of the discussions and the desired mini-outcomes towards the grand goal of limiting the further heating of the Earth's surface. The understanding, in itself, is important for the necessary course-correction we need to take as an industry.

To receive an intimate view of the event, we at *Climate Control Middle East* reached out to Dr Rajendra Shende, the Former Director of the United Nations Environment Programme (UNEP), to request him to write a year-long guest column. Dr Shende, a chemical engineer, is eminently qualified to present a macro-view as well as a granular view of the mega-event, given the profound nature of his participation in discussions in past COPs. In addition to his tenure with UNEP, he served as the Coordinating Lead Author for the Intergovernmental Panel on Climate Change (IPCC)/Technology and Economic Assessment Panel (TEAP) special report on Safeguarding the Ozone layer and Global Climate System, in 2005; the work of the IPCC/TEAP, along with significant contributions by many scientists, won the Nobel Peace Prize in 2007. Additionally, Dr Shende is Founder-Director of the Green TERRE Foundation; Prime Mover of the Smart Campus Cloud Network (SCCN); and Chairman of the International Advisory Board, Operation Earth, China.

As manufacturers, suppliers, consultants, contractors, developers, policy-makers, regulators, testing & commissioning professionals, Operation & Maintenance professionals and Facility Management companies, it would perhaps help to follow the narrative and internalise the global drive to curb greenhouse gas emissions. Doing so just might help give a better expression as stakeholders with the capacity to contribute effectively and substantially to the global effort towards lowering emissions. Now is the time, if ever.

climate control MIDDLE EAST
KEY PERSPECTIVES ON THE REGION'S HVACR INDUSTRY

Climate Control Middle East magazine proudly supports the UAE President's initiative of declaring 2023 as the 'Year of Sustainability'

Co-Founder & Editorial Director
Surendar Balakrishnan
surendar@cpi-industry.com

Co-Founder & Commercial Director
Frédéric Paillé
fred@cpi-industry.com

Editor
Surendar Balakrishnan
surendar@cpi-industry.com

Features Writer
Indu Revikumar
indu@cpi-industry.com

Online Writer
Ranjana Maria Konatt
ranjana@cpi-industry.com

Advertising Enquiries
Frédéric Paillé
+971 50 7147204
fred@cpi-industry.com

Sayf Camran
Advertising Manager (Europe)
sayf@cpi-industry.com

Judy Wang
Our representative in Asia (except India)
+852 307 80 826
judywang2000@vip.126.com

Deep Karani
Our representative in North America
+1 365 885-6849
deep.karani@cpimediagroup.com

Design
Analou Balbero
analou@cpi-industry.com

Webmaster
Chris Lopez
chris@cpi-industry.com

Database/Subscriptions Manager
Purwanti Srirejeki
purwanti@cpi-industry.com

Founder, CPI Media Group
Dominic De Sousa (1959-2015)

EMPANELLED COLUMNISTS

Dr Iyad Al-Attar
Independent air filtration consultant, writes on specific science and technology issues relating to Indoor Air Quality, including airborne particles

Antonios Dimitracopoulos
Partner, BSA Ahmad Bin Hezeem & Associates LLP, writes on legal affairs pertaining to the construction industry.

Krishnan Unni Madathil
Auditor, Bin Khadim, Radha & Co. Chartered Accountants, carrying out an analysis of the market, writes on business opportunities for the HVACR industry

Jeremy McDonald
Principal of Guth DeConzo Consulting Engineers, in New York. He served as the technical consultant to the New York State Energy Research and Development Authority in development of an IAQ guideline for Higher Education in NY: "Covid-19 Response Guide, State University of New York".

Dan Mizesko
Managing Partner/President, US Chiller Services International, writes on issues relating to chilled water systems, including operation & maintenance

Nabil Shahin
International Technical Director, AHRI MENA, writes on regulation-related issues in the GCC region.

Published by
CPI INDUSTRY

Head Office
PO Box 13700, Dubai, UAE
Web: www.cpi-industry.com

Printed by:
Jaguar Printing Press L.L.C

11TH EDITION

food chain

15 JUNE 2023 | DUBAI, UAE

www.climatecontrolme.com/foodchain

For editorial enquiries:
Surendar Balakrishnan
Co-Founder & Editorial Director
M: +971 50 509 2457 | E: surendar@cpi-industry.com

For sponsorship enquiries:
Frédéric Paillé
Co-Founder and Commercial Director
M: +971 50 714 7204 | E: fred@cpi-industry.com

COP28: WHY THE HULLABALOO OVER THE UAE HOSTING THE EVENT?

Dr Rajendra Shende is also the Founder-Director, Green TERRE Foundation; Prime Mover, SCCN; and Coordinating Lead Author, IPCC, which won the Nobel Peace Prize. He may be reached at *shende.rajendra@gmail.com*. The article first appeared in a Media India Group publication.

Ignoring its achievements and singling out the country as an oil producer points to selective memory, argues **Dr Rajendra Shende**, Former Director, UNEP

THERE has been an unseemly controversy over the location of COP28 (the Conference of the Parties of the UN Framework Convention on Climate Change (UNFCCC)), to be held in the UAE later this year, with many Western analysts, environmentalists and media criticising the choice of the country as well as the President of the Conference. The President of the event – H.E. Dr. Sultan Ahmed Al Jaber – is the Managing Director and Group CEO of the Abu Dhabi National Oil Company (ADNOC).

The criticism is baseless, as most of the COP meetings held so far have been in countries that are either big producers or consumers of fossil fuels. Indeed, Big Oil or Big Coal has always been at the centrestage in every single climate change meet so far.

'Merchant of Death' was the term used to describe Alfred Bernhard Nobel, a Swedish scientist and businessman who made millions selling dynamite, which he had invented. These explosives became the game changer in fiercely fought wars. Dynamite was the single most destructive invention ever in the history of weaponry and is still used in battles of the 21st Century. European newspapers stated in the 1860s that Alfred Nobel 'made fortune by finding ways to kill more people faster than ever before'.

More than 25 years later, Nobel decided to donate more than 90% of his life earnings to create a symbol of respect and honour for the people who contributed to the betterment of humankind. One of the categories, and globally most recognised, is the Nobel Peace Prize, which continues to inspire billions even in this present age. The Peace Prize is given annually to the person or society that renders the greatest service to the cause of humanity in the suppression or reduction of standing armies, or in the establishment or furtherance of peace.

The 'Merchant of Death' is now known as the 'Messiah of Peace'! The fortune made by Alfred Nobel by 'killing people' is now deployed to honour the fortunate few for saving humankind. Since Nobel's death, towards the end of the 19th century, the world awaits the Nobel Peace Prize every year and get inspired in this chaotic world.

Over a century later, another person is being handed out similar uncomplimentary sobriquets. The President of COP28 is unkindly referred to as the 'Merchant of Disasters'. He is also called as the 'fox in the henhouse' by many in the Western media and their compatriot green activists.

The detractors, who mainly belong to the countries that bear the highest degree of responsibility for total inaction or, at best, delayed and diluted action on climate change for over three decades and for making COPs a theatric exercise of talk shows, have gone on overdrive in their comments against H.E. Dr. Al Jaber.

The Intergovernmental Panel on Climate Change (IPCC), established by the United Nations Environment Programme (UNEP) and the World Meteorological Organisation (WMO), was one of the recipients of the Nobel Peace Prize for its studious and untiring global efforts to highlight the fatal risks facing the planet due to global warming and climate change. Right from the early 1990s, the IPCC has been warning policymakers that the root cause of climate change is the emission of greenhouse gases or GHGs. Carbon dioxide, emitted from burning of fossil fuels, like coal, oil and gas, is the

biggest contributor to climate change. The key solution to this problem of planetary proportion, therefore, is to get rid of fossil fuels altogether.

The latest report of the IPCC, released in April 2022, stated that 'the global temperature will stabilise when carbon dioxide emissions reach 'net zero'. Limiting global warming to 1.5 degrees C means achieving net-zero carbon dioxide emissions globally in the early 2050s; for 2 degrees C, it is the early 2070s. The short-term indication that the world is on a net-zero path to achieve the target of 2 degrees C is that all global greenhouse gas emissions must peak before 2025, at the latest.

And here comes the illusive reason of shocking reactions reported in the Western press about the UAE's decision to appoint H.E. Dr. Al Jaber as the President of COP28. The mainstream media, read the Western media, believes that the UAE is not the right place to hold COP28, and that even if it is held, H.E. Dr. Al Jaber, who is the Managing Director and Group CEO of ADNOC, cannot be appointed as President of COP28, as the meeting is meant to finalise the timeframe and measures needed for phasing out fossil fuels.

While on the surface, the critics' views may be appealing, there are quite a few backstories to this tale. Let us understand the perspective. First of all, the UAE is the seventh largest oil-producing country in the world. The fourth largest oil-producing country and the sixth largest gas-producing country, Canada, has already hosted COP11.

Similarly, the fifth largest gas-producing country, Qatar was the host country for COP18. As regards coal-producing countries, the second largest (India), the third largest (Indonesia), the seventh largest (South Africa), the ninth largest (Germany) and the tenth largest (Poland) have all held COPs once, or more than once. Each country's Environment or Energy Minister, Oil and Gas Minister as well as the officials handling fossil fuels have presided over these COPs. The other major stakeholders in fossil fuels, as producers and consumers – the United States, Russia and China – are yet to hold any COPs.

None of these host countries have demonstrated any decline in emission of GHGs since their role as host of respective COP meetings, though a country like India has shown national and international leadership in generating the nationwide 'Net Zero' campaign through lifestyle change and the International Solar Alliance.

Against this scenario, it is noteworthy that the UAE's CO_2 emission has reduced over the years, and it appears to have peaked in 2015. None of the countries from where past Presidents of COPs came can boast of such achievements as that of the UAE.

And speaking of H.E. Dr. Al Jaber, he is a professional to the core and with a passion for innovation. He has risen to his present position through exemplary career progression. His chemical engineering, business, economics and management education, including doctorate-level studies, from well-known universities in the United States and the United Kingdom, were financed by merit-based scholarships that he won.

He rose to become an important member of the UAE government, holding roles as Minister of Industry and Advanced Technology, Managing Director and Group CEO of ADNOC and as Chairman of the Abu Dhabi Future Energy Company, otherwise known as Masdar.

His ambition seems to be forging ahead with renewable energy, and rightly so. His strategy seems to be clear – financing the development of renewable energy through the fortune made from the oil business. His Masdar project is a perfect example of this model – it involves using the large amount of sun that the UAE receives through the year by installing solar power-generating units, be it on rooftops or through immense solar parks that are spread across large tracts of desert-land in the country. He has also set up waste-to-energy plants in the UAE and also taken them overseas as part of Masdar, which is one of the largest developers of renewable energy with frontline technologies in the world.

Masdar City is fed by 10 MW of solar panels on ground and 1 MW on rooftops. Certainly, as compared to today's large solar power plants in India and China, these capacities are relatively small; however, it is worth recalling that H.E. Dr. Al Jaber had initiated the Masdar project in 2008, much before the waves of large solar plants started striking the shores of sunny countries.

A multi-talented personality, H.E. Dr. Al Jaber had started his career as a process engineer. Now, as the Managing Director and Group CEO of an oil company and as the Minister of Industry and Advanced Technology, Al Jaber has become an icon of the younger generation, mainly because of his initiatives in renewable energy, innovation and digital technologies.

He was invited by the UN Secretary General on the panel for High-Level Group on Sustainable Energy for All. He has been UAE's climate envoy in earlier COPs. No other President of any COPs in the past has had such hands-on experience and credentials. To top it all, he is now leading a pathbreaking Green Hydrogen project through partnership with multi-nationals.

He has been awarded the Champion of the Earth award by the United Nations Environment Programme (UNEP). Indian Prime Minister, Narendra Modi conferred on him the lifetime achievement award for his contributions to energy security, building bridges to emerging Asian economies and for reshaping traditional energy business models.

H.E. Dr. Al Jaber has a unique opportunity to demonstrate to the world – as has the UAE's leadership, through the establishment of awards on sustainability and environmental protection – how a large oil-producing country can use its fortune for the betterment of humankind.

The world now has another opportunity to get to know yet one more Alfred Nobel. We should let H.E. Al Jaber not only preside over COP28 but also allow him to develop yet another out-of-the-box strategy to help rescue the world from climate disaster. He can use the money-making oil machine to establish another fund from profits of oil business to shame the developed countries who have not yet delivered on their promises of climate finances to developing countries. He can go beyond Alfred Nobel's legacy to use the oil fortune to become the CEO of a worldwide venture that supports renewables and hydrogen energy.

As an old Indian adage goes, the best way to remove the thorn stuck in the body is to use another thorn. The climate thorn stuck in the planet's body can be removed by deploying yet another thorn, a strategy that H.E. Dr. Al Jaber seems to be trying to perfect. cme

DISTRICT COOLING, CaaS OR…?

Larbi Behloul, Head of Facilities Management, Dubai, Developments, writing in response to the article on Cooling as a Service (CaaS) in the February 2023 issue of *Climate Control Middle East*, weighs in on the pros and cons of District Cooling and CaaS

Larbi Behloul

THE question of using the services of District Cooling providers versus buying your own chillers is the subject of a seemingly never-ending debate. Indeed, this is a process that all developers go through at the initial design stage to select the cooling strategy of the property.

The Dubai property market is volatile and fluctuates up and down, depending on several market factors; and one of them is the cost of cooling. Most prospective tenants prefer "Free Chiller", and this adds more stress to the developers to come up with a plant that is a win-win for all.

District Cooling

The cost of District Cooling is known, as are its pros and cons. Typically, a District Cooling scheme, as an option, eliminates installing chillers and ancillary equipment. However, it comes with connection charges, based on the total load required, as per the design of the building; demand charges, which are like the connection charges but are paid on a monthly basis at a fixed rate; consumption AED/RTH; and the Low Delta T penalty, where the landlord pays a penalty for not keeping the design Delta T.

CaaS

As for CaaS, the new kid on the block, the contracts are not mature enough for us to evaluate properly. At this stage of writing this article, I must say that I am responding to the interview on CaaS that appeared in the February 2023 issue of *Climate Control Middle East* and, subsequently, to a presentation on the subject during the relatively recently concluded Retrofit Tech Summit, in Dubai.

The cost of CaaS can be higher than District Cooling, in the case of air-cooled chillers. This point has not been sufficiently addressed in the aforementioned interview. To enumerate…

1. There is no fixed AED/RTH
2. Scalability is limited
3. Owner must manage the plant at the end of the contract, which brings us back to Point 1; and at the 25-year mark, the owner must do the retrofitting

Meeting CHW requirements without District Cooling or CaaS

It is possible to meet chilled water requirements without opting for either District Cooling or CaaS. In the event of a project under design, it is imperative to ensure that the heat-load calculations and, later, the hydronics are done accurately and that the equipment are adequately selected to meet the required load at peak time within the industry standards, like Dubai Municipality's green building code, ASHRAE and AHRI. Proper execution and commissioning are key aspects, as well, to guarantee the installations are functioning within the design limits. A few things to consider at this stage are…

Water cooled or air cooled

This is not an easy decision to arrive at, as both systems have their pros and cons. Generally, water-cooled systems are more efficient than air-cooled systems; however, water-cooled systems require more space, as there is a need for accommodating the centrifugal chillers, chilled water pumps and condenser pumps. They also require space on the roof for the cooling towers. Speaking of roofs, if opting for air-cooled chillers, they need to be installed there.

Water-cooled systems come at the higher initial cost, and therefore, they are best suited for large projects.

Hydronics, pumps and valves

The selection and brand choice of the pumps and valves is as crucial as the selection of chillers. Proper pump selection would avoid operational issues, such as uncontrolled Delta T, repeated leakages, high noise levels, cavitation and, obviously, high consumption.

Controls

There is no efficient plant room without controls; and by controls, I don't only mean BMS but a way more advanced technology to control the equipment. I am referring to a chiller plant room manager with industrial controls, like SCADA capabilities, to gather data such as temperature, flow, pressure, fan speed and kWh, and mainly an AI layer,

to analyse and provide the best settings in any given scenario, based on either pre-set algorithms or machine learning.

Defect Liability Management and warranty

During this period, the plant operators are required to scrutinise all the data and reports generated by the SCADA/CPM, or noticed during visual and routine inspections to identify deviations in the design parameters or installation defects, and coordinate with the contractors for rectifications. In the Defects Liability Period (DLP) is an opportunity for the plant owner's representative to learn and get familiar with all the equipment and how to deal with the problems, as they arise or, in some cases, before they arise.

