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GCC's green ambitions under spotlight

Although dependent on oil and a manufacturing sector based on energy competitiveness, the GCC economies are undergoing transition and have long held plans to diversify



A file photo of the first Middle East Green Initiative Summit held in Riyadh in 2021

Middle East's green ambitions and developments are under a sharp focus as Egypt and the UAE prepare to host the next two major world summits on climate change.

This year, the 27th annual summit of the United Nations Climate Conference of the Parties or COP27 takes place in Sharm el-Sheikh, Egypt, starting November 6, while the UAE readies to host COP28 in 2023.

According to the UN, COP27 is being held against a backdrop of extreme weather events worldwide, an energy crisis propelled by the crisis in Ukraine, and scientific data reiterating that the world is not doing enough to tackle carbon emissions and protect the future of the planet.

A report published by UN Climate Change, said Egypt and the UAE are among 26 countries that have updated their climate targets in line with the pledges made last year at COP26 in Glasgow, UK. Egypt is promising to further cut greenhouse-gas emissions from electricity, transport and the oil and gas sectors, although this is only compared to previously forecast levels — and the commitment is contingent on receiving international financial support. The UAE is pledging to cut greenhouse-gas emis-

sions by 31 per cent by 2030, compared to business-as-usual level, which is beyond its previous promised cut of 23.5 per cent.

The UN report says commitments made by countries in the past year will reduce projected emissions rises to 10.6 per cent above 2010 levels by 2030, compared to the 13.7 per cent forecast in a similar analysis last year. But they remain well short of what the world needs to limit warming to 1.5-degC by the end of the century.

According to the UN statement, COP27 will be about moving from negotiations, and “planning for implementation” for all these promises and pledges made.

Egypt has called for full, timely, inclusive, and at-scale action on the ground.

“Climate change is an increasingly important issue in the GCC region and is receiving a sharper focus in growth and diversification plans in countries such as Saudi Arabia and the UAE. The region has several competitive advantages, not least in relation to solar and hydrogen power,” observes Oxford Economics.

Oxford Economics’ research shows that the economic impact of global warming rises for countries that are already among the hottest in the world. The GCC belongs to this group.

Although dependent on oil and a manufacturing sector based on energy competitiveness, the GCC economies are undergoing transition and have long held plans to diversify. This means ambition and spending could be higher in the GCC than in other parts of the world, which could enable rapid progress in new sectors. This presents opportunities but also carries risks – GCC countries need to get it right or risk becoming old and dusty oil states.

“The GCC countries are embarking on a clean energy transition pathway, which targets more sustainable, efficient and cost-effective methods for using energy,” Dr Mohamed Al Rashidi, Director of Energy, Secretariat General of the Gulf Cooperation Council (GCC), said.

“We are witnessing a real change happening in the region, with exciting visions and ambitious projects launched. This creates an attractive environment for the GCC and EU entities to be partners in this endeavour,” he added.

Al Rashidi was addressing a webinar which was held with the goal of fostering closer ties on climate change issues between the EU and the Gulf Cooperation Council ahead of COP27.

The experts addressed the current debate around climate change, challenges of energy efficiency in the building sector, and the necessary strategies, policies and regulations to facilitate energy efficiency.

They also discussed investment and finance, business models in the energy efficiency sector, and the need for local and global sustainable growth and development. Focusing on energy efficiency as a critical driver toward decarbonisation in the sector, the event called for collective action through quick, cross-sectoral and human-centered interventions.

Participants presented practical solutions to issues such as low energy efficiency and chronic reliance on fuel subsidies, and discussed the role of clean energy in cost-effective energy consumption.

In May 2022, the European Union introduced its Joint Communication on a Strategic Partnership with the Gulf, aiming to broaden and deepen the EU’s cooperation with the Gulf Cooperation Council and its Member States. The Communication presents concrete proposals to strengthen cooperation on energy, green transition and climate change, trade and economic diversification, regional stability and global security, humanitarian and development challenges, and closer people-to-people contacts. ■

EGA joins hydrogen leadership initiative

The initiative is dedicated to increasing research and development into the increasing use of hydrogen in industrial decarbonisation

Emirates Global Aluminium (EGA) announced the signing of an agreement with the UAE Ministry of Energy and Infrastructure to become part of the country's UAE Hydrogen Leadership Initiative. The Initiative is dedicated to increasing research and development into the increasing use of hydrogen in industrial decarbonization.

