Arab-German Yearbook 2021/22

Construction, Energy and Consulting

www.ghorfa.de

GOVERNMENT OF SHARJAH
UNITED ARAB EMIRATES

invest in Sharjah

Guiding Your Success

As the Sharjah FDI Office, we are dedicated to the continued transformation and economic diversification of the emirate and committed to guiding foreign investors through a bespoke step-by-step facilitation process.

@investinSharjah #investinSharjah investinSharjah.ae

Arab-German Yearbook 2021/22

Construction, Energy and Consulting

Ghorfa
غرفة التجارة والصناعة العربية الألمانية
Arab-German Chamber of Commerce and Industry e.V.

Table of Contents

Preface

Advanced Technology is the key ingredient to success in the future. Smart Construction showcases technology, digitalised energy transitions, innovations and trends that are transforming society. The 11th edition of the Arab-German Yearbook "Construction, Energy and Consulting" sets its focus specifically on development topics, where different chapters emphasis on the idea of the creation of a future that is secure, environmentally-friendly, and economically successful.

The Arab world and Germany traditionally share close and diverse business ties. German companies offer a huge variety of opportunities for cooperation and are not only able to provide high-quality goods, but also state of the art know-how.

To ensure a balanced and sustainable exchange, they are exporting first-class products and bringing education and know-how along with it. Due to their unique and globally renowned experience and knowledge, German engineers, architects and constructors have a considerable impact on the construction sector worldwide. This is exemplified by the execution of infrastructure projects, as well as in sustainable environmental and energy projects.

Germany has shown leadership in digitisation, decentralisation and decarbonisation of its energy sector in the last decade. Today, more than 50 % of its electricity is generated by renewables. In the meantime, similar developments are being observed worldwide. German companies play a major role in the context of technical advancements and innovative service solutions, as well as in concepts for improved energy efficiency and diversification plans for energy sources and can offer a sustainable contribution to this development.

In the Arab world, the energy transition is even more challenging due to its rapidly rising consumption, for example due to increased cooling, salt water desalination and transportation demand. Thus, large investments in the expansion of clean generation capacity have to be arranged.

The Ghorfa Arab-German Chamber of Commerce and Industry has a powerful network consisting of both institutional and entrepreneurial decision makers from Arab countries and from Germany. As the competence centre for business relations between Germany and the Arab world, Ghorfa promotes and strengthens business relations between German and Arab enterprises in the fields of trade, industry, finance, and investment.

We would like to thank the contributing German companies for their valuable insights, Ms. Nancy Ishak for her commitment and dedication to the publication and also Mr. Fadhl Al-Romaima for layout and design. We hope you enjoy reading this book and wish you inspiration for further reference projects.

Dr. Peter Ramsauer
President
Federal Minister ret.

Abdulaziz Al-Mikhlafi
Secretary General

Dr. Peter Ramsauer

Abdulaziz Al-Mikhlafi

» Renewable resources, such as solar energy, are playing an increasingly important role in the supply of power across the globe. As described by the United Nations Sustainable Development Goals, the world needs to move towards the efficient use of sustainable energy. «

Salma Mesbahi, Communications and Advocacy Manager, North and Francophone West Africa, BASF

Energy Efficiency

© BASF

BASF supplies sodium nitrate for the world's biggest concentrated solar projects in Morocco and the UAE

BASF

Solar thermal power plants turn the sun's energy into electrical energy. Their major advantage: with heat storage systems, they are also able to supply electricity when the sun isn't shining. Discover more about this environmentally friendly technology which experts predict has a bright future.

Renewable resources, such as solar energy, are playing an increasingly important role in the supply of power across the globe. As described by the United Nations Sustainable Development Goals (SDGs), the world needs to move towards the efficient use of sustainable energy. Nowadays, access to energy is also becoming key to preventing disease and fighting pandemics. Furthermore, as we are moving towards rapid urbanization, the need for sustainable cities and communities is essential.

Sun as a source of energy

Photovoltaic and solar thermal power technologies use the sun as a literally inexhaustible source of energy. While

photovoltaic uses solar cells to convert sunlight directly into electricity, solar thermal power technology produces thermal energy. In private homes, solar thermal power is used mainly to provide hot water and well-heated rooms. Meanwhile, concentrating solar power (CSP) can produce electricity on a large scale.

A CSP plant is a thermal power plant that uses the sun's energy to produce electricity. Mirrors concentrate the sun's rays in a receiver in order to warm up a heat transfer medium to high temperatures. One difference between the various types of solar thermal power plants is the shape of the collectors that capture the sun's energy. By releasing the heat from the heat storage, the CSP plant can maintain its full performance overnight and during cloudy days. However, enormous volumes of salt mixtures are required to be stored in tanks.