The combination of the above would eventually lead to an efficient plant room, generating just enough cooling to cope with the demand at any given time. Once such a plant is delivered, operation, maintenance and, later, retrofitting become important to run the plant for 25 years with no to minimal deviation from the design parameters.

I am highlighting key elements to keeping a plantroom as efficient as possible…

Annual Maintenance Contracts with specialists

Annual Maintenance Contracts (AMCs) shall be signed with the major equipment manufacturers' O&M division to ensure functionality and adequate preventive maintenance is done on a periodic basis, as per the manufacturer's guideline. This would ensure…

- Reduced equipment breakdown
- Longer asset life
- Genuine spare parts and consumables
- Best operating conditions
- Highest possible efficiency

Highly trained plant operators

A plant room consists of several equipment, which require daily and, sometimes, hourly service, especially during sandstorms for the side stream filters, which get clogged frequently, or chemical dosing systems, which may need refilling. The plant room operator would take this task and carry a routine inspection to ensure all the equipment are running properly and, if needed, coordinate with the AMC holders for their preventive or reactive maintenance visits.

Water quality and water level

Chilled water or condenser water levels and quality are crucial for a system to function properly. Dosing systems are installed to inject chemicals to maintain the water quality, to avoid coils from getting clogged and to prevent scale build-up. The pressurisation injects fresh water into the system in the event of a leakage, ensuring system pressure is constant.

Data analysis

Several BMS and controls providers offer analytical platforms to process all the data gathered using all the sensors and field devices that are installed in the plant room. The resultant information gives an insight on the plant condition and consumption; moreover, it predicts issues before they happen and reduces the downtime drastically.

The controls in place are integrated with a Computer Aided Facility Management software and a ticket is created for each fault, thereby ensuring a proper history on all the faults and measures taken for rectification. All this feeds to the machine learning and improves the system each day that goes by.

Retrofitting – turn the problem into an opportunity

With new technologies and manufacturers' innovations fed by high R&D investments and fierce competition, new machines and equipment are being introduced each year, opening up possibilities of making plants more efficient than ever. The replacement of any defective equipment for any reason whatsoever shall never be like-for-like, since there is always a new equipment with higher efficiency and, therefore, a return on the investment. I call this as turning a problem into an opportunity.

No free chiller!

Some property developers provide leasing with "Free Chiller Fees". It is an altogether different matter that there is nothing like a free chiller, since someone must pay for the energy, operation and maintenance.

When tenants are offered free chiller, that would mean there is no bill going to them every month, and therefore, most of the AC units are running constantly. This results in the below issues…

- It is difficult to maintain Delta T, which means low return temperatures.
- Tenants generally complain when they see a high chiller bill – they won't in the case of a free chiller regime, as they don't receive the bill; and therefore, any leaking valves are never seen and attended to, which creates significant energy losses.
- No BTU meters are installed, meaning there can be no track of energy usage and distribution.
- There is loss of revenue, and therefore, all the operations and maintenance are affected.
- It is difficult to raise capital for equipment replacement or upgrade.

Conclusion

As a representative of Dubai Developments, even though I do not use ESCOs for the identification of ECMs and their implementation, I do have a huge respect for companies like Taka Solutions, as I am sure they have their proven record of achievements. I do not work with ESCO as a concept, as we at Dubai Developments have achieved much higher results than any ESCO could provide to us. If they can invest in our plant and still make money it means we can do it internally. Even better, we can build the right plant and later operate in an efficient way. ccme

The writer may be contacted at l.behloul@dubaidevelopments.com.

HOW SAFE ARE OUR AIRPORTS?

It's not out of place to raise the alarm on the quality of indoor air in airports

Dr Iyad Al-Attar, an independent air filtration consultant, writes on specific science and technology issues relating to Indoor Air Quality, including airborne particles. He may be reached at iyadalattar@yahoo.com.

HAD it not been for the achievement of the Wright brothers, in North Carolina, and Bleriot's last historic crossing of the English Channel, humankind would have been bound to the Earth's surface. Over the past century, the aviation industry has gone from learning how to reach the sky to embracing how to fly safer, faster and farther, with heavier planes and greater passenger capacity. Today, the Federal Aviation Administration handles over 10 million scheduled flights, carrying an average of three billion passengers, annually[1]. According to the International Civil Aviation Organization (ICAO), "the demand for air transport is expected to increase by an average of 4.3% per annum over the next 20 years"[2]. ICAO also expects that "by mid-2030s, no fewer than 200,000 flights per day are expected to take off and land all over the world".

During the pandemic-induced lockdowns, we realised the importance of aviation to our economies in enabling trade, generating economic growth, creating jobs, and facilitating interconnectivity and tourism. Many air transport processes and practices need reinvigorating for the aviation industry's transition to meet the 2030 United Nations Agenda of 17 Sustainable Development Goals (SDGs; now known as Global Goals). That would undoubtedly require mobility to embrace sustainable business models, technological innovation, efficient operations and approaches in all pillars of transport, particularly air transport. However, that comes at a cost – the scale, scope and speed of increased greenhouse gas emissions from international aviation impact airport terminals and many communities, especially those living nearby. Today, governments and regulators are pressured to curb aviation footprints by characterising outdoor and indoor air in and around airport terminals to quantify the impacts of aviation emissions on residential exposures.

Air quality for airports

Typically, civil aviation requires airport terminals to be built according to international standards, encompassing navigational and meteorological systems and standard operational practices to minimise misunderstandings leading to errors or accidents. Exposure to polluted outdoor and indoor air can severely impact human health by causing dizziness, fatigue, and respiratory and cardiovascular diseases. Emissions in the vicinity of airports come from terminals, landing and take-off operations, aircraft auxiliary power units (APUs) and ground support equipment (GSE). For example, aircraft engine emissions consist of nitrogen oxides (NOx), volatile organic compounds (VOCs), hydrocarbons (HC), particulate matter (PM) and carbon monoxide (CO). Monitoring stations are installed to establish and manage models able to identify the contribution of airport activities to outdoor pollutant concentration.

Inside airport terminals, human occupants are exposed to a wide array of pollutants with various concentrations and particle size distribution. These pollutants can contaminate the terminal's indoor air and pose a hazard to passengers, staff and visitors. Therefore, continuous air quality monitoring through functional and reliable sensors will prove invaluable in protecting the human occupants in the terminals. In addition, airport terminals are designed to accommodate large and fluctuating human occupancy. That would influence the complexity of HVAC systems and the required controls to respond to the variation in Indoor Air Quality (IAQ) and heat loads. Therefore, for evaluating the thermo-physiological health of occupants in airport-constructed environments, quantifying the dynamic sensible and latent heat gains is essential. Additionally, modelling and comprehending the fluctuation in heat loads aid HVAC designers in anticipating and incorporating the time, space and human occupancy features impacting the total thermal comfort.

Physical and chemical characterisation of outdoor air around the terminals would help tweak filter selection and the number of stages required to render the air safe to breathe. Furthermore, functional ventilation systems, providing appropriate air exchanges per hour, can be critical to IAQ characteristics while observing indoor temperature and humidity levels. They would also help protect data centres, control rooms and towers served by HVAC and filtration systems.

Although leak-free ducts and efficient filter installation minimise particle deposition on heating/cooling coils, ducts and air diffusers, these HVAC segments must be cleaned and disinfected regularly. Therefore, visual inspections of HVAC equipment are essential to their professional operation, including pressure gauges' intact functionality to ensure on-time filter replacement. In addition, the dampened nature of coils makes them prone to foster microorganism growth. Hence, maintenance teams should be attentive to their operational conditions.

The uniqueness of each terminal

Each terminal's uniqueness lies in its architectural design and HVAC and filtration requirements to make the travelling experience pleasant. Architecturally, airports are distinctive in the flow of passengers during arrival, departure and transit. Other considerations include the personal hygiene and health conditions of individuals using the terminal. Furthermore, the geographic location and climatic conditions can impact many design aspects of airport terminals, especially HVAC equipment and filtration systems. Ultimately, it is challenging to make sweeping conclusions that what works for a specific airport also works for others. However, understanding HVAC and air quality requirements is critical to better serve an airport terminal's particular nature, operational challenges and occupants' thermal requirements.

A great deal to safeguard

An integrated air quality control approach based on real-time monitoring is the way forward to enhanced and sustainable HVAC systems and filter performance. IAQ data collection will help understand the daily variation in IAQ parameters relevant to different physical activity patterns and the flow of passengers. The oscillation in particulate and gaseous contaminant concentrations can be managed if the performance of the HVAC and filtration systems are adaptive and based on data that drives how we mitigate air quality. Such management can play a significant role in rendering an airport terminal green and clean to occupy.

Coil washing and disinfection to maintain its cleanness and performance

Conceptually, passengers, visitors and staff opt for clean airport terminals with the best air quality and a thermally comfortable built environment. However, the air quality inside terminals should not only revolve around CO_2 but also entail other solid and gaseous pollutants, when present at harmful concentrations. Therefore, the appropriate employment of chemical filters to reduce the concentration of gaseous pollutants is paramount to tackle the gaseous pollutants.

Poor IAQ in densely occupied indoor spaces in airports can impact the wellbeing of passengers, visitors and staff. Therefore, inappropriate and insufficient filtration and ventilation can lead to deteriorated IAQ. Thus, ventilation systems must operate even when airport terminals have low or no human occupancy to avoid stagnant air and any possible mildew build-up on the facilities or equipment, thus reducing virus propagation. In addition, moisture control is another critical aspect that impacts the thermal comfort of indoor occupants, since it varies with human vapour and their breathing patterns.

Multi-stage filtration

As the concentration of multiple pollutants is found near airport terminals, the role of multi-stage filtration and extended air filters becomes well-pronounced. First, reducing the concentration of suspended particles from the outdoor intake air is critical

to ensure that the depth deposition of particles is intact, extending the stationary filtration, particularly in regions sustaining frequent sandstorms. Appropriate multi-stage filtration can prove invaluable to the energy efficiency of air filter performance. It can also reduce the possibility of particle-bridging and premature surface deposition, which may impair fibrous filters from being used to their full potential. Furthermore, in the Sahara, in Africa, for instance, silica dust is a dominant element in the chemical composition of airborne dust, which can impact the wellbeing of human occupants when inhaled at higher concentrations with longer exposures.

Air diffusion

Air diffusion represents the last stage of the HVAC system where equal delivery of clean and comfortable air is required. Therefore, airflow dynamics and diffusion patterns are essential to achieving thermal comfort while reducing virus transmission to protect the health and safety of the human occupants. Many efficient air filters can help prevent or reduce the spread of viruses by lowering the concentration of indoor air pollutants if their design and media selection fit the filtration purpose. Additionally, HVAC and filtration experts should address the lifecycle impacts of filter performance and continuous air quality monitoring with HVAC system energy efficiency considerations, as they are not mutually exclusive.

Several challenges confront air quality assessments in airports, such as the fluctuations in human occupancy and physical activity, which is typical of the terminal environment. That may strain the air quality and increase the heat load and ventilation requirements, which calls upon “zoning” to allow for individual temperature control. In addition, many airports rely on enhancing vertical ventilation to discharge hot air near the ceiling to save energy for heating and cooling consumption. However, the complex nature of the co-existence of airborne pollutants in the vicinity of airport terminals makes assessing air filter performance challenging, not to mention the obtained air quality. When solid and gaseous pollutants deposit on air filter media, a possible interaction between deposited particles/pollutants and the filter media, which may off-gas a by-product, cannot be ruled out. To better assess these challenges, continuous air quality monitoring is required to identify possible repetitive contamination patterns and to deploy optimum mitigation strategies. That could entail installing other purification and disinfection technologies within the HVAC systems and the built environment. However, the success of these technologies lies in their certified performance and appropriate employment. Conceptually, a holistic approach is needed to comprehensively enhance the IAQ in airports by reducing the potential risks of airborne pollutants.

Eventually, we all aspire to achieve better air quality in airport terminals to protect the wellbeing of passengers and staff in the building. Indoor air characterisation and monitoring are vital for accurate filter performance and lifetime prediction. In addition, safeguarding occupants’ health requires knowing what our filtration systems are up against to optimise HVAC operational schemes for better IAQ while reducing energy usage and maintenance operations.

Chemical filters find their permanent spots in the filtration systems where gaseous contaminants exist

Going the extra mile

In modern airports, designers perceive airports not only as travel platforms but also as exciting gateways to relax, dine and shop while awaiting their next flight. Modern and future airports will transform the perception of the conventional terminal with simple seats and multiple gates to healthy built environments with full-fledged facilities that offer outstanding service and comfort standards. First, however, designers must embrace adaptive HVAC and second-to-none air filter performance equipped with outdoor and indoor aerosol monitoring systems that measure, track and control airport air quality around the clock. Going the extra mile starts with meeting the unique needs of such complex airport terminals, which requires specialised expertise to raise the bar of air quality by controlling and mitigating emissions. Today’s paradox of our airports is that we install ordinary air filters and expect extraordinary IAQ. Until that changes, we must have our boarding passes, passports and personal masks ready before the final call. ccme

LOOKING FOR REFRIGERATION PRODUCTS?

climate control MIDDLE EAST

Refrigeration BUYERS' GUIDE 2023

Your reference hub to the refrigeration industry in the Middle East

www.refrigbuyersguide.com

The largest database of refrigeration products & suppliers in the Middle East

FOR ADVERTISING OPPORTUNITIES
EMAIL: advertising@cpi-industry.com

UNMANNED DISTRICT COOLING PLANTS THE WAY FORWARD

Omnia Halawani may be contacted at omnia@grfn.global.

Omnia Halawani, Co-Founder & Co-CEO, GRFN Global, elaborates on the potential cost savings and other benefits to be had through deploying Unmanned Machinery Spaces

THE widely improved technological advancement in artificial intelligence, data acquisition and monitoring, and advanced controllers make the realisation of Unmanned Machinery Spaces (UMS) a possibility.

The advantages that come with UMS are numerous. Cost savings are a natural bi-product and driver for UMS, owing to reduced working hours, and the associated salaries and costs. Further, powered by advanced controls, the reduced reliance on human intervention may result in improved efficiency through optimisation of machinery use and faster error detection as well as reduced maintenance costs, as predictive maintenance takes the forefront. UMS also improves safety simply by removing personnel from machinery spaces and, hence, reducing risks of injury, death and exposure to hazardous materials.

In the District Cooling industry, specifically, automated plants still largely rely on human interventions for their operation. These plants are assisted by personnel to perform necessary assessments, checks, operation and safety procedures. It takes a higher level of automation, data analytics and advanced controls, accompanied by all necessary safety interlocks and redundancies, to achieve a fully automated unmanned space. In this article, I am attempting to explore how to automatically operate and monitor multiple District Cooling plants from a central station with minimal human interference.

So, what are the basics needed as a stepping stone to make a plant "remote-ready"?

On the design and installation front

A plant should house a comprehensive network of accurate sensors, actuators and transmitters to enable the intended control logic. The first step is to draft a solid control philosophy, identify the measurements required, and design the network of sensors and associated transmitters as well as valves actuators, accordingly.

The machinery and equipment, on the other hand, should seamlessly integrate with the control and monitoring system at the plant. Designs should allow for redundant and fault-tolerant systems to ensure continuity.

An advanced and suitable control and monitoring system (CMS) is the most critical element completing the installation requirements for a full and successful integration of plant equipment, sensors, actuators and machinery. The use of machine learning and artificial intelligence will continue to shape and advance control systems to enable effective adjustments in the operation of chillers, pumps and other equipment to achieve optimal energy efficiency and system performance. The CMS should be completely functional and integrated to a distantly located command centre.

The central command centre should be capable of acquiring data from the different plants or premises connected to it, while displaying all the instantaneous operating parameters, faults, and alarms in a clear way to the operators. When well implemented, the real-time data can provide operators with valuable insight into system performance and help identify potential issues before they become problems, allowing operators to make necessary adjustments. It is vital to develop emergency response plans that include procedures on how to respond to issues that may arise, like equipment failures, systems malfunction and power outages. The plans should include the course of action, shutdown procedures and the protocols to be followed by the operators and

maintenance personnel. Training the remote personnel on such protocols is vital for the success of UMS.

There are several means of integration between plants and a central command centre. Fibre Optic networks and GSM are quite widely used. The selection criteria should take into consideration area/distances, construction constraints, availability, reliability, speed and maintenance needs.