EGA's membership in the organization means it also becomes a member of the Abu Dhabi Hydrogen Alliance and the National Hydrogen Technical Committee. These committees were both formed in 2020 as part of the ministry's push to encourage decarbonization in industry. Hydrogen is specifically targeted due to the potential it promises for a replacement for natural gas in the aluminium industry and other areas.

Suhail Al Mazrouei, UAE Minister of Energy and Infrastructure said in a press release that the move is the next leg in the country's journey to decarbonization.



Officials at the agreement signing ceremony

"The UAE continues its efforts to take decisive steps to advance the clean energy sector, particularly in hydrogen. The UAE is committed to strengthening the country's position as a global centre for a sustainable, green economy, in line with the vision of His Highness Sheikh Mohammed bin Zayed Al Nahyan, President of the UAE and his brother, His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai, members

of the Supreme Council the Rulers of the Emirates, and the 'Projects of the 50', leading to the 'UAE Centennial 2071' vision."

"The agreement for EGA to join the Hydrogen Leadership Initiative, which was launched by the UAE and the Ministry of Energy and Infrastructure during COP26 in Glasgow, will create a new model for constructive cooperation to strengthen the position of hydrogen as a key enabler in the decarbonisation of carbon-intensive industries," he continued. "The UAE sees hydrogen as a promising fuel for the future to achieve carbon neutrality and the UAE Net Zero by 2050 Strategic Initiative. Such partnerships will help accelerate the transition to clean and renewable energy."

Abdulnasser Bin Kalban, Chief Executive Officer of EGA, said that the partnership meshes well with his firm's existing commitments to decarbonization.

"Aluminium's use plays a key role in decarbonising other industries economy-wide, which makes decarbonising aluminium production even more of an essential challenge for our own industry. Replacing natural gas with hydrogen is one part of the potential solution, and we look forward to accelerating our work in this area in partnership with the other members of the Hydrogen Leadership Initiative, in cooperation with the Ministry of Energy & Infrastructure, and in support of the UAE's Net Zero by 2050 Strategic Initiative."

EGA is an aluminium conglomerate created by the merger between Dubai Aluminium (Dubal) and Emirates Aluminium (Emal) in 2013. ■

Borouge in deal to boost Mena sustainable solutions

BOROUGE, a major petrochemical company based in Abu Dhabi, has joined hands with Ravago, a global leader in recycling polyolefin raw materials, for the production and marketing of sustainable solutions across the Mena region.

Borouge is a joint venture between Abu Dhabi National Oil Company (Adnoc) and Borealis, a leading international producer of chemical and plastics solutions headquartered in Austria.

Announcing the joint collaboration, Borouge said it will enable the group to tap into a growing market of enhanced by-products in the Mena region, while helping lower the carbon footprint of manufacturing applications. By-products



occur in all manufacturing processes.

The collaboration with Ravago involves the sorting and filtering of by-product polymers, which are then reprocessed, before recompounding them

for sale to customers for use in value add manufacturing applications.

Maitha Al Marashi, Acting Senior Vice President for Corporate Affairs, said: "Borouge is a responsible company and committed to providing more competitive and sustainable solutions for its customers."

"Following the success of the first phase of our collaboration, we are assessing the addition of post-consumer recyclates (PCR) to the reprocessed by-products - enabling Borouge to further expand its Mena portfolio of circular solutions, while promoting higher recyclability in end-use products," she noted. ■

>> tion that certifies the performance of plate heat exchangers globally.

Most importantly, AHRI Performance certification eliminates concern about calculations and promotes a stronger focus on energy efficiency, which will foster innovation and stimulate manufacturers to develop more efficient products. Consequently, gasketed plate heat exchangers designed and supplied with AHRI Performance Certification, ensure sustainability by default.

Alfa Laval has chosen to take an active role in promoting AHRI certification in the Middle East. From every perspective, AHRI certification is better for everyone involved in the process of designing, producing, selecting, and operating plate heat exchangers. Performance certification is an important step in creating a sound plate heat exchangers market and benefits the industry as a whole.