A high number of CSP plants have been and are being built in countries such as Spain and the United States, as well as the Middle East and Africa.

"Noor I" plant in Morocco, first thermal project in Africa and the Arab world

In 2016, the Moroccan Noor plant was constructed at the gateway to the Sahara Desert, and was considered at the time as the biggest complex in the world with a capacity of 580 megawatts when completed. In 2018, BASF supplied around 27,000 metric tons of sodium nitrate for this project. The Moroccan solar park is in a perfect location: in the area around Ouarzazate, solar radiation reaches an intensity of more than 2,500 kilowatt-hours (kWh) per square meter per year, one of the highest levels in the world. At the Noor I facility, 537,000 computer-controlled parabolic mirrors turn constantly to face the sun. They concentrate the sun's rays and convert them into thermal power. The slightly curved mirrors extend to a height of more than 10 meters and has pipes running through its middle that contain a circulating thermal oil. This synthetic fluid, that can be heated to 393°C, is fed through to the power plant at the center of the area of mirrors, where steam is produced to drive the power plant turbine. In order that electricity

Legend: The Noor Morocco plant is built on the edge of the Sahara: By 2018 it supplied electricity to more than 1.3 million people.
© BASF

Legend: In a solar tower power plant, such as the one used in the Noor Energy 1 project, the sunlight is reflected from several hundred mirrors to a central tower. © Noor Energy 1

is also available after sunset; large heat storage units have been installed. As a result, solar thermal power plants can offer a decisive advantage in the renewable energy mix: electricity can be used around the clock.

Noor Energy 1 located in UAE is the world's largest solar project

In 2018, Noor Energy 1, located in the United Arab Emirates (UAE), took over as the world's largest solar project: a total of 950 megawatts is to be generated by the end of 2022. To achieve this goal, the project operator is relying on state-of-the-art concentrated solar power plants: a solar tower power plant, three parabolic reflector power plants and a photovoltaic power system. The power plant works on the principle that the sunlight is concentrated in order to heat up the melted sodium bitrate. When the sun is shining, thousands of mirrors of the solar tower power plant automatically align themselves to reflect the sunlight to a central receiver. In the case of the Noor Energy 1 tower project, this is supported by a 260-meter-high tower. The extreme concentration of sunlight at the top of the tower produces temperatures of up to 600 °C. The molten nitrate salt is pumped in a circuit and used to transfer the thermal energy of the sunlight to a water circuit via a heat exchanger, the steam from which drives a turbine, thereby producing electric power. A total of roughly 100,000 tons of the inorganic salt produced at BASF's Ludwigshafen site is being shipped to the Gulf over the next three years. The necessary contracts with the project's engineering partner, Shanghai Electric Group Co. Ltd (Shanghai Electric), were signed in January 2019.

The salt's purity plays a crucial role

For more than 100 years, BASF has been producing nitrate salts, focusing on ultrapure synthetic sodium salts. It is one of the few companies that produces sodium nitrate chemically, with mining providing an alternative extraction method. But the greatest benefit of the chemically produced salt is its purity: the fewer magnesium or chlorine remnants in the salt, the better it is suited for use in a CSP. Furthermore, BASF sodium salts can boost plant efficiency by enabling operators to create mixtures that can be heated to 565 °C with minimum corrosion – and even higher temperatures are possible through careful control of salt chemistry.

Countries such as Morocco and the UAE are making through CSP projects an important contribution to reducing emissions of greenhouse gases, thus becoming leaders in renewable energy. Such projects help lay the foundations for more inclusive and greener growth on both continents. As the world's leading chemical company, BASF conducts ongoing research into salt technologies, continuously aiming to reach new heights in efficiency and cost-effectiveness for heat transfer and thermal energy storage. Along with its use

Legend: Sodium nitrate of the highest purity: In solar thermal power plants, this melted salt from BASF stores the sun's energy, which can be converted into electrical energy when needed. © BASF

in the solar industry, sodium nitrate is primarily used in the processing of glass and foods.

About BASF

At BASF, we create chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility. More than 117,000 employees in the BASF Group work on contributing to the success of our customers in nearly all sectors and almost every country in the world. Our portfolio is organized into six segments: Chemicals, Materials, Industrial Solutions, Surface Technologies, Nutrition & Care and Agricultural Solutions. BASF generated sales of €59 billion in 2019. BASF shares are traded on the stock exchange in Frankfurt (BAS) and as American Depositary Receipts (BASFY) in the U.S. Further information at www.basf.com.

Salma Mesbahi
Communications and Advocacy Manager, North and Francophone West Africa

BASF

EMERGENCY POWER GENERATORS
MADE IN GERMANY

High-quality diesel power generator
for emergency power,
peak load supply and continuous operation.