With the high level of automation and connectivity, cyber security becomes a potential threat, though. So, it is essential to implement measures to protect the plant and its systems through incorporating firewalls and intrusion-detection systems and through regular software updates.

On the operational front

The plant should be set up with adequate, reliable and safe auto-control sequences. Strict and robust safety strategies should be embedded, accommodating different levels of alarms, facilitating timely intervention by remote well-trained professional operators for critical issues.

Predictive maintenance takes an important role in achieving successful UMS. Techniques like condition-based monitoring and predictive maintenance should be used to identify potential issues prior to breakdown. Regular planned inspections of the plant machinery are also a good measure to ensure reliability and continuity of service.

To enable a truly unmanned space, the systems in the plants should produce meaningful, informative, and periodical automatic reports and trends that provide clear visibility on the plant's performance, efficiency and compliance for analysis and predictions. They allow operators to track performance over time and identify trends and patterns of energy consumption, operational costs and maintenance needs. Reports also help with regulatory and standards compliance monitoring, like metrics on emissions and safety incidents.

UMS can profoundly reduce human intervention in operation. Indeed, remote control and monitoring from a central station would result in reduction of operational cost, and improved overall plant management and efficiency. A qualified consultant can help clients in their stride towards advanced automation by providing systems specifications, guidelines and scope of works. It takes an ambitious and future-centric client, a knowledgeable consultant and enabling solutions providers to successfully integrate advanced technological applications. cme

CPI Industry accepts no liability for the views or opinions expressed in this column, or for the consequences of any actions taken on the basis of the information provided here.

Cx IN CHILLED WATER PLANTS

Retro/recommissioning can unlock remarkable savings in CHPs, and the Empire State Building stands testimony to that.

WHAT is energy management with respect to chillers? Currently, the industry standard chiller energy management practice is to provide enough cooling to meet the needs of the facility while minimising chiller run hours. This is either achieved manually by experienced operators or automatically by a building automation system or chiller plant manager automation system with operator oversight. Neither of these methods addresses the enormous energy savings of increasing chiller performance and operating efficiency, though.

The Empire State Building, in New York City, is an American cultural icon. Built in 1931, it remains the fourth tallest building in the United States. It is designed in the distinctive Art Deco style and has been named one of the Seven Wonders of the Modern World by the American Society of Civil Engineers. It is ranked number one on the AIA's List of America's Favorite Architecture.

The building's 10,000 RT plant includes electric- and steam-driven centrifugal chillers and is located three storeys below ground. The plant supplies chilled water to three zones: Low, medium and high. Each zone is a primary flow parallel chiller arrangement. Cooling towers are located on the ground floor in the open-loading dock area. Tim Dailey, the Director of Engineering at the Empire State Building, was looking for a way to save more energy in his facility. The Empire State Building had already been recognised as a LEED-certified building and had incorporated almost every ECM (Energy Conservation Measure) available in the industry. The chilled water plant had VFDs on all its condenser and chilled water pumps, on its cooling towers and on all its electric-driven centrifugal chillers. Additionally, it had a state-of-the-art BMS/CMS operating and controlling the building and optimising the chilled water plant, so it seemed not much was available to further save power at the building's 10,000 RT plant. Dailey still felt that his plant could save additional energy, and that's when he contacted US Chiller Services to have a look at his plant to see if we could do something more.

After a brief inspection of the plant, we realised we could save at minimum 15% of the plant's energy; and with the plant maintenance being put out for bid, we thought this would be an ideal opportunity to implement retro-commissioning of the plant, should we win the bid, which we did.

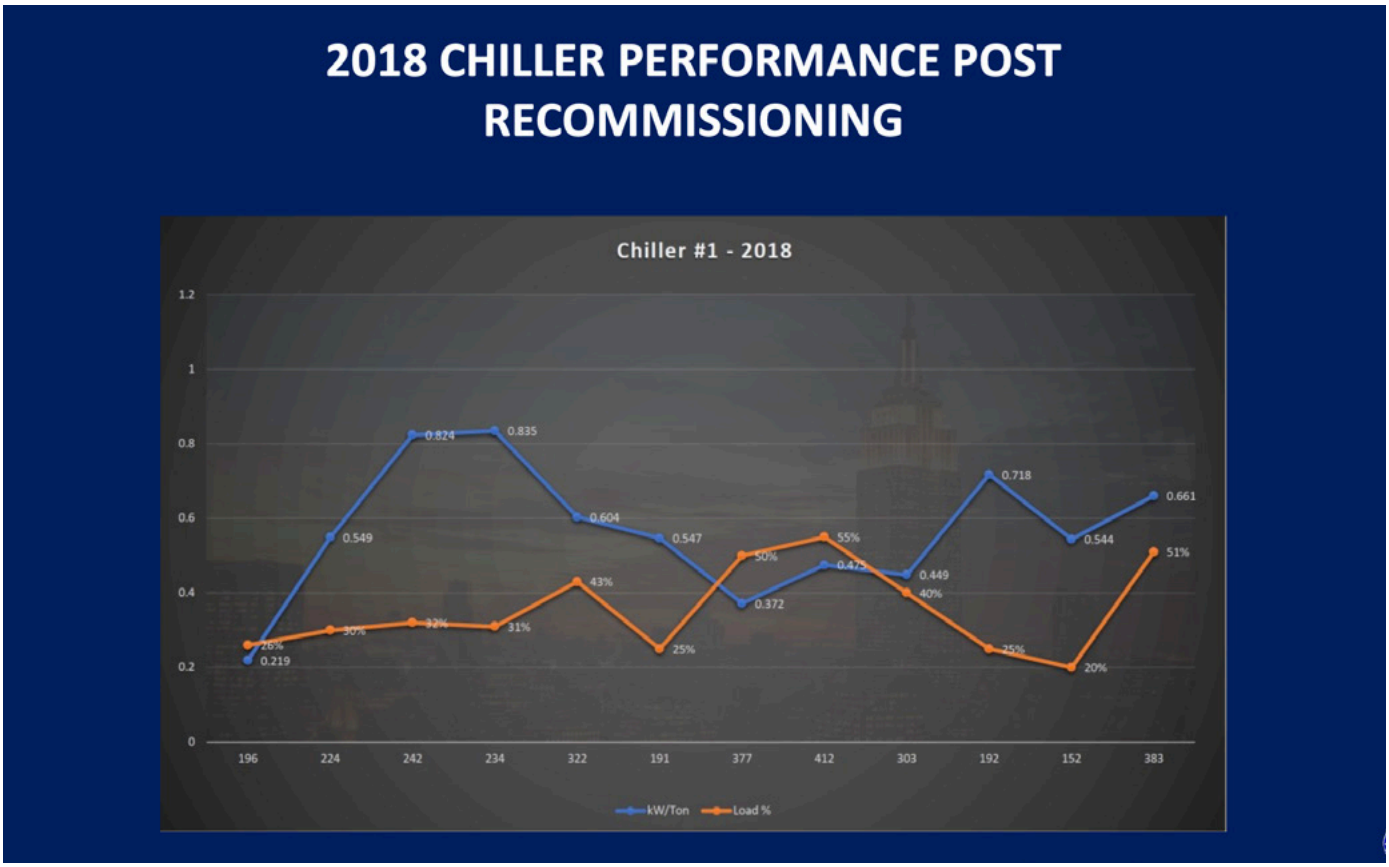
The year 2017 was used as the baseline, as all ECMs were fully installed and operational in 2017 and the savings achieved were already confirmed and proven. This was the perfect baseline for us to prove the additional savings we would achieve with our retro/commissioning services, which were all performed as part of our service agreement for the plant. The sweetener was that the iconic building did not require any additional investment for any savings achieved.

In 2018, we completely retro/recommissioned the plant, paying particular attention to the electric-driven York YK centrifugal chillers. We utilised two parameters for savings verification: the chiller's kW/ton performance and the 2017 vs 2018 utility bills, which were weather and occupancy normalised.

CASE STUDY

Major energy savings

We selected various load points of the chillers in 2017 and the corresponding kW/ton at these load points.



We selected these same load points of the chillers in 2018 and the corresponding kW/ton at these load points.

44% EFFICIENCY IMPROVEMENT WITH RECOMMISSIONING

Tonnage		kW/Ton		Load %		Change in efficiency (+/-)
2017	2018	2017	2018			
196	196	.793	.219	26%		+113%
224	224	.724	.549	30%		+27%
242	242	.900	.824	32%		+9%
234	234	1.033	.835	31%		+21%
322	322	.817	.604	43%		+29%
191	191	.827	.547	25%		+40%
377	377	.598	.372	50%		+46%
411	412	1.032	.475	55%		+74%
305	303	.782	.449	40%		+54%
193	192	.841	.718	25%		+16%
152	152	.940	.544	20%		+53%
380	383	1.103	.661	50%	51%	+50%
						Average Change (+/-) +44%

The data proved the retro/recommishing realised a 44% increase in chiller efficency.

EMPIRE STATE BUILDING CHILLER #1 – 2017 V. 2018 COMPARISON

2017		2018	
Total kWh	607,721	Total kWh	856,990
Total Ton Hrs	671,520	Total Ton Hrs	1,727,644
kW/Ton	**.905**	kW/Ton	**.497**

Full Year - 45% efficiency increase

- Ton hours increased in 2018 because Jockey chiller and steam driven chillers were not needed to meet the load.
- Recommissioning, repairs and maintenance by USCNY resulted in a 45% increase in efficiency vs. baseline 2017.
- Chiller #1 is the most frequently run chiller in the plant.

We then compiled the full 2017 and 2018 operating data,and the retro / recommissioning proved the chillers had a 45% improvement in efficency.

44% EFFICIENCY IMPROVEMENT WITH RECOMMISSIONING

Tonnage		kW/Ton		Load %		Change in efficiency
2017	2018	2017	2018			(+/-)
196	196	.793	.219	26%		+113%
224	224	.724	.549	30%		+27%
242	242	.900	.824	32%		+9%
234	234	1.033	.835	31%		+21%
322	322	.817	.604	43%		+29%
191	191	.827	.547	25%		+40%
377	377	.598	.372	50%		+46%
411	412	1.032	.475	55%		+74%
305	303	.782	.449	40%		+54%
193	192	.841	.718	25%		+16%
152	152	.940	.544	20%		+53%
380	383	1.103	.661	50%	51%	+50%
						Average Change (+/-) +44%

We had an outside, independent party perform a utility bill analysis, which proved that the retro/recommissioning saved USD 1,344,110 in power costs.

Throughout the United States and the Middle East region, there are thousands and thousands of buildings and chilled water plants that have tremendous opportunities to save vast amounts of energy, even if they have implemented various ECMs and have already saved energy. Indeed, retro/recommissioning still have the ability to save substantially more energy.

Chiller and chilled water plant retro/recommissioning should be a major part and the first step in energy conservation. It will – as we have found and as our data proves – save the bulk of energy even over employing any other expensive ECMs at the chilled water plant and should be the major part of the solution for buildings and chilled water plants looking to conserve and save power and money. This solution is suitable for a wide range of facilities in new buildings, chilled water plants and in older facilities. For many owners, retro/recommissioning can be included in the maintenance/service agreement, and the energy savings will be an operational expense and not a capital expense. In addition to the improved energy efficiency will also come greatly improved chiller reliability, as an efficient chiller is a reliable chiller. The facilities will also have improved comfort and the ability to meet cooling requirements during peak load. ccme

WWW.CAREERSBAY.COM

1) Plant Manager (water bottle)

A minimum of 10 years' experience in the water bottle manufacture (from startup to operational)Mechanical Engineer & biochemical Graduate

2) Marketing Manager

A minimum of 10 years' experience in the HVAC trading company in the UAE market Mechanical Engineering & MBA Graduate

3) Junior Sales Engineer

Mechanical engineering with 1 year UAE experience

4) Technician/electrician cum driver

Diploma in electrical engineering with a minimum of 3 years' experience in the UAE

For all your headhunting needs,
please contact:

+971 50 3580708 or email **alissa@careersbay.com**

www.careersbay.com

AI CHATBOTS: SCRIPTING A NEW NARRATIVE?

What is the extent of influence of AI-generated content on the HVACR industry? **Indu Revikumar,** Features Writer, *Climate Control Middle East,* has the story…

ROBERT Davies, Operations Director for Advisory Services, WSP Middle East, sits down to compose an 800-word article on 'How feasible is net-zero?' The topic is relevant to his business but not within his expertise. So, he takes advantage of Copymatic, an Artificial Intelligence-powered platform, to accomplish the task. Within 30 seconds, Copymatic has produced a well-organised piece with relevant information, a captivating introduction and suitable sub-headings. To avoid plagiarism, he paraphrases the article using QuillBot, another AI-based tool, before sharing it with a colleague with extensive experience on the topic. His colleague, who leads the Department of Earth and Environment, takes about 15 minutes to review the article, and together, they write an expert piece in the shortest time possible, which otherwise would have taken at least a couple of hours of investigation and writing.

Although he found the experience phenomenal, Davies hasn't explored these tools much ever since. However, he is keen on how AI-based language models – including ChatGPT (Chat Generative Pre-Trained Transformer) – can transform the industry and the many aspects surrounding it, ranging from upskilling to creating new job profiles. Though not the first of its kind, the launch of ChatGPT, by Open AI, marks a significant milestone in generative artificial intelligence. An implementation of the GPT-3 transformer model, often used in Natural Language Processing, ChatGPT interacts conversationally, enabling it to answer follow-up questions, admit mistakes, challenge incorrect premises and reject inappropriate requests.

Within a few weeks of its launch, in November 2022, ChatGPT gained massive popularity. Whilst Davies, with his initiative of writing an AI-generated article on net-zero, established a link to engineering, how does ChatGPT measure up in the realm of the HVACR industry? Sahul Hameed, General Manager, Bin Dasmal Contracting, is of the view that AI-enabled bots could be used effectively in entry-level engineering tasks, like preparing method statements or material submissions. The present format of ChatGPT, he says, is helpful for basic queries but not sufficient to address the complex tasks involved in MEP. "The idea of adopting AI-enabled bots that can streamline operations, reduce time and enhance efficiency is intriguing," he says. "However, it's also important to understand the advantages and disadvantages of a new technology before fully embracing it. Further, I also believe that adopting generative technologies, which is the future, will be a gradual and slow process – the shift from manual drafting to AutoCAD itself was a big transformation. The industry will comply with it, as it has embraced technologies across different stages of growth."

Ronak Monga, Regional Manager, Building Automation - Intesis Middle East, says: "It's a technology that appears to be disruptive to how we approach work in several industries. Overall, the construction and HVACR industries are also ripe for disruption. AI and other generative tools will bring that next era of productivity gains in how we do things in the industry and, generally, in our lives. They will enable the things we do today through human resources to be done faster and with fewer chances of error. With any new technology, there will be early innovators and early adopters, and there will be those that fall in the early majority or late majority of adopters. It's currently too early to comment on the adoption rate, specifically in the HVACR industry, but we expect it to start making its impact sooner rather than later." Globally, Monga said, we are seeing early adopters of AI in customer support, where AI-powered chatbots can provide a faster way to answer your questions on specific issues related to MEP equipment. Engineers, he said, are using AI to auto-complete solving of complex graphical and mathematical models and AI-based design tools that could replace engineering design tools such as Computer-aided design (CAD) or Building Information Modeling (BIM) software."

For Ghassan Freiwat, CEO, Awal Gulf Manufacturing, the impact of AI and generative technologies on many industries, with HVAC being one of them, is both inevitable and imperative. "We could see the obvious impact and radical

transformation [of the industry through technological innovation] in recent years," he says. "The one area of the HVAC industry that got the most impacted is Controls, in general, with an increasing level of demand by the marketplace and end-users seeking the most advanced smart applications in both residential and commercial segments." Bissan Abbas, Managing Director, Techem Energy Services, speaking specifically, says: "The rising popularity of generative technology and conversational chatbots makes the end-users more aware of the requirements, and they, in turn, increase the expectation towards contractors and construction companies." Generative technologies and transformer models, like ChatGPT, she says, make it easy for the end-user to understand the potential problems and ways to address them. This easy access to reliable information will put professionals in a critical position to showcase more efficient performance; however, the impact of AI and generative technologies on the HVACR, architecture and construction industries will depend on the priority and importance of the requirements, she says. Moreover, integrating AI and generative technologies into the existing process could also change how consultants and designers work, she adds.

"THE IDEA OF ADOPTING AI-ENABLED BOTS THAT CAN STREAMLINE OPERATIONS, REDUCE TIME AND ENHANCE EFFICIENCY IS INTRIGUING."