Alfa Laval for example was the first in the region to offer a broad range of heat exchanger innovations – the AlfaQ range – certified to AHRI 400 and boasting a 100 per cent success rate in the AHRI performance certification program for more than a decade.

GASKETED PLATE HEAT EXCHANGERS

Open cooling tower systems are also a source of increasing levels of calcium carbonate and corrosive chloride ions in the circulating cooling water. These unwanted

minerals enter via make-up water and accumulate over time to unacceptable levels. The water in the open cooling tower water loop evaporates, but the minerals stay and increase in concentration in the cooling system.

Over a six-month period, calcium carbonate and chloride ions can double in concentration. The only way to clean the system of these unwanted minerals is to periodically flush the loop. This cleaning results in increased operational costs and is normally not done as water costs are high.

Increasing the concentration of calcium carbonate minerals in the cooling water loop will cause major losses in energy efficiency and higher pumping costs. Furthermore, the reduced diameter of cooling water pipes, maintenance, replacement of cooling equipment, and unexpected shutdowns will all mean losses in heat transfer efficiency, requiring more cooling water and thus further investments in cooling tower capacity.

In addition, the condenser is often the hottest point of the cooling tower loop. With condensing temperatures of 80-degC, it is here that most of the scale forms, and adheres to hot condenser surfaces. With a gasketed plate heat exchanger installed to protect the condenser, the formation of scale is reduced, as wall temperatures will be 30-40-degC. Scale CaCO₃ behaves opposite to that of sugar. The higher the surface temperature, the greater the formation of scale on

hot surfaces.

There are major benefits of a gasketed plate heat exchanger when used as inter-changer:

- Savings in chiller running costs as a result of a condenser free from fouling and scale.
- Savings in pumping costs with clean pipes, as the diameter does not reduce due to the adhesion of calcium deposits on hot inner pipe surfaces.
- Savings in reduced maintenance costs of downstream cooling equipment such as shell-and-tube heat exchangers.
- Less money spent on chemical dosing and treatment of a smaller volume of open cooling tower loop. Typically, 10 per cent of overall cooling loop in volume.
- Fast simple and easy cleaning of gasketed plate heat exchangers by a single person in a few hours.

AHRI performance certification provides a third-party guarantee of 5 per cent of duty load in kW and 5 per cent of specified pressure drop. The latest trend of protecting the chiller condenser from the harmful effects of an open cooling tower will provide savings to owners and managers of cooling systems, to the level of an average 10 per cent per year in chiller electricity running costs.

In conclusion, efficient gasketed plate heat exchangers in the market will perform according to specification and ensure a lower life cycle cost for numerous other cooling equipment throughout the plan. ■

Alfa Laval to supply to largest green hydrogen plant

ALFA Laval has signed an agreement to deliver compact heat exchangers to the world's largest green hydrogen plant, which is to be constructed in the Middle East. The facility, powered by renewable energy, will be part of the city of Neom, in Saudi Arabia built, from scratch in the northwestern desert, with the ambition of establishing a new model for sustainable living.

According to International Energy Agency (IEA), hydrogen is one of the leading options for storing energy from renewables during days, weeks or even months, and it enables transportation over long distances. However, green hydrogen production has its challenges. When purified water is split into hydrogen and oxygen using renewable elec-

tricity, it is crucial to keep a stable temperature in the electrolyser to maximize efficiency. Splitting water into the two gases generates excess heat which needs to be constantly cooled off. In this project it is done by using Alfa Laval energy efficient plate heat exchangers.

Alfa Laval is a leading supplier of heat exchangers to many of the main electrolyser manufacturers.

Neom's location and infrastructure will allow the generation of 4 GW of renewable power from solar and wind where the green hydrogen production facility will use about half of it. It will be the largest green hydrogen plant and the first installation of gigawatt size, producing 650 tons of hydrogen per day. This in turn will be used to pro-

duce 1.2 million tons of green ammonia annually.

"Our business within hydrogen has developed well over the past years and we are today supplying efficient heat exchangers to the various steps of the process; for production, distribution and use," says Thomas Møller, President of the Energy Division at Alfa Laval. "With our products and expertise, we will continue to be part of accelerating and scaling this area, which is so important in the race to net zero emission."