- Stationary and mobile systems
- Container units • Mobile light towers
- Trailer • Automotive vehicles
- Switch gears • Spare parts

STANDARD AGGREGATEBAU K.G. HAMBURG

S·A·B

STANDARD AGGREGATEBAU
EVERS GmbH & Co. KG
Telefon ++49 40 / 522 50 11 0
www.generatingset.com

We accompany you at your project: from planning to commissioning until maintenance - according to your wishes at any time.

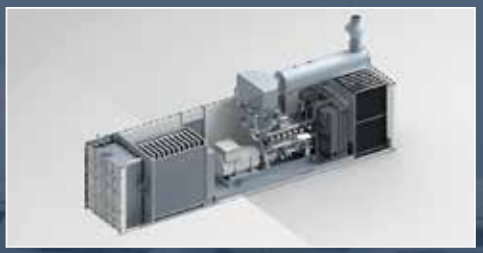
Each project is different in its requirements:

We deliver project-designed generator sets for applications with sophisticated requirements and individual manufacture.

You will receive a proper conception and implementation, also for business-critical projects.

Redundant starting facility and power lines- if needed.

Our customers include data centers, shopping centers, airports and hospitals – for more than 60 years.



» The corona virus was and is still affecting the whole world. The year 2020 has shown quite dramatically that things can quickly turn out rather different than predicted. New ideas were needed. The topic of cloud, digital and data solutions was already an issue in the sector before the crisis, of course, but it took on a whole new meaning as a result of the crisis. «

Moritz Manzel, Managing Director of DFS Aviation Services Bahrain Co WLL

Digital Trends

From crisis mode to innovative growth in air traffic management

DFS Aviation Services Bahrain Co WLL

Moritz Manzel, Managing Director of DFS Aviation Services Bahrain Co WLL, talks about the challenges and opportunities that the Corona pandemic brought to the air transport industry and the air traffic control industry in particular.

Since January 2019 DFS Aviation Services Bahrain Co WLL (DAS Bahrain) works closely together with the Ministry of Transportation and Telecommunications of Bahrain and the local Civil Aviation Affairs (CAA). From its office in Manama, DAS Bahrain manages the supply of personnel for Air Traffic Management (ATM) to the Bahrain CAA. The responsibility of the subsidiary of DFS Aviation Services GmbH (DAS) from Germany (part of the DFS Group around DFS Deutsche Flugsicherung, the German Air Navigation Service Provider) also covers ATM standards, training, safety, electronics, engineering and regulatory personnel. Moreover DAS Bahrain is honoured to contributing to the overall development of air navigation services to meet the existing and future

© shutterstock, DEEPAK SUDHAKARAN

challenges in the air navigation field by providing advice and support to the ministry.

Contributing to the further development of the aviation sector in Bahrain

The agreement with the Bahrain CAA comes as part of the Kingdom of Bahrain's strategy to further develop its aviation sector to the highest international standard, which can fulfil its role of efficiently connecting Bahrain to the rest of the world. One of the critical success factors in reaching this position has been the skilled Bahraini workforce, with a team of highly qualified air traffic controllers, trained to the highest international standard. DFS Aviation Services Bahrain is responsible for ensuring this high quality.

The Corona Pandemic: Years of growth meet sudden standstill in global air travel

The corona virus was and is still affecting the whole world. The year 2020 has shown quite dramatically that things can quickly turn out rather different than predicted.

Also the air traffic sector was hidden dramatically. Travelling collapsed rapidly in spring 2020, flights decreased by around 90% compared to 2019. Everyone can imagine the impact on airlines, airports, ANSPs their personnel and everything associated with them. The situation is still very tense. The pandemic keeps boiling up selectively and causing almost daily changing travel restrictions. The latest forecasts show global air traffic is expected to recover earliest 2023 globally. In summer 2021 Middle East, together with Asia, remains one of the most significantly impacted regions with still -43 % traffic volumes (June 2021 vs. January 2020)[1]. The region is expected to take until 2024 to recover[2].

Air traffic connects people, nations and cultures

The indispensable hinge function of air traffic for society and the economy is and was also evident in the corona pan-

1 *CANSO: CANSO ATM Traffic Analysis Report June 2021, page 3, https://canso.fra1.digitaloceanspaces.com/uploads/2021/07/JUNE_2021-Weekly-Air-Traffic-Management-Report.pdf*

2 *IATA: 20 Year Passenger Forecast, 2021-2039 Current Trends, Infographic, https://www.iata.org/contentassets/e938e150c0f547449c10932395597cc18/pax-forecast-infographic-2020-final.pdf*

Exemplary view of air traffic controllers of DFS Aviation Services working in the airport tower at Dortmund Airport. (pre Corona!) © Fenchel & Janisch Filmproduktion

demic - with repatriation flights, the transport of medical protective equipment, the distribution of vaccines or the maintenance of value chains. 2020 has shown that physical distance sometimes can be vital but also that the 'stronger together' idea is essential in our world. This is not new, but awareness of it becomes typically more present in crisis situations.