SAHUL HAMEED, GENERAL MANAGER, BIN DASMAL CONTRACTING

Sharing his view on the potential impact of generative technologies on the HVACR and construction industries, Davies points out that even though most people have a reasonable understanding of technology, they still need to fully embrace the power of the devices they use daily, such as smartphones and laptops. This lack of appreciation for the potential of technology has led to engineers and other professionals in the industry not being able to fully utilise the latest software and ways of working designed to make their jobs more efficient and effective, he says. "Adoption of new technologies has been lethargic and reactive rather than proactive," he says. "People are not always willing to invest the time and resources necessary to learn and implement new tools. As a result, many of the latest software or tools available to them, including CAD or BIM, are not used to their potential." Davies says the adoption rate of AI in HVACR and construction has been equally slow. There is a lack of awareness about AI, he says. Even among those who have shown interest in AI, only a small percentage has subscribed to the recently launched chatbots or invested time to explore their potential fully, he says.

"IT'S A TECHNOLOGY THAT APPEARS TO BE DISRUPTIVE TO HOW WE APPROACH WORK IN SEVERAL INDUSTRIES. OVERALL, THE CONSTRUCTION AND HVACR INDUSTRIES ARE ALSO RIPE FOR DISRUPTION."

RONAK MONGA, REGIONAL MANAGER, BUILDING AUTOMATION - INTESIS MIDDLE EAST

Davies also notes that unlike manufacturing or financial industries, in which return on investments and staying ahead of the curve, in terms of intellectual properties, are pertinent, the adoption rate of new technologies in construction or HVACR is low and can't be considered a ground-breaking industry. Or rather, we are not acknowledged to be a transformational sector, he says. Their adoption rate is relatively high, and ours is slow, because adopting a generative technology or software doesn't fundamentally change how the construction or HVACR industry works, he says.

Ever since the ChatGPT storm hit the world, there has been a sense of anxiety that it would bring significant changes to employment profiles, that it would make some job profiles redundant, create new roles and even replace humans. And then, there are counterviews. As Farhan Juratli, Associate Director, District Cooling, Nakheel, puts it, while it is true that AI technology, like ChatGPT, can potentially replace certain job functions, it is important to note that it is not meant to replace human expertise and decision-

making completely. Instead, it is meant to augment and assist human capabilities. He also observes that in the case of MEP designers, AI technology can help automate specific tasks and reduce errors, but it cannot replace the creativity and problem-solving skills that a human designer possesses. AI technology will likely continue to advance and integrate into various industries, but human expertise will always be valuable in areas that require critical thinking and creativity. "ChatGPT and similar technologies are likely to positively impact MEP contractors in terms of contract management and administration," Juratli says. "They can help with immediate problem-solving and reduce the need for people to think about strategic solutions. This can help reduce contracting claims and related legal issues. However, for legal arbitration, going to court for the foreseeable future may still be necessary. Overall, the impact will be positive but insignificant regarding legal arbitration." As if echoing Juratli on problem-solving and critical thinking, Hameed points to the significance of years of industry experience in dealing with critical concepts and finding solutions, "While AI-enabled bots assist with specific tasks, it is important to remember that they cannot replace the expertise and skills of human professionals in many areas," he says. "There may be a shift in the types of jobs in demand, but there will likely always be a need for skilled professionals in fields such as engineering and construction. It is vital to adapt and evolve in response to changes in the industry, but nothing can replace the value offered by human expertise." Hameed also believes that AI-enabled bots may impact entry-level graduates, as the features offered by them can potentially complete the tasks usually assigned to an engineer in the early years of their career.

Hameed says the possible impact on certain job profiles ought to be a cue for HVACR professionals to nurture new skillsets to meet the growing demands of the industry as well as clientele. Abbas, agreeing, says that as the industry becomes more advanced, the demand for new skillsets and for highly skilled professionals to meet the requirements of the industry and to stay ahead of the competition increases. This, she adds, also brings forth the significance of reskilling, especially among junior- and mid-level professionals, because there will be a shift towards more technically savvy and skilled labour in the industry. Abbas also notes that adopting AI-based technologies and altering employment profiles would be higher in developed nations due to easy access to the latest technology and information.

As Monga puts it, any disruptive technology always brings with it a skill-set evolution within the workforce. Any tool, he says, is only as good as the person using it, and it will continue to be the case with AI-based tools. "While repetitive tasks we do today may be replaced with AI, the workforce will need to upskill to utilise those AI tools to the best of their potential to get the most productivity gains out of the tools," he says. "ChatGPT, or AI tools, will not necessarily replace jobs but ensure that job roles evolve and create new jobs. I recently heard a great quote on a podcast, 'ChatGPT/AI will not replace the job of a lawyer, a lawyer using and leveraging ChatGPT/AI will replace the job of a lawyer who is not using this technology.' The AI-powered tools will also differentiate themselves by leveraging learning models built within the tool. AI tools are expected to improve as they learn from how they are used and from the queries being given to them. These learnings can also help manufacturers leverage information to produce better solutions. For example, if a manufacturer applies an AI-powered chatbot to provide technical support to customers, it will help the manufacturer learn from the frequently asked queries, devise better solutions and innovate. AI-powered tools could also help make the commissioning of MEP equipment easier at the site by providing guided set-up assistance and step-by-step instructions to ensure accurate commissioning."

Freiwat says the transition is but only natural. "The job market has undergone various phases of transition since the millennium, and it continues to experience more and more changes as the world keeps evolving at such a fast pace that we have never experienced before," he says. "If we may call it so, the post-pandemic era has even witnessed an expedited evolution and transformation compared to the pre-pandemic period. Having said that, I do not doubt that there will be an impact on how the current job market would look. This does not mean that more people will lose their jobs, but it means that people will need to be flexible enough to adapt to the change and acquire new skills they had not been exposed to before. This is the nature of life, anyway."

Davies says artificial intelligence has the potential to enhance certain aspects of the construction industry and create new job opportunities. He says he feels that artificial intelligence is going to become a role profile for a few people within the

business rather than everybody, just like companies employ an expert in InDesign or BIM. However, he strongly believes it would fundamentally change knowledge sharing. He also considers AI-powered bots as a highly effective research tool.

Quoting Gartner, Inc., Davies says chatbots will become the primary customer service channel for roughly a quarter of organisations by 2027. Chatbots can play a vital role in the creation of instructional or troubleshooting guides and enrich the overall experience, he says. The perspective shared by Davies on using chatbots to enhance customer experience emphasises the importance of human interaction and the need for people to be physically present with each other in the pre-pandemic phase. He says: "Our teams want to be in the office and be back around each other, having meaningful discussions. Clients also want us to be back in their offices. It's just human nature, there are some things you can't change. We can't just sit in our rooms getting advice from an AI Chatbot. A part of our nature is those conversations and the fun of going through ideas, and we like talking to each other and can't change that need." The deduction from Davies' statement is that while AI can provide valuable assistance, there still would be resistance to fully relying on it, as people enjoy the interactions and discussions that come with being in the same physical space. Artificial intelligence, from that perspective, would be viewed as complementing human interaction rather than being a complete replacement. The use of chatbots and artificial intelligence can be effective in certain industries to communicate messages to customers. For example, receiving a video message from a bank may be more appealing than a lengthy email.

Whilst discussing chatbots, it is also interesting to understand the concept of intelligent buildings, which are bringing new definitions to the way Facility Management works. As Juratli puts it, an intelligent building uses artificial intelligence algorithms based on user behaviour and outside factors to operate the facility, and it is a step beyond traditional and advanced building management systems. "Although smart and intelligent buildings are often used interchangeably, they are distinct," he says. "In an intelligent building, the algorithm, created from user behaviour and climate data, operates the facility automatically, reducing the need for manual intervention. While this may impact the FM workforce, it provides more comfort and convenience for building occupants. An intelligent building is a technological advancement that enhances building management and user experience. In an intelligent building, monitoring and analysing data continuously are also possible, providing a more efficient and effective solution for customer complaints and improving the overall user experience. Moreover, by investing a little more in intelligent building technology, building owners can provide a better user experience for their customers and achieve significant savings."

"THE JOB MARKET HAS UNDERGONE VARIOUS PHASES OF TRANSITION SINCE THE MILLENNIUM, AND IT CONTINUES TO EXPERIENCE MORE AND MORE CHANGES AS THE WORLD KEEPS EVOLVING AT SUCH A FAST PACE THAT WE HAVE NEVER EXPERIENCED BEFORE."

GHASSAN FREIWAT, CEO, AWAL GULF MANUFACTURING

Given the definition of intelligent buildings, chatbots would be a natural fit. But, that again would depend on the ecosystem and on the willingness of multiple stakeholders to embrace it. As Davies puts it, the adoption of any new technology would be faster in the public sector in the UAE, and a significant part of it could be attributed to the highly competitive talent pool in the region, which is keen on adopting new technologies and the latest trends. "I am from a small town in Scotland," he says. "If I start talking about AI there, they would have no interest. So, I think that government direction helps us to some extent, but the people living in that environment will also drive change." Hameed shares a similar perspective on the role of government in adopting the latest technologies. He believes that implementing such technologies would involve monitoring and checking them thoroughly to ensure their effectiveness. "The government will identify areas where AI-based technologies can be applied and

"CHATBOTS WILL BECOME THE PRIMARY CUSTOMER SERVICE CHANNEL FOR ROUGHLY A QUARTER OF ORGANISATIONS BY 2027. CHATBOTS CAN PLAY A VITAL ROLE IN THE CREATION OF INSTRUCTIONAL OR TROUBLESHOOTING GUIDES AND ENRICH THE OVERALL EXPERIENCE."

ROBERT DAVIES, OPERATIONS DIRECTOR FOR ADVISORY SERVICES, WSP MIDDLE EAST

implemented accordingly," he says.

Abbas believes the UAE is a perfect testbed for chatbots. The UAE, she says, has been leading the way in integrating advanced technologies into various industries, including IT, environment, production and space research. "This trend is expected to continue, with initiatives and programmes launched by GCC region countries to support the development and adoption of AI technology," she says. "Although businesses in the construction industry may be more focused on executing their plans, they should still consider the potential benefits of incorporating artificial intelligence."

Monga says it is too early to comment regarding the adoption of ChatGPT by businesses in the GCC region. "We can see the use cases emerge for different types of businesses and the business models around AI, and I am confident that many companies can benefit from ChatGPT, but I can't comment on the extent of adoption now," he says. "From the Governmental perspective, it is very positive to see the adoption and push of AI, developing frameworks, such as establishing the UAE Council for Artificial Intelligence and Blockchain, to propose policies to create an AI-friendly ecosystem and encourage research to adopt and regulate these technologies as needed."

"ALTHOUGH SMART AND INTELLIGENT BUILDINGS ARE OFTEN USED INTERCHANGEABLY, THEY ARE DISTINCT."

FARHAN JURATLI, ASSOCIATE DIRECTOR, DISTRICT COOLING, NAKHEEL

Many common threads exist on how consultants, contractors or organisations in the HVACR and construction industries approach the potential ways artificial intelligence and generative technologies could transform the landscape. One of the most important aspects is the slow rate of adoption of new technologies; however, there are also specific areas, such as technical report writing and research, where artificial intelligence could be easily implemented, enabling engineers and consultants to be more client-oriented.

It is widely agreed that artificial intelligence tools can help reduce ideation time and improve efficiency in the design and construction processes, but training and support for current employees to learn and incorporate these new tools into their work processes are an inevitable necessity. Reskilling and upskilling are crucial to keeping up with technological advancements, and artificial intelligence can be helpful in streamlining certain operations through automation. However, artificial intelligence cannot replace human expertise and physical presence, and chatbots, such as ChatGPT, could be a valuable tool in supplementing human expertise, enhancing productivity by streamlining operations and enriching the overall customer experience. ccme

‘BUDGETS ARE INCREASING, OPENING UP GOVERNMENT INVESTMENTS’

Stefan Leitl, Managing Director, BITZER Middle East, speaks on the market outlook in the Middle East. Excerpts from the interview he gave to **Surendar Balakrishnan** of *Climate Control Middle East*

WHAT is BITZER's outlook for 2023? And what specific products are you focusing on offering as solutions to customers in the region?
We at BITZER welcomed 2023 with a positive notion that "all will be well". Presently, the economic indicators are cause for concern, but we hope and believe private consumption and willingness to invest will not weaken.

What economic indicators are cause for concern?
We are referring to the overall view of what's going on. The war between Russia and Ukraine and the talk of recession in the United States are key aspects. We don't know how they will continue, but the Middle East seems to be on the right track. Usually, I collect forecasts from customers, and many are saying, "We don't feel so bad, and we hope to perform as the year before." I somehow have the same feeling that something is going on around us, but we are not affected as much as other countries are. The Middle East, especially, is a winner with oil prices at a high level, which means budgets are increasing, opening up government investments in infrastructure and pharma cold chain.

What challenges do you see as a manufacturer and supplier in the region? As a company, have you resolved pandemic-induced supply chain disruptions? Or, are you facing residual challenges?
We have solved supply chain disruptions in a good manner, actually. We have buffer stock available, and we could manage even during pandemic times. So, the situation is quite good. Even during the pandemic, we had not closed down the factory or resorted to short-term working schedules. We were able to service our clients, and this was an outstanding feature. In general, we are well prepared, and we can produce and manufacture as usual. You also spoke of challenges in the market. The challenges, on one side, are opportunities on the other side. We always try to find gaps. The good thing of operating in the Middle East is that we are responsible for 22 countries in the Middle East and parts of Africa. In some of these countries – Syria, Lebanon, Pakistan – there are some issues. What we lose here, we can gain elsewhere, and vice versa. On the other hand, if you are responsible for one country – say, Russia – if the economy is down, then you are down. So, that way, the Middle East is easier to maintain.

When it comes to product development, a nagging issue is the pressure to meet stringent norms, with insufficient time to do so. What is your take on this?
This is definitely a challenge, because regulations are done to protect the local market. And of course, you have to react quickly, and there is never enough time. But we have been meeting the challenge for years. I am convinced that it is possible to meet the standards issued by SASO and the others. People need to have suppliers that can fulfil these expectations, and until now, we could always do so. Saudi Arabia is one of our really good markets in the region. I am observing Saudi Arabia with a lot of interest. The Saudi Vision 2030, issued by the country's Crown Prince, and the Neom project are impressive. I wish the project will become a reality as soon as possible. We are following the developments in Saudi Arabia. We sometimes find some tenders available, but it is more talking than acting. I hope we soon get to see some big business in our industry.

Pricing wars and counterfeiting are causes for concern for manufacturers and traders of HVACR equipment. A word please on that. Do you see anything changing for the better?
For sure, it is affecting us, but we have a good loyal customer base, and they know what they get from us. It is not just the product but also the service around it. And we are willing to provide service around the lifecycle of the product. We are fighting against Low Price Technically Acceptable (LPTA) and duplicates.

Counterfeiting is a major problem, and of course, we have a legal department that is fighting against it, but we still have a long way to go, unfortunately. We do have a system of QR Codes and special tracking mechanisms, so customers are able to understand whether a product is original or not. We are trying to protect, but counterfeiters will always find ways to jump in. On one side, there is pain; on the other side, when you realise it is you they are copying, you know you are the leader of the market.

> **"We are trying to protect, but counterfeiters will always find ways to jump in. On one side, there is pain; on the other side, when you realise it is you they are copying, you know you are the leader of the market."**

What areas of investment do you see as representing bright business prospects?
Starting 2-3 years ago, during the pandemic times, there was huge investment with respect to pharma products and food storage technologies. Many governments are issuing programmes of having enough food for three months without outside supply;

this has opened up the cold storage sector, and we are happy. In the future, we see a strong thrust in the areas of electronics and data collection, serving products over their lifetime and providing information about application, about preventive maintenance and the condition of the system. In my opinion, this is the future milestone.