The IEA expects the total hydrogen demand from industry to expand 44 per cent by 2030, with clean hydrogen becoming increasingly important – and rapid actions are needed in the next 10 years to meet this demand. ■

Hydrogen 'is investment for sustainable future'

From analysing hydrogen's role in manufacturing to what is required to scale up the opportunity, SERGIO HICKE, Cluster President - India, MEA for Alfa Laval discusses these issues in an exclusive interview with PUMMY KAUL

Alfa Laval, committed to carbon neutrality by 2030, has some of the most innovative climate change technologies in the Middle East and supports ambitious net zero targets for the region.

The company is helping reduce carbon emissions in sectors that are difficult to decarbonise, while simultaneously cutting costs, with industry-leading energy-efficiency technology across a number of key strategic industrial sectors, including energy, marine, and food and beverage.

Sergio Hicke, Cluster President - India, Middle East & Africa for Alfa Laval has been part of the Alfa Laval group since 1995, serving in multiple leadership positions.

Alfa Laval is also one of the leading companies providing technology for refueling and also for the generation of clean energy and for the hydrogen production process. The company supports the hydrogen production process with high efficiency heat exchangers that make sure that energy is not wasted and is kept within the system thus making green hydrogen.

On November 1, Hicke participated on the Adipec Hydrogen Council round table at Adipec, where he gave further insights into The Hydrogen Council, a global CEO-led initiative that brings together 140+ leading companies based in 20+ countries with a united vision and long-term ambition for hydrogen to foster the clean energy transition.

From analysing hydrogen's role in manufacturing to what is required to scale up the opportunity to playing a key role in decarbonising the sector, Hicke discusses these and related issues in an exclusive interview with *Gulf Industry*. Excerpts:

How do you see the current role of hydrogen in manufacturing or industrial applications, and what is required to



Sergio Hicke

scale up the opportunity?

Hydrogen has been historically used in refineries and for fertiliser production. However, the demand for new industries is still ramping up. International Energy Agency (IEA) targets transport, buildings and power generation segments. We are seeing hydrogen-fueled cars coming on the roads and demand on refueling stations starting to grow.

Alfa Laval is proud to be one of the leading companies providing technology for refueling and also for the generation of clean energy and for the hydrogen production process. First, the use of hydrogen in industry requires investment in clean power followed by the use of that clean power in Hydrogen generation. Alfa Laval is proud to be a technology leader supporting clean energy generation with efficient solutions for energy storage. We also support the hydrogen production process with high efficien-

cy heat exchangers that make sure that energy is not wasted and is kept within the system thus making green hydrogen. Green fossil fuels are still in widespread use, but investment in hydrogen is an investment for the sustainable future of this planet. Sustained political will and continued ESR investments will drive this reality to a carbon neutral future.

DNV predicts that the manufacturing sector will begin making direct use of hydrogen by the late 2020s, to replace coal and gas in high-temperature processes. Do you agree? What are the biggest problems that still need to be overcome for hydrogen to play a key role in decarbonising the manufacturing sector?

The availability of affordable hydrogen at competitive rates vs fossil fuel is one. The political will to change industry will be fueled by the consumer and their demand for products that are carbon-neutral. We as a people need to keep demanding goods made using clean energy and from manufacturers with proven Net-Zero production processes. The market realities of demand and supply still apply.

Given that heavy industry is responsible for nearly one-third of global CO2 emissions, is there a need to accelerate emerging strategies and the technologies to decarbonise steel, cement, aluminum, shipping, trucking and aviation?

Yes there is definitely a need. However, let's not forget that business has to run while we are doing this. A sensible step-wise increase in consumption is mandated and needs to be followed. You cannot have demand outstripping supply because that results in penalising those at the forefront of adoption. Capacity increase is planned and is transparent, so it is up to governments and the IEA to ensure that industry segment adoption is planned and not haphazard.

How is Alfa Laval committed to carbon neutrality? What are your some of the most innovative climate change technologies in the Middle East which support net zero targets for the region?