New challenges and opportunities in air traffic management

The air navigation services industry worldwide was challenged to maintain the safety of the remaining flights despite the slump in air traffic and constantly changing conditions, as it is part of the critical infrastructure. At the same time, the safety of the personnel had to be guaranteed at all times. In addition to the protection against the virus, the constant training and further education now also became challenging, as face-to-face events were no longer possible and the actual traffic conditions could not be trained. New ideas were needed. The topic of cloud, digital and data solutions was already an issue in the sector before the crisis, of course, but it took on a whole new meaning as a result of the crisis.

Emerging from the crisis #strongertogether: Exemplary projects

Also DFS Aviation Services, as a certified air navigation service provider (ANSP) and as a global partner for air traffic management, used the crisis time to create innovative solutions and to break new ground with its partners and for its customers.

1) Unique operational ANS model proves itself in the crisis

German airport customers also were and are massively affected by the economic consequences, as the so-called "regional airports" in Germany are required to bear the costs of the necessary air traffic control services themselves.

For providing Air Traffic Services at these regional airports, DFS Aviation Services uses a unique operational model that ensures both the safe provision of service and a highest flexible approach to any change of circumstances. DAS utilises several key positions that are both stakeholder and operations focused. In addition to Air Traffic Controllers, the operational model includes Team Managers and Tower Managers who are dedicated key contacts for the various

stakeholders at each tower, what is exceptional in the industry. Allocating communication to several key positions enables the team to ensure coordinated and smooth alignment with all stakeholders.

The basis of this model has been tried and tested for more than 10 years now, but its rapid adaptability and high level of effectiveness was proven especially during the current crisis. Airfields cannot simply close overnight. As part of the critical infrastructure, operations must be adapted to the circumstances and their continued operation ensured.

The unique operational model of DAS enabled the team to act highly flexible and quick at all times, guaranteeing the safety of air traffic for its hard-hit airport customers, while minimising the risk of infection for their air traffic controllers.

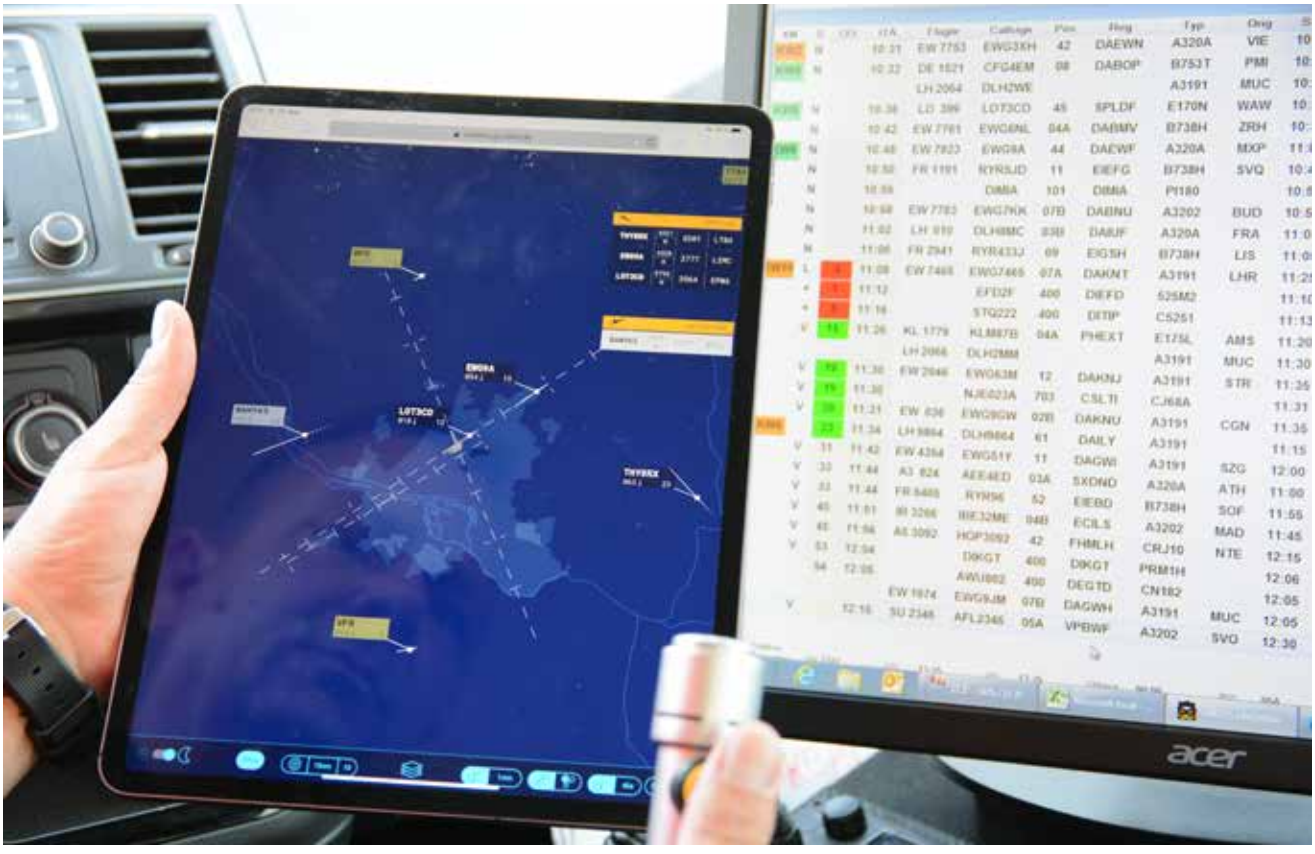
The model attracted a lot positive feedback and appreciation from customers and impressed the jury of the Airport Technology Excellence Award, who awarded DFS Aviation Services the prize for the best COVID-19 response.