In this year of COP28, with the UAE hosting it, do you see the event as providing the impetus for greater uptake of products that score high on energy efficiency?
Let's say that energy-efficient systems are more and more in focus in the Middle East. When we look back to 5-8 years, energy-efficient products were nice to have but were not mandatory. In the world of today, though, green footprint has to be applied everywhere, and energy-efficient systems constitute the future direction the Middle East will go in. I see the countries of the Middle East as willing to invest and going the

extra mile. We are ready with inverter technology, and this, of course, comes from a European perspective. We have strong direction on decarbonisation. All fossil fuels are not really banned, but we are going in that direction. The momentum is gathering to heat apartments with heat pumps and to use waste heat. And this is something we are strongly focused on. For instance, our ElectraTherm ORC solution, which is produced at ElectraTherm – a 100% BITZER company, in the United States – makes a major contribution to minimising the carbon footprint by turning waste heat into electrical power. This solution can be used in the Oil & Gas industry. Likewise, the waste heat that is produced can be used to generate power in chicken farms in the desert. ccme

HAVE YOUR SAY!
We welcome your views on the Q&A.
Write to **editor@cpi-industry.com**

Produced By

CPI INDUSTRY

Official Publication

climate control MIDDLE EAST
KEY PERSPECTIVES ON THE REGION'S HVACR INDUSTRY

DC Dialogue

7th EDITION

7 June 2023

Double Tree by Hilton M Square Hotel and Residence
Mankhool, Dubai, UAE

THEME:

Case-studies as a collective expression of District Cooling possibilities

www.dcdialogue.com

For editorial enquiries:
Surendar Balakrishnan
Co-Founder & Editorial Director
M: +971 50 509 2457 | E: surendar@cpi-industry.com

For sponsorship enquiries:
Frédéric Paillé
Co-Founder and Commercial Director
M: +971 50 714 7204 | E: fred@cpi-industry.com

ITALIAN INITIATIVE

What significant innovations is the Italian HVACR manufacturing industry able to report in terms of enabling better energy efficiency, Indoor Air Quality and reliability? **Indu Revikumar**, Features Writer, *Climate Control Middle East,* searches for answers…

IN what is being called the post-pandemic age, building owners across Italy are confronted with complex and demanding regulations. The Italian government has introduced several new regulations to make buildings more sustainable, safe and digitally enabled. It has also introduced incentives for renovations that promote energy efficiency. As a result, retrofitting is a popular trend across the country's Existing Building landscape. A similar trend is blowing through the refrigeration industry for greater efficiency and reliability in cold chain.

The regulations and incentives impact the HVACR industry by creating a need for cost-effective solutions that meet the demands of owners of facilities for greater energy efficiency, better IAQ and reliability. Manufacturers of equipment and components are responding by developing new technologies and products that address these needs.

Francesco Mastrapasqua, Institutional Affairs Manager, Epta Group, notes that Italy and Europe, in general, face challenges such as high energy costs and the availability of components, which impact food retailers' margins. Despite market growth, retailers are cautious in directing budgets towards purchasing new equipment. To reduce environmental impact, companies need to meet the requirements of F-Gas regulations, improve energy efficiency through eco-design and energy labelling, and embrace the European Green Deal's climate-neutrality target. The latest version of Eco-design encourages recycling, repair, reuse and reconditioning of products to reduce waste and carbon emissions. Energy labelling provides retailers and hospitality stakeholders useful information to make informed choices. In short, the HVACR industry needs to transition towards an environmentally friendly approach as stakeholders embrace the green shift.

Mastrapasqua, elaborating, says: "European standards and regulations aim at protecting the environment and encourage sustainable use of resources. For several years now, the Group has replaced HCFCs and HFCs with natural alternatives, mainly CO_2 and R290, in our offerings for Europe, providing additional energy savings in any country, at any external temperature. In addition, in compliance with Eco-design and energy labelling, Epta has developed a range of solutions that are best in class in terms of energy efficiency. In a context in which refrigeration accounts for 40% of the store's energy bill, Epta have just launched remote and plug-in display cabinets in the market, which reach top efficiency classes, A and B."

Gessica Perani, Marketing and Communication Manager, Errecom, says the Italian government has initiated various projects and incentives to revitalise the construction sector by renovating and transforming old buildings into high-performance ones. These incentives allow citizens to claim a percentage of their expenses against tax bills and exchange it with the constructor. The improvements include anti-seismic measures, photovoltaic systems and heat pumps, among others, to improve energy efficiency and tackle climate and energy challenges. As most buildings in Italy and Europe are old and inefficient, many citizens have taken advantage of these incentives. The industry is influenced by the government's decisions, and Italy, as an EU member, can benefit from R&D funds and subsidies to drive these changes.

Perani adds: "Right now, the Italian government is defining the plan for REPowerEU, which must be submitted to the European Commission by April 30. Considering that one of REPowerEU's goals is to double the number of heat pump units in the next five years, I would say that Italy is on the right track: According to the latest data available, the number of additional heat pump units sold in Italy in 2022 recorded a growth of +134% compared to 2021."

Reflecting on Perani's comments, Nicola Zanca, Director of the Technical Department, Valsir, highlights the impact of the pandemic on the construction market in Italy, stating that the market in Italy is focused on renovating existing buildings, since the majority of the buildings in Italy are old and in need of upgrades to improve their energy efficiency profile. To encourage these renovations, the Italian government offered tax benefits for those


Andrea Cavalet


Mirco Cauz


Francesco Mastrapasqua


Fred Penhall

who improved their building's energy efficiency by two classifications, which he notes constituted a significant motivation. This led to a significant increase in the market for heating, cooling and plumbing companies. However, he notes that Italy's many historical buildings present a unique challenge for improving energy efficiency. Nevertheless, Europe will require all countries to have their energy efficiency classified as A, B, C, or D by 2030, requiring significant investments by individuals and companies in the next seven years.

Alessandro Borri, COO, General Gas, says: "On the refrigerant gas side, the only thing we can say is that Italy, as a member State of the EU, moves within the context outlined by the European regulation on fluorinated gases (F-Gas), which, moreover, is currently being revised and discussed at the level of the European Parliament. In other words, Italy will not necessarily do anything different from what the other member states will also have to do from an EU perspective."

Mirco Cauz, Managing Director, Central and Southern Europe, Carel, speaks of a growing focus on energy efficiency and reducing dependence on fossil fuels like natural gas in Europe. This includes a shift towards more natural efficiency, emphasising heat pumps, especially propane pumps for residential heating. This trend is also starting to take root in other parts of the world, like the GCC region countries, though it may take some time to fully develop. Carel, he says, is contributing to this effort through pilot installations of commercial refrigeration systems that prioritise natural efficiency – combining plant efficiency, serviceability and lower cost of ownership with minimal impact on the environment.

While several European countries have access to nuclear power and cheap electricity due to their geographical advantages, each country has its own specific resources and priorities, leading to different energy strategies, notes Sandro Bazzoni, Commercial Director, Valsir. As he puts it: "Italy, for example, relies heavily on renewable resources due to the abundance of rivers and solar energy. However, despite the focus on renewables, energy demands in Italy are high due to the country's strong manufacturing sector. The COVID pandemic has also significantly impacted the energy sector and society as a whole, highlighting the need to be prepared for future changes. Predicting what will happen in the future is challenging, so being ready to face changes is essential."

Cauz adds: "Generally, when the industry tackles growing environmental concerns, technology plays a key role in enabling the industry to take these challenges on. The latest revision of the European Energy Performance of Buildings Directive (EPBD) focuses on promoting the adoption of smart technologies, particularly through establishing a smart readiness indicator (SRI). This indicator allows the assessment of the ability of buildings to adapt their operations to the needs of the occupant, including optimising energy efficiency and overall performance and adapting their activity in response to signals from the grid (energy flexibility). The SRI indicator raises awareness among building owners and occupants of the value added by building automation and electronic monitoring of building technology systems, giving occupants confidence in the savings these new advanced features can bring. Although this definition of smart buildings refers primarily to energy issues, it is clear that smart ventilation is a key factor in the "smart" readiness of buildings to reduce energy impacts and provide adequate air quality. The demand for connectivity is now a fundamental requirement in developing new products, and Carel is well positioned and experienced to

support the new requests we see from within the region."

When it comes to manufacturing, Cauz highlights the mirroring strategy, involving producing each product in at least two facilities worldwide, allowing for the swift shift of production to other plants during a pandemic. This sustainability strategy allowed the company to continue production during the pandemic and contributed to its growth of about 2.8 per cent.

Salah Abdelghany, General Manager, Castel Gulf DMCC, notes that Castel has stuck to its philosophy of making production processes more efficient while maintaining high stock levels. Andrea Cavalet, General Manager, Epta Middle East, says: "Innovation and sustainability are the pillars of Epta's development and constitute the fundamental assets of our group identity, the Epta Sustainable System. The sustainability of our business, both in terms of manufacturing and product offering, embraces the environment and its people. This is the secret to facing complex contemporary challenges, such as energy transition and digitalisation, in compliance with the continuous evolution of consumers' purchasing habits and the urgent need to reduce the carbon footprint."

GCC region to the fore

Speaking about the GCC region, Bazzoni notes that the GCC region market is now more accepting of new technologies that were previously too expensive, such as Valsir's multi-layer composite pipe system. This material, he says, is flexible, durable and resistant to chlorination, which is important for water quality. "Although it may cost more initially, people are willing to invest in it, because it will last longer and prevent future problems," he says. "We are also involved in renovation and refurbishment projects for older buildings experiencing issues with their current piping systems." Another example of a technology gaining acceptance in the GCC region market is underfloor cooling, previously less heard of, Bazzoni says. This system provides better comfort and energy savings, which is important for sustainability and reducing energy costs, he says, adding that the GCC region market is increasingly open to innovative technologies that offer long-term benefits.

Zanca says that Valsir is exporting its products to over 100 countries worldwide and is currently engaged in various projects related to acoustic systems, water supply, and heating and cooling systems. Recently, Valsir signed an agreement with its distributor in the GCC region to promote its products, which the company says, have a longer lifespan, better performance and sustainability features. The GCC region market, Zanca says, is now more accepting of new technologies, like the multi-layer pipes, which resist chlorination. "It is common in the UAE to use air conditioning systems due to the hot weather, which can be expensive and unsustainable," Zanca says. "However, combining underfloor cooling with an AC system can create a more comfortable atmosphere while reducing energy costs. Underfloor heating is also popular in markets like Italy and North Africa, as it is more comfortable and energy-efficient than traditional radiators. This trend is also gaining popularity in the GCC region market, with projects like a three-floor station in Riyadh utilising underfloor cooling to reduce the impact of air conditioning. Underfloor heating and cooling systems are not just for residential properties but can also be applied to large surface areas like factories. In Italy, installing underfloor heating in new homes is mandatory, and solutions are available for the renovation market. These systems offer a more sustainable and efficient way of heating and cooling buildings."

Fred Penhall, Managing Director, Carel ME, says: "Following the trends in Europe that have been developed for some years, the biggest issue is the requirement to exactly match kilowatt delivered to kilowatt demand. The ability to reduce wasted energy is key. So now, we have a lot of traditional buzzwords like VRF and VRV that allow you to match demand and supply. These are now being extended to DC drive technologies, which are currently at the forefront of this technology. This is simply to improve the annual energy efficiencies of these plants. Several manufacturers are adopting DC technology, and it is also being extended into refrigeration applications, where we see the adoption of propane technology. The trends in Europe are moving into the GCC region ahead of legislation, which is a positive movement. I also think separating the discussion from the cost of procurement is becoming increasingly important. The capital cost versus the lifetime cost of a product should be considered. Technologies may increase the capital cost, but these costs are quickly recovered in the lifetime ownership, which is becoming more and more relevant in the discussions."

Speaking from a refrigeration perspective, Mastrapasqua, says: "Innovation must be sustainable from every point of view, and ensure advantages during the entire life of the solution, from every point of view, such as energy consumption, maintenance and reliability. The continuous research in ground-breaking systems based on CO_2 allowed us to develop two technologies for transcritical CO_2 plants: Full

Transcritical Efficiency (FTE) and Extreme Temperature Efficiency (ETE), which have distinguished themselves over time for their simplicity, performance and respect for the environment. As far as the GCC region is concerned, Epta has installed a full transcritical CO_2 (R744) supermarket in 2019, in Abu Dhabi. The installation has proved extremely reliable and efficient, with -40% energy consumption compared to a standard HFC technology. This installation is a clear example of Epta's approach and will to bring its experience and research to support the GCC region's green transition. The target is clear, and the customers start giving signals of interest and implementation of ESG policies while still waiting for clear governmental policies to move in this direction. The Kigali Amendment to the Montreal Protocol is the latest policy on this matter, and it sets long deadlines, creating a big gap with the European community's pace. Awareness of even energy efficiency topics is lacking, and most of the time the main concern is on the initial investment without a clear focus on the TCO (Total Cost of Ownership) reduction. A clear Regulation from the Authorities may help in the transition, and shift priorities."

Cauz says: "In the Middle East, there is more demand for renovation projects than new construction. Cooling systems are becoming more popular in this region compared to the European market, where heating and cooling systems are required for year-round comfort. However, implementing these systems requires careful consideration of factors like humidity and temperature to ensure that the technology effectively creates a comfortable environment. While the technology exists, it needs to be developed further to account for these factors and to ensure that it works in different countries and climates. Developing these systems is important to provide a sustainable and efficient way to heat and cool buildings.

Abdelghany says: "Retrofit activities are not conducted directly by Castel but are managed by our end customers and installers; over time, the innovative components enter more frequently in these renewal activities and new projects. Even if difficult to estimate quantitatively, the retrofit market is an important component of our outlet market in the GCC region."

Penhall says: "There's an opportunity for retrofitting; we know that the GCC region is full of, let's say, pretty old technology and low energy-efficient equipment. So, the opportunity for retrofitting is logical; it's there. I think the driving force to get it done is where it becomes a bit challenging. Energy, I think, will be driven by the private sector. You will find companies that see an opportunity to have a business around energy efficiency. And as soon as they can offer a reasonable return on investment or possibly even fully support the retrofit cost, there will be good opportunities for retrofit."

Andrea Cavalet, General Manager, Epta Middle East, says that retrofit is part of the aftersales strategy and is set to grow in the GCC region. It is the easiest way to extend the systems' life and guarantee a benefit in terms of energy consumption, he says. "If we think about Europe, retrofitting has been mainly pushed by two facts: High energy costs and policies from the European Union," he says. "This mix, which included incentives to companies investing in more efficient solutions, boosted this business segment. There would be tremendous growth if these two elements come into action in the GCC region. The refrigeration business is going very well in the GCC region, especially in those regions that are investing and expanding more than others. The Group is gaining market share and is closer and closer to those customers who see Epta as a reliable partner."

Cauz says: "The fact that certain types of innovation or change should be driven by legislation also affects this strategy. It's difficult to invest in an environment waiting for the end, and when certain technologies are already standard in Europe, it becomes difficult to ignore the environment without specific involvement. This also affects enterprises, because when discussing price, we are usually thinking about capex. However, when discussing energy efficiency, we are intrinsically referring to the total cost of ownership. If we don't change and are unable to achieve a return on investment, then additional costs will be incurred due to the need for intelligent systems, controls and innovative solutions, which may take some time to pay back. That's why I suggest breaking the discussion into three parts."

Penhall says: "The region continues to deliver double-digit growth year-on-year, even during the pandemic. So, of course, for Carel, we have two opportunities that we are pursuing. One, of course, is

to follow and support organic growth, and the second is to bring more of our products to the market, taking advantage of our customer relationships. We are very upbeat about these opportunities. Additionally, the order book is healthy, so we are positive about the short- and long-term.

Cavalet says Epta is helping the GCC region countries by implementing technologies which have already become consolidated in Europe – solutions that are well advanced compared to GCC region standards. This, he says, allows Epta to propose efficient systems without affecting the initial investment costs.

Abdelghany says Castel, to stay close to its customers in the GCC region area, opened a branch in the area at the beginning of 2023. In addition to an easier commercial supply, this also allows for technical engineering support to facilitate the GCC region market's transition to more ecological, low-GWP and low-energy consumption products without impacting negatively from an economic point of view, he adds.

Gessica Perani, Marketing and Communication Manager, Errecom, says the company's mission is to provide HVACR technicians with the tools and knowledge to carry out ordinary maintenance on air conditioning and refrigeration systems, reducing their energy consumption and CO_2 emissions and eliminating refrigerant gas leaks into the atmosphere. Considering the importance given to energy efficiency today, Errecom is the ideal partner for the future Perani says. "Our products – leak stop, additives, UV dyes and cleaners – improve systems' performance and are available for an affordable price, Perani says. "Compared to replacing or repairing systems, the cost of purchasing one of our additives is significantly lower. Not to mention the economic and social cost potentially linked to the downtime of a refrigerated vehicle, data centre or cold room, which could be easily avoided by simply planning ordinary maintenance with Errecom's products."