Alfa Laval works on reducing the energy load in existing industry by replacing old technology using high efficiency heat exchangers. This is our forte and helps our customers recover and reuse their energy more efficiently. On the new Clean

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Technology we are at the forefront with new technologies targeting:

1. Multi-effect evaporation allowing for waste energy to be used in electrolysis within Hydrogen production
2. ORC Solutions using our brazed units
3. LDES – Malta
4. Data Centre technologies

We are committed to also looking at our energy consumption in production and in the logistics end of our businesses with multiple projects running internally. Our investments help our customers reduce their Scope 1 and Scope 2 transmissions which supports industry as a whole.

How does your heat exchanger made using 'fossil-free steel and recycled materials' contribute to decarbonisation?

At Alfa Laval, we are committed to doing our part in enabling a decarbonised future. With a commitment of becoming carbon neutral by 2030, we aim to eliminate emissions from our products, from raw material extraction to end-of-life. All over the world, Alfa Laval is working with customers to create new solutions for accelerating energy efficiency, clean energy and the circular economy.

Concept Zero is a crucial step on this journey, pushing the boundaries to develop a truly carbon-neutral plate heat exchanger with no misleading schemes. Alfa Laval has signed an agreement with SSAB, the global Swedish steel company, to collaborate on the development and commercialisation of the world's first heat exchanger to be made using fossil-free steel. The goal is to have the first unit made with hydrogen-reduced steel ready for 2023.

Global steel production accounts for 7 per cent of the world's carbon emissions.

With a leading position in high-strength steel, SSAB's upcoming fossil-free steel made with HYBRIT technology will be a breakthrough for the industry as it transitions to more sustainable operations. Alfa Laval's energy-efficient heat exchangers, used in industrial processes worldwide, are made of 40 per cent steel and are up to 50 per cent more efficient than traditional technology. This means that they can save energy and reduce CO₂ emissions.

In April 2021, Alfa Laval announced a new partnership with Stena Recycling to introduce a groundbreaking business model for boosting circularity in the heat exchanger supply chain. The collaboration is inspired by the Circular Initiative, a business-driven collaboration arena in circularity led by Stena Recycling.

The goal of this new initiative is twofold: Firstly, to encourage replacement of less energy-efficient plate heat exchangers by new modern products. This will lead to significant energy savings and reduced CO₂ emissions in customers' processes. Secondly, plate heat exchangers contain large amounts of valuable metals that can be recycled and reused in new Alfa Laval products; Stena Recycling's innovative technology enables up to 100 per cent metal regeneration.

Can you please comment on: Alfa Laval's expertise in digitalisation and the transition to a sustainable and fair low carbon future?

Energy efficiency is in our DNA. It is something we have been developing for almost a decade. In fact, Alfa Laval's heat transfer solutions save 100 GW of energy every year. That is enough power to heat 20 million homes.

Our proven and efficient heat transfer solutions enable customers to save en-

ergy and water, improve heat recovery, and reduce carbon dioxide emissions by maximising energy efficiency in almost all industries.

Now, we are accelerating our technology for waste energy to improve existing industries and help businesses save energy today.

QR code tagging – Together with the customers, we are exploring connected exchanger technology. The connected exchanger allows for continuous monitoring of the unit performance and for conditional maintenance that can be predicted in advance, allowing for more reliability and uptime. In this initiative, QR codes are attached on every unit. Scanning the QR codes on the installed heat exchanger guides the end-user to find direct digital support, including troubleshooting assistance.

According to the Hydrogen Council's latest report, Hydrogen Insights 2022, the pipeline of hydrogen projects is continuing to grow, but actual deployment is lagging. What are the reasons for the slow uptake and how can this issue be addressed?

There is appetite for investment but traditional siloed plans are being challenged and our customers are now starting to look at their investments into capacity in a more combined way. For example, hydrogen plants and water generation in green hydrogen production are not being looked at as their own siloes, but investors are looking at energy integration between these two traditionally separate blocks. This integration has taken time, but investors are very aware and are correctly demanding future ready solutions which is a good time investment even if it results in projects getting off the ground is a little later than expected.

It's been recommended that joint action by the public and private sectors is urgently required to move from project proposals to FIDs. What factors inhibit policymakers from encouraging hydrogen uptake?

The traditional method of project planning and vendor selection is one factor. Public-Private partnership is the first step, but also including technology leaders on the planning platform as we have on the Green Hydrogen Council is the way to go. You cannot leave technology decisions to the end anymore, this is a vital aspect of the Carbon Score of new investments. ■