2) Air traffic control training goes digital

The Corona pandemic not only has a massive impact on air traffic itself, it also poses new challenges for the important training and follow-up of air traffic controllers. The reduced air traffic makes realistic training difficult and thus a successful completion of training partly impossible, as this is linked to the successful training of realistic scenarios. Therefore DFS Aviation Services and DFS developed a new training concept in cooperation for the air traffic controller trainees at Frankfurt Airport - one of the largest and actually busiest airports in Europe - which ensures the qualification of the trainees even with the currently lower air volume.

With the help of a modern, state-of-the-art training simulator provided by DFS Aviation Academy (DAS A²), it is now possible to guarantee sufficient training in the actual traffic situation at the airport for customers worldwide. In May 2021, the first trainees successfully completed their training with the new training concept and are now qualified air traffic controllers for the Frankfurt tower. The final

The web- & cloud based air traffic control system PHOENIXWebInnovation of DFS Aviation Services easily can be used even on a simple tablet © DFS Aviation Services



Exemplary view of the modern 360 degree simulator for the training of air traffic control personnel © Fenchel & Janisch Filmproduktion

examination, the so-called "check out", was started in the Frankfurt tower and continued in the simulator with realistic examination scenarios.

3) Cloud solutions finally experience boom in air traffic control world

Already in 2019, DFS Aviation Services delivered a new web-based, cloud-enabled radar display for a first customer, Hamburg Airport. The so called "PHOENIX WebInnovation" with its modern design makes air traffic control possible completely independent of hardware and location. More projects followed, but the scepticism in the security-sensitive industry towards internet-based solutions required a lot of education and only slowly did the reluctance give way.

In recent months, as the world of work in general has also experienced a digital boom, awareness of the great advantages of these flexible and more cost-effective solutions has risen sharply. Also new areas of application for the web- and cloud-based system emerged.

PHOENIXWebInnovation had the great honour of supporting its mother company DFS Deutsche Flugsicherung during the European Football Championship (EURO 2020) in Munich and also the flood crisis in Rhineland-Palatinate, Germany. It enabled a rapid, mobile deployment of air traffic controllers on site. Operations of this kind are designated as special use airspace. They involve enforcing a total ban on flights within German airspace. A restricted area is set up around the event venue in which all air traffic is prohibited and this exceptional situation requires professional management.

All these examples show how close challenges and opportunities are and that standing still is not an option, even when the world feels like it is standing still. It is now more important than ever to emerge from one of the most severe crises ever: strengthened, better and full of innovative power.

Moritz Manzel
Managing Director DAS Bahrain

DFS Aviation Services
Bahrain Co WLL

ATM cloud solutions e.g. PHOENIX WebInnovation @Cloud

Remote Tower solutions & consultancy

Professional training at DAS Aviation Academy (DAS A²)

DFS ATS Suite with innovative ATS automation systems (main & fallback)