The Saudi thrust

Penhall says that Saudi Arabia is the market dominating most of the conversation. The market, he says has huge growth, and it is not only about potential but concrete plans. The projects that are tabled for the next 10 years are extremely interesting for any manufacturing or development business, he says. "So yeah, there's no wonder why it's the market that everyone's focused on," he adds.

Abdelghany says: The GCC region – in particular, Saudi Arabia – is experiencing a moment of important technological evolution also in the HVACR sector, with undoubted commercial impacts. "The opening of our new group company in Dubai demonstrates Castel's focus on the area," he adds.

Cavalet, says: "It is evident that Saudi Arabia has started playing one of the major roles in the region, with large investments in several business sectors, helping the companies to invest with confidence. Despite this, there is no shift in the focus and capability to grab opportunities in different countries. To be successful in the GCC region, Epta promotes a long-term vision in this area. The Group's flexibility makes it easier to accept fast changes in the current political situations and grab opportunities out of the "comfort zone". The key strategy is to be an entrepreneur in this region by bringing the Corporate's Values and Directions." ccme

Gessica Perani

Nicola Zanca

Salah Abdelghany

Sandro Bazzoni

Tabreed announces an EBITDA of AED 1.23 bn in 2022

District Cooling provider says the figure represents a 19% increase over 2021, and a net profit of AED 600.2 million

By CCME Content Team

Khalid Al Marzooqi

TABREED released its consolidated financial results for the year 2022, reporting an EBITDA of AED 1.23 billion – a 19% increase over 2021 and a net profit of AED 600.2 million, representing an increase of three per cent

Making the announcement through a Press release, Tabreed said the company's Board of Directors have recommended a dividend of 13.5 fils per share, to be paid fully in cash – an increase over last year, acknowledging growth of the business while retaining availability of capital for further expansion.

Tabreed said 2022 was an exceptional year for the company. It added that it spent the year building on its network of assets, spearheading expansion into existing and all-new markets, while investing heavily in its existing UAE infrastructure. In January 2022, Tabreed said, it practically doubled its concession capacity in Oman with the acquisition of a seventh District Cooling plant, which services Al Mouj, the Sultanate's most prestigious new real estate development.

This was swiftly followed, in February 2022, by the announcement of its partnership with Gascool and Marakez for Real Estate Investment Company, to provide District Cooling services to the new D5M Mall in New Katameya, in eastern Cairo, Tabreed said. Just seven months later, Tabreed said, it signed an agreement with Egyptians for Healthcare Services Company (EHCS), to build, own and operate on a long-term basis, an expansive District Energy plant to supply cooling and heating to CapitalMed, an all-new healthcare city project by EHCS in Cairo.

In May 2022, Tabreed sponsored and exhibited at the inaugural World Utilities Congress in Abu Dhabi's National Exhibition Centre (ADNEC). And in June 2022, Tabreed received valuable recognition on the international stage, being presented with the Silver Award for the Number of Buildings Committed in 2021 Beyond North America, by the International District Energy Association (IDEA), with respect to the connection of 56 new buildings to its networks.

Tabreed said it plays a vital role in the region's sustainability targets. It said that in 2022, it was privileged to be part of the UAE's delegation which represented the country at COP27, the global environmental summit, held in Egypt. Such high-profile activities have helped Tabreed to position itself at the forefront of this nation's sustainability agenda, gearing up for further involvement during 2023 and the UAE's hosting of COP28, it added.

According to Tabreed, 2022 also began and ended with two senior appointments to Tabreed's Executive Management Team. In January, Antonio Di Cecca was named Chief Operating Officer (replacing Jean-François Chartrain); and, in November, the all-new position of Chief Asset Management Officer was announced, with Dr Yousif Al Hammadi assuming the role, the company said.

During 2022, Tabreed added 34,454 Refrigeration Tons (RT) of new connections in the UAE, 19,202 RT in Oman and 500 RT in Bahrain, increasing the company's total connected capacity to 1,264,252 RT.

According to Tabreed, the financial highlights in the 12 months ended 31 December 2022 are…

- Group revenue increased by 13% to AED 2.22 billion (2021: AED 1.95 billion)
- Core chilled water revenue increased by 14% to AED 2.14 billion (2021: AED 1.88 billion)
- EBITDA increased by 19% to AED 1.23 billion (2021: AED 1.03 billion)
- Net profit attributable to the parent increased by three per cent to AED 600.2 million (2021: AED 585.2 million)

According to Tabreed, operational highlights in the 12 months ended 31 December 2022 are…

- Total connected capacity increased to 1,264,252 Refrigeration Tons (RT)
- 54,156 RT of new customer connections added
- The company achieved a record 17,039,729 hours worked without a single lost time incident (LTI), the most recent occurring in July 2015

According to Tabreed, environmental impact highlights in the 12 months ended 31 December 2022 are…

- The company saved 2.31 billion kilowatt hours across the GCC region – enough to power approximately 132,000 homes every year
- It prevented the release of 1.38 million metric tons of CO_2 into the atmosphere, which is equivalent to the removal of approximately 300,000 vehicles from the roads, annually

Khaled Abdulla Al Qubaisi, Chairman, Tabreed, said of the results: "With each passing year, Tabreed fortifies its already iron-clad reputation as one of this country's most resilient companies. Targeted, strategic, carefully planned growth continues to manifest meaningful

results that benefit shareholders, employees, clients, and the districts and communities in which we operate. As we take our globally renowned expertise into new markets, we further our positive impact by helping to negate climate change through optimum efficiencies. And we do this, always with sustainability as a cornerstone of our continuous success."

Khalid Abdulla Al Marzooqi, CEO, Tabreed, said: "During 2022, Tabreed's objectives and intentions became crystal clear. Our medium- and long-term strategy is being rolled out, with the company entering additional territories and increasing awareness through close alignment with governments, legislators and developers, who understand how vital our services are in the drive to net-zero. This company is built on excellence and the pursuit of maximum efficiency, and these results prove that Tabreed's reputation as the world's leading District Cooling company is entirely justified."

ISHRAE launches UAE chapter

Marks the occasion with a conference that discusses a potpourri of HVACR-related issues

By Surendar Balakrishnan | Editor, *Climate Control Middle East*

Moan Abraham


K Kalimuthu


N.S. Chandrasekar

Panel discussion: Cross-sectoral partnership for positive climate action

ISHRAE launched its UAE chapter on January 25 in Dubai. It marked the opening with an oath-taking ceremony of the chapter's newly appointed office-bearers and with a conference, called Urjavaran, comprising a series of discussions revolving around HVACR-related issues.

Nishant Gupta, Vice President (Technical), ISHRAE, led the oath-taking ceremony, which saw senior HVACR industry stakeholders in the UAE assume office, with Moan Abraham as President, Agnel D'Souza as President-Elect, S S Swamy as Treasurer and Ajith Abraham as Secretary.

Gupta, then giving the opening address, spoke of how it was a proud moment for the 42-year-old organisation to establish its 51st chapter, in the UAE. In the coming months, he said, the ISHRAE chapter expected to launch different initiatives in the country.

Moan Abraham, speaking after him, elaborated on the birth of the chapter, which to date has enrolled 125 members in the UAE in the span of four months. "Our aim is to reach 300 members by the end of the calendar year," Abraham said, adding that in the coming months, the chapter planned to conduct a workshop on commissioning, a Distinguished Lecture Series, webinars, product presentations, and training programmes on the importance of psychrometric chart, on heat load calculation, environmental air quality and on ISHRAE-certified programmes. In addition, Abraham said, the chapter would be holding training sessions for students.

A key area of focus, Abraham said, would be refrigeration, against a backdrop of a general paucity of technical programmes on the subject in the country.

Panel Discussion: Achieving energy efficiency and occupant health through VRF technology

Nishant Gupta

Ajith Abraham

N.S. Chandrasekar, National President for the 2022-2023 term, ISHRAE, making a presentation, spoke of how ISHRAE has over the years built a membership of 20,000 professionals and 7,000 students. ISHRAE, he said, has 49 chapters in India, with the 50th, in Warangal, in the southern Indian state of Telangana, at a formative stage. Pointing out that the first overseas chapter came to be established in Bangladesh, in 2022, he said it was a matter of pride to establish the second in the UAE, with one in Qatar to follow. He also said that ISHRAE has been receiving requests for chapters from the HVACR communities in Nepal, Sri Lanka, Kenya and Nigeria.

Speaking on ISHRAE's theme of the year, 'Prithvi, Pariyavaran, Parivarthan', which stand for Earth, Environment, Transformation, Chandrasekar said it aligned with India's climate action, including the country's net-zero target by the year 2070 and with that of the UAE, which has made a commitment to become net zero by 2050, is a host of the impending COP28 Summit and has a hydrogen roadmap. ISHRAE, as a technical organisation, is one of the largest influencers and can do a lot towards net zero, he said. "We can make sure that we from the HVAC field can contribute," he said. "In India, we work with the Bureau of Indian Standards, the Environment Protection Ministry and with the Star Labelling programme. We, as ISHRAE, give inputs and work with industries, architects, academia and end-users. We are looking at the prospect of being able to spread the knowledge of HVAC here."

Chandrasekar said ISHRAE, over the years, has established Technical Standards on VRFs, AHUs, IEQ and on commissioning. The standard on commissioning, he said, is one of its kind, he added.

Chandrasekar, just like Abraham before him, spoke of the technical programmes in the UAE chapter's pipeline. Emphasising on refrigeration as a subject, he said the chapter has outlined topics related to refrigeration, including heat load estimation, selection of components (insulation panels, evaporators (heat exchangers), condensing units, refrigeration racks, air-cooled condensers and water-cooled condensers), piping design, best practices for installation and commissioning, and operation and maintenance.

Speaking after him, K Kalimuthu, Consul (Economic, Trade & Commerce), Consul General of India, Dubai, spoke of the importance of refrigeration in the context of food losses. "We lose 30%-40% from the point of production to the point of consumption of food," he said. "So, imagine if we could provide a solution. One unit saved is one unit produced."

Kalimuthu also spoke on the subject of standards – on how they could become barriers to trade. He said the UAE and India have agreed to work together to understand to ensure technical standards do not become barriers. The ISHRAE chapter, he said, could help in cooperation and increased trade. Indian trade relating to HVAC equipment, he pointed out, is not substantial, considering that we are a premium trading partner of the UAE. This could change, he said.

The conference track of the event included a panel discussion on cross-sectoral partnerships for positive climate action. It also included a panel discussion on achieving energy efficiency and occupant health through VRF technology.

The event was sponsored by Daikin (Presenting Partner); Carrier (Host Country Partner); HTL Aircon (Engineering Solutions Partner); Leminar and Rheem (Knowledge Partners); Mexflow (Copper Partner); Bry-Air and DRI (India Innovation Partners); Blue Star (Sustainability Partner); Edgetech (Air-Handling Solutions Partner); and ABL Technical Services, Advance Valves, Daspass, Grundfos, HisenseHVAC, Humidin|Casilica and SRM Tec (Strategic Partners). *Climate Control Middle East* magazine was Media Partner of the event.

Empower announces its financial results for 2022

District Cooling utility company announces posting record profit of AED 1.001 billion, and a proposed dividend of AED 425 million

By CCME Content Team

EMIRATES Central Cooling Systems Corporation PJSC (Empower) announced its financial results for the fiscal year 2022, with a total revenue of AED 2.8 billion, and a growth of 13.3% compared to 2021.

Making the announcement through a Press release, the company said it has recorded a net profit of AED 1.001 billion, representing an increase of seven per cent, compared to the previous year. The company said it has also proposed a dividend amount of AED 425 million for the second half of the year 2022, as stated in the Prospectus.

Speaking on the occasion, H.E. Ahmad Bin Shafar, CEO, Empower, said: "The year 2022 marks an important milestone in the history of Empower and a significant event in its journey towards growth and prosperity, especially following its listing on the Dubai Financial Market. The successes achieved during 2022 are unprecedented, as the company's portfolio is growing at an accelerated pace serving a diversified portfolio of projects."

H.E. Bin Shafar further stated that Empower is committed to distributing a total dividend of AED 850 million per annum for the first two years, subject to the approval of the Board of Directors and General Assembly.

H.E. Bin Shafar stressed that Empower's leadership in creating a sustainable business model and its superiority in meeting the growing demand for District Cooling services, as well as the quality and sustainability of its services and advanced infrastructure, has made it the world's largest player in the District Cooling industry, and the most capable for expansion and planned growth. "Thanks to our innovative business model, we have managed to expand and achieve consistent growth based on ambitious proactive plans that focus on upgrading the capabilities of our teams, investing in infrastructure, and adopting modern and advanced technologies in its kind," H.E. Bin Shafar said.

H.E. Bin Shafar pointed out that by the end of 2022, Empower has provided District Cooling services to more than 1,463 buildings, most notably the recently added Atlantis The Royal Hotel, Museum of the Future, Marsa Al Arab, One Zabeel and Wasl1, bringing the demand for District Cooling services high by 13.3% compared to 2021.

The CEO also commented that the company has worked hard during 2022 to provide District Cooling services to various regions in Dubai by expanding its network to more than 380 kilometres by the end of the year, allowing the company to increase its share in Dubai's District Cooling market to more than 80%.

He said that in 2023, Empower will mainly focus on "ensuring profitable and sustainable returns to its shareholders, investing in developing the District Cooling infrastructure of the company, and expanding its transmission and distribution networks to cover more regions in the Emirate of Dubai".

Empower said in the Press release that it caters to vital sectors in the Emirate of Dubai, as it provides District Cooling services to more than 64% of the residential buildings and 15% of the commercial buildings in Dubai. The hospitality sector's share is 14%, and the health sector accounted for three per cent, with the remaining four per cent distributed among the education, entertainment and retail sectors. Bin Shafar said that catering to various sectors in Dubai will continue with the aim of helping the sectors assume their responsibilities in reducing carbon emissions and enhancing Dubai's endeavours to achieve a green economy and sustainable development.

During 2022, Empower said, it announced the commencement of operations of the first phase of its Zabeel District Cooling plant, with a production capacity of 27,750 refrigeration tons (RT). The company indicated that the total production capacity of the plant will reach 50,000 RT upon its completion, noting that the interconnection between the new Zabeel Plant and the Dubai International Financial Center Plant will bring a total production capacity to 112,000 RT.

The company said it also started

the operations of the first phase of its fourth District Cooling plant in the Business Bay area, in Dubai, with a production capacity of 27,750 RT. The total production capacity of the plant will reach 50,000 RT upon the completion of all construction phases, by the end of September 2023, the company said.

Empower said it also awarded a contract in the past year for the construction of a new-generation District Cooling plant in the Dubailand Residence Complex development, for a total value of AED 193 million, with the aim of providing environmentally friendly District Cooling services to the development. The plant will have a production capacity of 23,500 RT with the completion of the first phase, and is set to be operated during the first quarter of 2023, the company said. The total capacity of the new plant will reach 47,000 RT upon completion of the whole project, the company indicated.

Empower highlighted how, in 2022, it announced the commencement of a scaling-up plan that includes expansions and qualitative developments of the infrastructure of its District Cooling systems in the Business Bay region, with the objective of ramping up on efficiency like never before and making the Business Bay region the single largest and independent urban District Cooling project in the world, with a total capacity of 450,000 RT through six District Cooling plants and 10 thermal energy storage (TES) systems, including the current and upcoming plants and systems.

Empower confirmed that it is moving forward with investments to expand its operations in Dubai, as part of its commitment to modernise and develop its facilities and technical staff, in order to meet what it described as increasing demand for its services from individuals, establishments and companies.

Empower also highlighted how it won various awards during the past year, notably two gold awards from IDEA 2022, held in Toronto, Canada, in the categories 'Number of Buildings Committed' and 'Total Building Area Committed'. The company pointed out that it had won gold awards from IDEA for these categories during the years 2016, 2017, 2018, 2019 and 2021. It said it had also won more than 16 times multiple awards in different categories during the past years, in addition to several awards in different global conferences and exhibitions.

The company said it also won two Golden Bridge Business and Innovation Awards 2022. The company achieved the gold award for the category 'Company of the Year' in the Energy & Utilities sector, in recognition of its achievements during 2022, its practical innovations in developing the District Cooling industry in the world, and its upgrading of sustainability standards in the sector. H.E. Bin Shafar, it said, won the gold award in the 'Executive Achievement of the Year' category in the Energy & Utilities sector, in recognition of his prominent role in encouraging the region to adopt District Cooling systems, as well as his pioneering role in leading Empower.