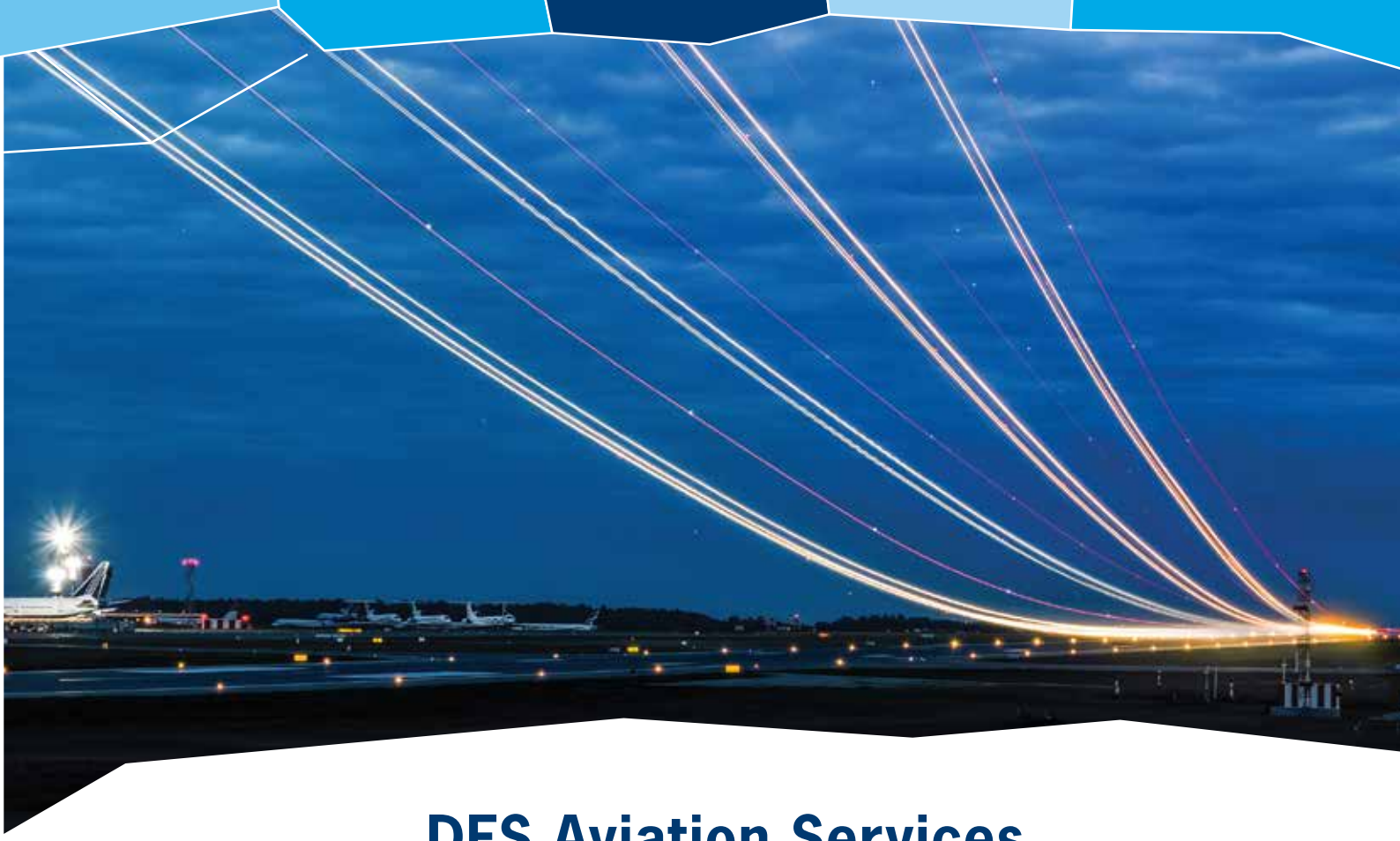
UAS Traffic Management

Green flying procedures & tools

Airspace design & procedure optimisation

ATC services & personnel

Runway safety with RIAS (Runway Incursion Alerting System)