In addition, the company said, it was successfully re-certified with ISO standards in 2022, including the quality management system (ISO 9001:2015), the environmental management system (ISO 14001:2015) and the occupational health and safety management system (ISO 45001:2018), which serve to highlight its commitment to adopting best practices, standards and management systems related to quality, environment, occupational health and safety, and to recording the highest levels of quality in providing District Cooling services and operations to achieve the highest levels of satisfaction and happiness of its more than 110, 000 customers.

"Empower has a clear vision and effective strategies for its expansion in line with the vision of the wise leadership in the transition towards sustainability," H.E. Bin Shafar said. "We seek to add new production capabilities that contribute to reducing costs and enhancing energy efficiency through using the most advanced technologies that we have developed."

AESG achieves NCEC Government Certification

Consultancy and advisory firm says the development strengthens its role in enabling sustainable development, under Saudi Vision 2030; appoints industry veteran, Tom Burkitt as KSA Country Director

By CCME Content Team

Tom Burkitt

CONSULTANCY, engineering and advisory firm, AESG said it has successfully achieved Certification under the Saudi National Center for Environmental Compliance (NCEC).

With COP28 set to take place in the GCC region this year, sustainability has been a key theme for regional economies, and this is especially evident in Saudi Arabia, which aims to achieve Net Zero by 2060, AESG pointed out through a Press release to announce the news of achieving the certification. Under this government vision, sustainability is at the heart of the Kingdom's transformation projects, such as Neom, the Red Sea and Qiddiya, AESG said, adding that it intends to be a fundamental enabler of this ambition.

AESG said that with the certification in hand, its qualified Environmental team will continue to actively preserve and protect the environment, by providing high-quality services that contribute to raising the level of compliance with environmental regulations and standards across the Kingdom's giga projects.

"Saudi Arabia has demonstrated clear intention for its giga-projects to set new sustainability benchmarks aligned with its Vision 2030 agenda," said Saeed Al Abbar, CEO, AESG. "In doing so, these projects are set to become showcases of innovative new construction and development paradigms and future-focused design concepts. Bringing this vision to life will call for the support of international engineering firms whose world-class expertise can ensure the incorporation of the highest industry standards."

Nivine Issa, Global Director of Environment, AESG, added: "At AESG, we are proud to have achieved the NCEC Certification, which enables our qualified team of environmental scientists, engineers and experts to guide developers in bringing the Kingdom's impressive giga-projects to life, while actively preserving and protecting the environment."

AESG said its commitment to the Kingdom is further evidenced by the appointment of Tom Burkitt as AESG's new Country Director. Burkitt is a scientist, business analyst and environmental consultant with 30 years of professional experience and a technical background spanning environmental impact assessment, coastal planning, climate risk assessment, capacity building, infrastructure asset management and the implementation of technologies for solving complex environmental and engineering challenges, AESG said. In his new role, Burkitt will spearhead the company's expansion across the Kingdom, while drawing on his extensive experience to advance the Kingdom's journey towards Net Zero, AESG said.

AESG said it established its dedicated operations hub in Riyadh in 2018, and over the last five years has grown to become a leading consultancy firm in the Kingdom. The company claimed that it distinguishes itself through its unique, multidisciplinary approach that combines expertise in Engineering, Cost Management, Environment and Sustainability and Building Commissioning, for the delivery of comprehensive value on large and complex projects.

Commenting on his new role, and outlining AESG's objectives in the Kingdom for 2023, Burkitt said: "2023 will be a pivotal one for the Kingdom, as work on a multitude of iconic, transformational projects, announced in recent years, surges ahead. The eyes of the world will be on these undertakings as the international engineering and construction industry looks to draw inspiration from the revolutions in design and implementation. I am excited to lead AESG's multidisciplinary team at this inflection point. Our holistic approach will help unlock tangible value through all phases of these projects, translating to high performing developments that balance ambition with sustainability."

7th edition

WORLD IEQ FORUM

20th September 2023 | New York, United States

THEME:
MAKING CITYWIDE IAQ A REALITY

STRATEGIC KNOWLEDGE PARTNERS

WFI FOR A BETTER WORLD

GUTH DeCONZO

CONTACT

FOR EDITORIAL-RELATED QUERIES:
Surendar Balakrishnan
Co-Founder & Editorial Director
T: +971 4 375 6831 • M: +971 50 509 2457
F: +971 4 434 1906 • E: surendar@cpi-industry.com

FOR SPONSORSHIP OPPORTUNITIES:
Frédéric Paillé
Co-Founder and Commercial Director
T: +971 4 375 6833 • M: +971 50 714 7204
F: +971 4 434 1906 • E: fred@cpi-industry.com

IN EUROPE, CONTACT:
Sayf Camran
Advertising Manager
T: +44 (0)207 193 1930
E: sayf@cpi-industry.com

IN NORTH AMERICA, CONTACT:
Deep Karani
MEERAKI MEDIA
T: +1 365 885-6849
E: partnerships@meerakimedia.com

IN ASIA (EXCEPT INDIA), CONTACT:
Judy Wang
Our representative in Asia
T: 00852-30780826
E: judy@cpi-industry.com

www.worldieqforum.com

Deloitte predicts further growth in 2023 Dubai, Saudi real estate markets

Report, covering hospitality, residential, retail, commercial space and industrial segments, predicts positive outlook for 2023

By CCME Content Team

DELOITTE released its ninth annual Middle East Real Estate Predictions 2023 report, which focused on the performance of Dubai and Saudi Arabia's real estate markets over the past year. The report provides a positive outlook for 2023 and delves into different real estate segments including hospitality, residential, retail, commercial office space and industrial.

Among the key findings, the report reveals the recovery, post-COVID-19, of tourism in both Dubai and the Kingdom of Saudi Arabia, with the key indicators within the hospitality sector being the increase over the past year in occupancy and average daily rates (ADR). The report also highlights the growth in residential sales across both geographies, as well as the rise of rent prices of commercial office space in Dubai. The significant growth of Saudi Arabia's gross domestic product (GDP) is making it among the most attractive global destinations for investors.

Stefan Burch, Partner and Head of Real Estate, Deloitte Middle East, said: "As global economies fully re-open post pandemic, we predict continued growth in the Saudi Arabian real estate market throughout 2023. Growth is set to be driven by robust spending across a wide range of government initiatives as well as a strong private sector that is responding to pent-up levels of demand for good quality real estate projects. While 2022 saw record levels of demand for commercial office space, as a result of 'Programme HQ', 2023 looks set to be dominated by the delivery of high-quality residential-led mixed-use schemes and a continued focus on tourism, leisure and entertainment projects."

Oliver Morgan, Partner and Head of Development in Deloitte's Real Estate team, in the Middle East, said: "2022 has been a prosperous year for residential investors, who had a tough time looking back at more recent trends in Dubai. In Saudi Arabia, there continues to be excess demand across all residential sectors, with more volume housebuilders competing for market share and to differentiate their product. Riyadh and Dubai continue to be attractive commercial markets, as occupiers search for growth away from the Far East and Europe. Investment in infrastructure, plus evolving retail and F&B offers, are a social marketer's dream which continue to draw record levels of tourists to both locations."

Speaking of Dubai's real estate performance, there is pent-up demand from travellers, and increased spending by residents led the post-pandemic recovery of the real estate sector. Inflation remains a concern for consumers and is expected to impact sentiments leading into 2023. The year to date (YTD) November 2022 occupancy for Dubai averaged 72% compared to 63% for the same period in 2021, while the average ADR over this period has increased by 22% year-on-year to AED 674. This is higher than the majority of the regional and international markets.

Further, average sales prices for residential properties in Dubai increased by approximately 10% between 2021 and 2022. Average rents also increased by approximately 21% over the same period. Office rents have recovered to pre-pandemic levels, registering an increase of 12% YTD September 2022 over the same period last year.

Consumer spending growth fuelled the retail sector recovery in both online and traditional mall formats. The Economist Intelligence Unit (EIU) estimates that the total UAE retail sales volume has increased by approximately 4.2% in 2022, with sales expected to increase by 3.9% on average between 2023 to 2026.

Average warehouse rents have continued to recover, as demand from logistics companies remain buoyant and freight movements at the airports surpass 2021 levels by three per cent and five per cent at Dubai International Airport (DXB) and Dubai World Central (DWC), respectively.

Speaking of Saudi Arabia's real estate performance, the GDP grew by 8.6% in Q3 2022 and is expected to have grown by 8.3% in Q4 2022, before moderating to 3.7% and 2.3% in 2023 and 2024, respectively, according to the World Bank.

The post-COVID recovery of the real estate sector is led by increasing tourist demand and government spending on infrastructure projects, such as the Riyadh Airport expansion, among others.

The first three months of the year were the strongest for occupancy performance in Riyadh, reaching 76% in March. Meanwhile, Jeddah hotels recorded the highest occupancy performance in May at 59%.

Sales prices for villas and apartments have increased during the first nine months of 2022, in comparison to 2021, and the demand for apartments from Saudi nationals has remained strong.

Employment forecasts from Oxford Economics indicate the Financial and Business Services segment registered a year-on-year growth of 12% in Saudi Arabia.

The Economist Intelligence Unit (EIU) estimates that the total retail sales volume in Saudi Arabia has increased by approximately four per cent in 2022, with sales expected to increase by two per cent a year, on average, between 2023 and 2026.

Rents have remained relatively stable for prime industrial stock due to the limited availability of international-grade warehouse facilities and the increasing demand from logistics companies.

Grundfos inaugurates new MAHY Khoory submersible pumps sub-factory

Grundfos-certified facility will provide greater product flexibility and reduced lead time for customers in the UAE, Danish company says

By CCME Content Team

MAHY Khoory launched its brand-new, Grundfos-certified sub-factory on February 8 in Dubai, an initiative that Grundfos described as paving the way for greater product flexibility and reduced lead time for customers in the UAE. Making the announcement through a Press release, Grundfos said the facility will produce its SP submersible pumps.

Grundfos said MAHY Khoory is its largest and oldest distributor in the UAE. Makarand Purohit, Manager, Groundwater Business, Grundfos, said the opening of the sub-factory is an exciting step in the two companies' collaborative journey. "There is considerable prestige associated with sub-factory status, as this shows that our distributor's assembly facilities have been certified in terms of Grundfos standards," he said. "This creates an even stronger foundation for our future mission to grow our market share together."

By stocking a wide range of pump components – rather than only the assembled pumps – MAHY Khoory will now have added flexibility to make the most of its inventory, Grundfos said. The company is now in a position to assemble pumps quickly and efficiently, according to customer specifications – reducing the usual lead time for importation, Grundfos pointed out. "Components for the different pump combinations are kept in stock, to speed up delivery to customers," Purohit said. "Each pump can be assembled out of 4-5 kits that we make available to the distributor, and the sub-factory is then equipped and accredited to professionally assemble pumps from these kits."

Grundfos said its SP submersible pump has been a pioneer in the market with the innovative use of stainless-steel sheet metal. Manufactured since 1967, the SP provides high energy efficiency, easy installation, compact design and built-in protections, Grundfos claimed.

H.E. Anders Bjorn Hansen inaugurates the sub-factory in the company of Salahuddin Sharif, Chairman, MAHY Khoory (to his left) and Michael Nielsen, Senior Regional Director, Grundfos UAE – IMEA (to his right)

H.E Anders Bjorn Hansen while touring the sub-factory

MAHY Khoory deals with a full range of Grundfos solutions, serving water authorities and industry as well as commercial and residential applications, Grundfos said, adding that the local assembly of the pumps also aligns well with the UAE's industrialisation policy.

Speaking on the occasion of the launch of the sub-factory, Salahuddin Sharif, Chairman, MAHY Khoory, said he was proud of the fact that his company had partnered with Grundfos for over 65 years.

Speaking after him, H.E. Anders Bjorn Hansen, Ambassador of the Kingdom of Denmark to the UAE, highlighted the close business ties between the UAE and Denmark and about how the two countries are committed to a better quality of life through working together and through their emphasis on sustainable development. Speaking on the value of water, H.E. Hansen said water scarcity and clean water are challenges. Denmark is one of the countries working in this direction and has a long-standing ethos of producing energy-efficient pumping solutions. "Since the 1970s, Grundfos has said that all the pumps it introduces must be at least 10% more efficient than that of its competitors," H.E. Hansen said. "Today, we are seeing how Grundfos is participating with MAHY Khoory in innovation. And it is an excellent example of how we [Denmark] can share knowledge and expertise."

Armstrong Fluid Technology wins 'Smart Project of the Year 2023 Award'

Receives honour at the 8th RetrofitTech MENA Summit

By CCME Content Team

ARMSTRONG Fluid Technology, manufacturer of intelligent fluid-flow and control solutions, received the award for 'Smart Project of the Year 2023' at the 8th edition of the RetrofitTech MENA Summit, on February 14 and 15 in Dubai.

Making the announcement through a Press release, Armstrong said the awards ceremony celebrates key players in the energy efficiency, sustainability and retrofitting sectors in the MENA region, highlighting the best projects, initiatives and innovators the industry has to offer.

Armstrong said it was recognised for its cutting-edge smart solutions that have amplified energy efficiency within the Park Hyatt hotel in Doha. Armstrong said that by combining hardware with artificial intelligence and IoT capabilities, its HVAC equipment retrofit generated outstanding energy savings of USD 31,902 in just one year.

The company said it installed its patented Design Envelope variable-speed pumps, Parallel Sensorless Pump Control technology and Pump Manager remote monitoring software to optimise HVAC performance within the hotel. The combination of technologies, the company said, not only improved occupant comfort and safety but also boosted system efficiency by 75%.

Speaking on the occasion, Kevin Laidler, Sales Director for the Middle East and Africa, Armstrong Fluid Technology, said: "At Armstrong, we believe in doing well by doing good. We're driven to make the world a better place through the solutions we provide, working in service of current and future generations. We are honoured to be recognised for our contributions and hope to inspire other industry leaders to leverage their own expertise to make a positive impact on the planet."

PRODUCED BY

CPI INDUSTRY

OFFICIAL PUBLICATION

climate control MIDDLE EAST

KEY PERSPECTIVES ON THE REGION'S HVACR INDUSTRY

CLIMATE CONTROL AWARDS

6 December 2023 Dubai, UAE

13th EDITION

GOLD SPONSOR

TROX® TECHNIK
The art of handling air

ASSOCIATE SPONSOR

AL HADARA CONSULTING • ENGINEERING

STRATEGIC KNOWLEDGE PARTNER

3e advisory

STRATEGIC RECRUITMENT PARTNER

WWW.CAREERSBAY.COM

www.climatecontrolawards.com

For editorial enquiries:
Surendar Balakrishnan
Co-Founder & Editorial Director
M: +971 50 509 2457 | E: surendar@cpi-industry.com

For sponsorship enquiries:
Frédéric Paillé
Co-Founder and Commercial Director
M: +971 50 714 7204 | E: fred@cpi-industry.com

AHR EXPO ROUND-UP

Infinitum announces next-gen EC motor for data centre cooling

Highly efficient motor system reduces energy consumption and power required for data centres, company claims

By CCME Content Team

INFINITUM, which claims to be the creator of the breakthrough air core motor, announced at the AHR Expo a next-generation, sustainable motor designed specifically for data centre cooling applications. Making the announcement through a Press release, Infinitum said the new motor system extends Infinitum's Aircore EC line of motors and meets the unique needs of data centres to reduce power requirements and energy consumption.

According to Infinitum, data centres currently consume two per cent of the world's energy and their energy demand is expected to increase eightfold by 2030. Forty per cent of the energy consumed in data centres is from motors powering cooling equipment, such as fans, pumps and compressors to reduce heat generated by servers, Infinitum said, adding that many of the fan systems used to cool data centres today use motors that have more horsepower than the application requires.

Infinitum said its Aircore EC motor for data centres can be customised to meet the application's specific horsepower, speed and torque requirements, while still achieving performance targets to reduce energy consumption by more than 10-15%. It also means the input current required by the motor can be minimised, opening a significant opportunity to reduce the wiring and protection equipment needs of the electric utility that powers the data centre, allowing data centre designers to save costs on upstream electrical infrastructure, including wiring, circuit breakers and transformers, Infinitum said.

The company said its new Aircore EC motor for data centres features an integrated variable frequency drive (VFD) to optimise motor control and efficiency, as well as smart features, such as IoT connectivity to monitor critical equipment and BACnet and Modbus controllers to optimise building operations. According to Infinitum, the new Aircore EC motor system for data centre applications will be available beginning in Q3 of 2023.

According to Infinitum, Aircore EC motors are 50% smaller and lighter, more efficient, significantly quieter and use 66% less copper than traditional motors. Infinitum said it designs and manufactures Aircore EC motors with a sustainable, circular lifecycle in mind. Modular design allows the housing, rotors and stators to be reused multiple times, giving parts a second and third life to serve future generations, the company added.

"Data centers are growing in size and energy intensity, as the world's demand for data grows exponentially," said Blake Griffin, Senior Market Analyst, Interact Analysis. "Infinitum's smaller, lighter, high-efficiency motor systems are a key technology for reducing energy consumption and carbon footprint."

Ben Schuler, Founder and CEO, Infinitum, said: "We're excited to bring our class-leading, sustainable Aircore EC motors to the data center world and give data center operators the opportunity to reduce energy demand and costs. When thousands of motors are often required to power data centers, our improved motor efficiency, reduced noise levels and smart features for visibility and building optimization add up to make a big impact for this sector."

AHR EXPO ROUND-UP

Airius launches new DeltaT line of controllers

Dynamic fan controllers help combat rising energy costs and empower building owners and facilities managers with complete control of stratification and building comfort, company says

By CCME Content Team

COLORADO, United States-based air movement and Indoor Air Quality (IAQ) company, Airius released its new line of DeltaT controllers during the 2023 AHR Expo at the Georgia World Congress Center.

Speaking on the occasion of the release, Christian Avedon, Director of Sales and Marketing, Airius, said: "With surging energy costs this winter, it's more important than ever to find cost-effective ways to heat large spaces. The enhanced level of control unlocked by our new DeltaT controllers allows for optimization of your building's stratification issues, ultimately saving money and improving comfort for building occupants. The auto control allows users to 'set it and forget it,' maximizing heat energy savings up to 30% or more."

According to Airius, the new destratification fan controllers continuously and gently mix the air to balance temperatures and increase occupant comfort. Utilizing an autotransformer to eliminate the hum often associated with TRIAC-type controls, the DeltaT line allows for six modes of quiet speed control, Airius said. The new controllers are easy to configure and install, with no software needed, enabling building owners and facility managers to monitor their Airius fan system, reduce their energy consumption and improve the comfort of their buildings, Airius claimed.

According to Airius, the new DeltaT line of controllers' modes of operation include the following:

- **Automatic Delta T control —** Automatic dynamic fan speed control based on the temperature differential between the supplied sensors. Users can define and adjust the minimum and maximum speeds and set speeds at various intervals.
- **Manual control —** Up and down arrows on the interface will override any automatic control modes for eight manual speed steps.
- **24-hour timer —** Set fans to turn on and off at a set time every day.
- **Humidistat control —** When relative humidity reaches a user-defined threshold, the fans energize to a set speed defined by the user.
- **Thermostat control —** When the air temperature reaches a user-defined threshold, the fans energize to a set speed defined by the user.
- **Direct Digital control —** With 0-10VDC control input, the line of controllers can control fan speeds across eight speed steps.

According to Airius, each package of DeltaT controllers includes the transformer control box, LED interface and two temperature/humidity sensors. Two versions of the speed control package, Airius said, will be available for use with either AC (120-volt or 230/277V) or EC motors.

ASHRAE announces nominees for 2023-24 officers, directors

M Dennis Knight is nominee for President-Elect

By CCME Content Team

ASHRAE'S Nominating Committee announced its nominees for the 2022-23 slate of officers and directors from a list recommended by individual members and from Chapters Regional Conferences.

Making the announcement through a Press release, ASHRAE said the 2023-24 nominees are…

President-Elect: M. Dennis Knight, P.E., BEMP, Fellow Life Member ASHRAE

Treasurer: Bill McQuade, P.E., LEED AP, Fellow ASHRAE

Vice Presidents:

- Billy Austin, P.E., BCxP, BEAP, BEMP, CHD, HBDP, HFDP, OPMP, Fellow ASHRAE
- Ashish Rakheja
- Wade Conlan, BCxP
- Chandra Sekhar, Ph.D., Fellow ASHRAE

Directors and Regional Chairs:

- Scott Peach, P.E., FPE (Region VII)
- Joe Sanders (Region VIII)
- Jonathan Smith, P.E., CEM, LEED AP (Region IX)
- Buzz Wright, P.E., FPE (Region X)
- Mahroo Eftekhari (Region XIV)

Directors-at-Large:

- Doug Cochrane, P.Eng., LEED AP
- Corey Metzger, P.E.,
- Heather Schopplein, P.E.

Alternate Director-at-Large: Patrick Marks, P.E., Fellow ASHRAE

ASHRAE said members will vote on the nominees via electronic ballot in the month of May. Ginger Scoggins, P.E., Fellow ASHRAE, will serve as ASHRAE President for the 2023-24 Society Year.

Belimo releases new BACnet remote inspection modules

Dynamic fan controllers help combat rising energy costs and empower building owners and facilities managers with complete control of stratification and building comfort, company says

By CCME Content Team

BELIMO Americas released its new FSKN remote inspection modules, which the company described in a Press release as allowing for code-required periodic testing of International Building Code Chapter 7 actuated life safety dampers without costly visual inspections.

According to Belimo, the module initiates damper cycling and verifies the damper position to ensure proper emergency operation. It connects seamlessly to fire alarm panels or Building Automation Systems using BACnet or Modbus communication protocols, Belimo said. The Fire Alarm and BAS companies will be more efficient with damper testing and comply with code requirements, ensuring proper damper operation, the company further said. The series includes 24 (FSKN24) and 120 (FSKN120) volt offerings, the company added.

According to Belimo, with the module:

- It is possible to inspect inaccessible dampers
- Deferred testing and maintenance will be reduced with automatic testing and generating inspection reports
- Systems commissioning can be performed more efficiently
- Frequent testing can be performed at no cost

FSKN mounted to a damper

Eurovent appoints new Eurovent Evaporative Cooling Equipment Chairman

Laurent Petiot of BAC takes charge as Chairman; Ulf Bergmann of GOHL-KTK assumes office as Vice-Chairman

By CCME Content Team

Laurent Petiot

DURING the meeting of the Eurovent Product Group 'Evaporative Cooling Equipment' (PG-CT), on October 27, 2022, at the Eurovent Summit in Antalya, Turkey, the participants elected Laurent Petiot as Chairman and Ulf Bergmann as Vice-Chairman of the Group, Eurovent said through a February 14 Press release.

Petiot is General Manager (France, Benelux and Maghreb), Baltimore Aircoil Company, Eurovent said. He has extensive experience in Eurovent and has been involved in heat transfer equipment within the cooling tower industry for more than 30 years, Eurovent said. Petiot will be supported by Bergmann, General Manager Sales and Marketing, GOHL-KTK GmbH, Eurovent added.

Petiot said: "With the advent of new technological systems, we have noticed that our world is changing with a mix of sustainability and an increasing demand, which definitely leads to a strong commitment, innovation and demonstration of the high contribution that evaporative cooling can offer to the world. Eurovent is the ideal platform and association to gather the skills of the cooling tower industry. The contribution of the members, gathered in a single point, will continue to offer the best of the profession."

According to Eurovent, the Product Group, 'Evaporative Cooling Equipment' covers Wet Cooling Towers, Open Circuit Towers, Fluid Coolers, Closed Circuit Towers, Evaporative Condensers, Hybrid Models and components related to these products – for example, Fans and Drift Eliminators). Eurovent added that it is the main working group dedicated to Cooling Tower manufacturers.

Danfoss highlights value of Excess Heat in whitepaper

Calls it world's largest untapped source of energy

By CCME Content Team

ACCORDING to new data, excess heat in the EU alone amounts to 2,860 TWh/y, corresponding almost to the EU's total energy demand for heat and hot water in residential and service sector buildings, including schools, hospitals, hotels, restaurants and shopping centres, Danfoss said through a Press release, on the occasion of releasing a whitepaper on the subject, titled 'The world's largest untapped energy source: Excess heat'.

Kim Fausing, President & CEO, Danfoss, said, "It is remarkable that the EU has "close to no initiatives that push for more efficient use of the vast amounts of wasted energy in the form of excess heat." The whitepaper explained that tapping into the excess heat would give a productivity boost to the economy, lower energy prices for consumers and businesses and accelerate the green transition.

According to Danfoss, a full implementation of technologies that tap into synergies between different sectors and enable a utilisation of excess heat has the potential to save EUR 67.4 bn a year, once fully implemented in 2050.

Every time an engine runs, it generates heat, Danfoss pointed out. Anyone who has felt the warmth behind their fridge can confirm this. The same is true on a larger scale in supermarkets, data centres, factories, wastewater facilities, metro stations and commercial buildings. Excess heat can be reused to supply a factory with heat and warm water or reused by neighboring homes and industries through a district energy system, Danfoss said.

Using this energy that would otherwise go to waste can give a productivity boost to the economy and lower energy prices for consumers, Danfoss said. Utilising excess heat can replace significant amounts of fossil fuels that are otherwise needed to produce heat. Used this way, excess heat can help stabilise the future electricity grid and, thereby, ease the transition to a green energy system, Danfoss said.

In some countries, the excess heat can even match the entire heat demand, Danfoss said. In the Netherlands, excess heat amounts to 156 TWh/y, while the heat demand is only 152 TWh/y, Danfoss added.

Yet the potential of excess heat is not even close to being utilised and is politically ignored, Danfoss said.

Fausing said recycling heat is not only an overlooked measure in the current energy crisis, but also the next frontier of the green transition. "Excess heat is the world's largest untapped source of energy," he said. "Still, very few initiatives have pushed for more efficient use of the vast amounts of wasted energy in the form of excess heat, even though we already have the solutions available today. We urgently need policy measures to accelerate the use of excess heat across sectors, both so that citizens and businesses can benefit from lower energy costs and to ensure we step up progress in the green transition.

"Energy demand is set to grow dramatically in the years to come due to population growth and rising incomes. Without urgent action to tackle the demand side of the green equation, using every single unit of energy more efficiently, we will not get on track to meet global climate goals."

The whitepaper assesses the potential of excess heat as an efficient energy source, Danfoss said. Quoting the International Energy Agency (IEA), Danfoss said a global push for more efficient use of energy can reduce CO_2 emissions by an additional five gigatons per year by 2030, compared with current policy settings. A third of the reduction needed in energy-related CO_2 emissions this decade, according to the IEA net-zero scenario, must come from improvements in energy efficiency, Danfoss said.

In terms of energy security, these energy savings can help avoid almost 30 million barrels of oil per day and 650 billion cubic metres (bcm) of natural gas per year (around four times what the EU imported from Russia in 2021), Danfoss said.

Fausing said: "The potential in reusing excess heat is staggering. But we need to change our perspective on it and begin to consider excess heat as an energy resource instead of waste to be disposed of.

"Today there are a number of barriers that prevent us from reusing excess heat, including lack of information and regulation. We have to introduce economic incentives, policy measures and prioritisation of partnerships between local authorities, energy suppliers and energy sources to help maximize the full potential of excess heat."

Toby Morgan, Senior Manager, Built Environment, Climate Group, commenting on the potential for excess heat, said: "The global energy crisis is a wakeup call to stop wasting energy, and Danfoss is right to call for governments and corporates to seize the enormous potential of excess heat. Now, more than ever, we need to make better use of the energy we already produce; we simply can't afford to let it literally escape out the window. Energy efficiency improvements, like capturing and recycling excess heat, are absolutely critical to lower fossil fuel demand and lower bills."

{Quoteyard}

We bring you a collection of some of the most interesting quotes, extracted from articles in this issue. In case you missed reading, we recommend you flip back to take full advantage of the insights and remarks, in the context in which they have been presented.

"The criticism is baseless, as most of the COP meetings held so far have been in countries that are either big producers or consumers of fossil fuels. Indeed, Big Oil or Big Coal has always been at the centrestage in every single climate change meet so far."

p06

"In the event of a project under design, it is imperative to ensure that the heat-load calculations and, later, the hydronics are done accurately and that the equipment are adequately selected to meet the required load at peak time within the industry standards, like Dubai Municipality's green building code, ASHRAE and AHRI."

p08

"People are not always willing to invest the time and resources necessary to learn and implement new tools. As a result, many of the latest software or tools available to them, including CAD or BIM, are not used to their potential."

p24

"**However, the complex nature of the co-existence of airborne pollutants in the vicinity of airport terminals makes assessing air filter performance challenging, not to mention the obtained air quality. When solid and gaseous pollutants deposit on air filter media, a possible interaction between deposited particles/pollutants and the filter media, which may off-gas a by-product, cannot be ruled out."**

p12

"The building's 10,000 RT plant includes electric- and steam-driven centrifugal chillers and is located three storeys below ground. The plant supplies chilled water to three zones: Low, medium and high. Each zone is a primary flow parallel chiller arrangement. Cooling towers are located on the ground floor in the open-loading dock area."

p17

"We don't know how they will continue, but the Middle East seems to be on the right track. Usually, I collect forecasts from customers, and many are saying, "We don't feel so bad, and we hope to perform as the year before." I somehow have the same feeling that something is going on around us, but we are not affected as much as other countries are.

p29

Efficiency. Sustainability. Compliance.

LEADING HVACR AND WATER HEATING EQUIPMENT MANUFACTURERS recognize AHRI certification programs and equipment performance standards as key to achieving energy efficiency, environmental sustainability, and regulatory compliance.

Through its extensive global network, only AHRI is positioned to provide the best solutions to help stakeholders navigate the ever-changing business environment.

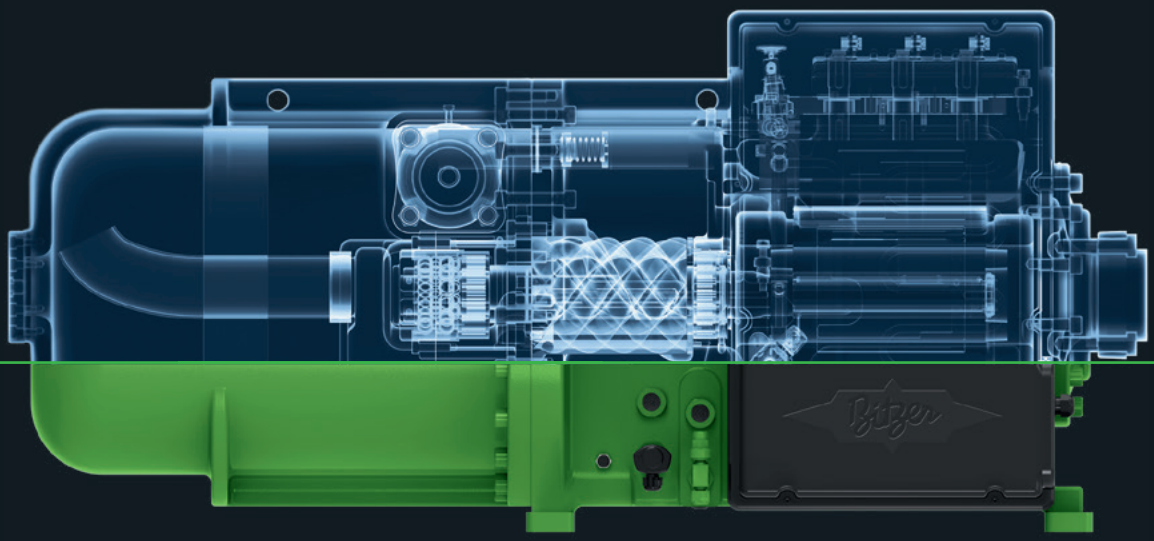
At AHRI, we make life better. Let us show you how.

Learn more about AHRI online at **ahrinet.org.**

AHRI
we make life better®

AHRI CERTIFIED®
www.ahridirectory.org
Globally Recognized. Industry Respected.

DAS HERZ DER FRISCHE



CS SERIES

CSV SERIES

A PERFECT COMBINATION.
FOR CUSTOM-MADE EFFICIENCY.

The BITZER modular building set: the joint application of CSV and CS compressors in chillers and heat pumps perfectly combines cooling capacity, efficiency and reduced first costs. Besides the standard CS+CS solution, the CSV+CS hybrid solution and the combination with CSV+CSV with two frequency inverters comes with improved efficiencies and reduced operating costs. All combinations are HFO-ready. Learn more at bitzer.de/screwcompressors // bitzer.de/electronics_controls // mail@bitzer.ae

- AIR CONDITIONING
- HEAT PUMPS
- PROCESS COOLING
- INTELLIGENT PRODUCTS
- FREQUENCY INVERTERS