DFS Aviation Services

Systems & Engineering | Air Traffic Services | Consultancy | Training

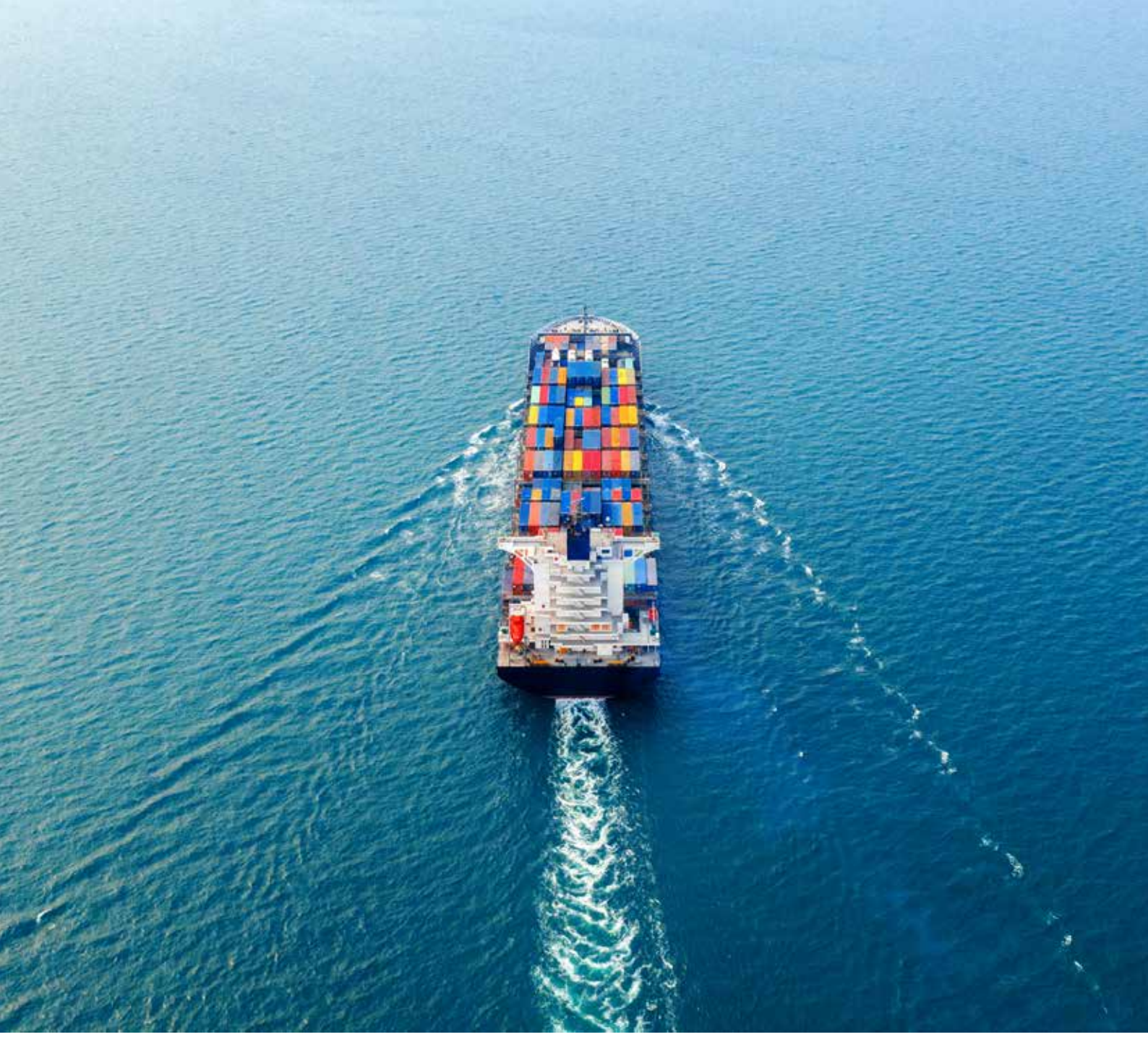
DFS Aviation Services is your perfect full-service partner for everything related to Air Traffic Management.
We ourselves are a certified air navigation service provider (ANSP). In addition, we can offer you a broad portfolio of highly professional air traffic control systems, services and training worldwide.

DFS Aviation Services
A brand of experience

www.dfs-as.aero

» The water strategy is in line with Egypt's 2030 agenda, which aims to achieve green growth and lays out reforms to promote sustainable consumption and diversification of resources across Egypt «

Yasser Nagi, Group Director Sales Area MENA, Managing Director Wilo Middle East & Egypt Wilo



Transport & Logistics

© Wilo

Wilo awarded Toshka project in Egypt

Wilo

Wilo Egypt has been awarded a Water Management project (Toshka phase 3&4) to supply 117 Split Case pumps in different capacities (200-450KW). The entire production took a place at the Wilo Middle East production facility in Dubai on partial deliveries to the site in Egypt.

The project name, Toshka, is a derivation of the name of an old Nubian village that the Egyptian government drowned when it created Lake Nasser. The Toshka Project is identified by the Egyptian government as a major national project designed to irrigate about 540,000 new feddans = (56,700 Acres) by elevating water from Lake Nasser. The estimated required water discharge is about 5.5 BCM/year taken at 265 km upstream of the High Aswan Dam (HAD). This large volume expelled from Lake Nasser has had a major transformational effect when irrigating the desert land. But its maintenance requirements are prohibitive, to say the least as the huge volume discharge is required to sustain the continued irrigation. Egypt's current share of 55.5 BCM/year of Nile water and electric source for the project is dependent on the united network.

© Wilo

Incorporating the world's largest ever pumping station, the Toshka Project sets out to make a vast area of Egypt's Western Desert suitable for agriculture, industry and habitation, both assisting national food security and relieving pressure on cities to accommodate a growing population.

Yasser Nagi, Managing Director, Wilo Middle East and Egypt & Group Sales Director MENA Region commented: "We are honored to begin harvesting previous years of work by winning a strategic project part of Egypt's vision 2030 and under the supervision of the President of Egypt and The Ministry of Water Resources and Irrigation. The move is expected to further reinforce Wilo Egypt's position as a complete solution provider in the Egyptian market."

Nagi continued "For the past 4-5 years, we have started our strong and strategic networking with various key stakeholders in the private and government sectors in Egypt. Winning this project is a result of a concrete strategic efforts done over years. With the support, fast response of Wilo technical team and having the local production facility in Dubai helped us a lot to win this project by meeting the tight delivery time. Our production team has done a lot of great work to ensure that the highest quality meets the expectations of the customer, there are more phases to come in the same project and we aim to continue to win the other phases and more mega projects as well."

Amgad Elfishawy, Sales Manager, Wilo Egypt commented "With Wilo's approach, the team's fast response and technical & commercial discussions with National services products organization, consultants and contractors.

The Wilo's main challenge was the delivery time which is in a span of 12 weeks. However, dedication and commitment are driven within the Wilo Middle East production team to comply with the requirements and complete the project successfully."

Egypt potential water projects

The Egyptian government has allocated $5bn of EU-backed funds for 43 projects to develop clean water across the country. Egypt's Ministry of Water Resources and Irrigation has laid out regulations for using water in the 2050 strategy

© Wilo

for water sustainability use and consumption. The water strategy is in line with Egypt's 2030 agenda, which aims to achieve green growth and lays out reforms to promote sustainable consumption and diversification of resources across Egypt.

The 47 desalination plants will be located in the governorates of North and South Sinai, Suez, Ismailia, Port Said, Dakahlia, Kafr e-Sheikh, Beheira Matrouh and the Red Sea coast.

The five-year plan is expected to result in additional desalination capacity of 2.44 million cubic metres a day (cm/d) by the end of 2025. The programme is being overseen by the New Urban Communities Authority (Nuca), the General Organisation for Physical Planning and the Holding Company for Water and Wastewater (HCWW).

Wilo Egypt to Serve customer needs with a modern sales structure

The German Leading pumps & Systems manufacturer Wilo established its subsidiary in Cairo, Egypt in 2016 to consolidate its position on the global industrial map, Wilo Group is witnessing growing demand for its products in the Egyptian market.

Egypt is one of the most significant marketplaces in the Middle Eastern region. "With the Wilo presence in the Egyptian market we state another clear signal regarding our commitment to permanently strengthen our development in this area", said Fouad Ahmed, Regional Marketing Manager MENA. "It also represents a further step in our intensified globalization strategy: the forecast to the development of the Egyptian market carries lots of positive indicators." The presence of the subsidiary in Cairo is the first step in a series that Wilo plans to implement based on the market feedback, as for example the construction of a local assembly line for a certain, market-based scope of water pumps e.g. for raw water intake or waste water treatment. Within the scope of the Groups digital transformation Wilo also focuses on future products, markets and projects such as Smart Urban Areas in Egypt.

In year 2020 and 2021, the company highlighted its focus on clean water supply, irrigation, and huge water treatment stations. Proudly, in a remarkable short period of time, Wilo

Egypt became a main supplier for smart water solutions in this field, which is considered as an aggressively quick respond to the local market's needs.

In line with this, under the auspicious of president El Sisi, and the Egyptian government, Wilo Egypt was awarded prestige projects that serve the developments of the country on the road to the New Republic, such as the Toshka project, Army Stadium (New Capital), and El Galala City. On the other hand, significant projects in the private sector were supplied by Wilo water solutions, namely El Taweela Island in the Red Sea, Al Brouj compound, Amwaj, and Marasi in the North Coast.

In 5-years' time, Wilo Egypt developed an outstanding mark, introducing smart-energy water pump systems and solutions for sustainable growth and paving its way into the heart of Egypt's New Republic.

Mr. Yasser Nagi
Group Director Sales Area MENA, Managing Director Wilo Middle East & Egypt

Wilo

© Wilo

» In the middle of 2021, gigawatt projects still seem like pipe dreams, but there is not much missing that they will be realised as soon as a demand for hydrogen materialises. «

Jens Kottsieper, Development Manager of ILF Beratende Ingenieure

Urban/Water Management

How to master plant maintenance shutdowns

REMA TIP TOPs solutions and services for scheduled shutdowns

Mining Site, Abu Dhabi-UAE © REMA TIP TOP ME

In construction, mining, and any other industry processing raw materials, seamless operations are essential to deliver sustainable performance and avoid financial losses. Smart systems and services help prevent or detect irregularities and perform efficient maintenance during operation. REMA TIP TOP offers a wide range of wear-resistant products, repair materials, surface protection solutions and services for raw material extraction and processing. Providing a broad range of services, such as inspections, maintenance support, system upgrades, and shutdown and asset management services, REMA TIP TOP also supports its clients with proven experience, know-how and a global service network in planning and managing scheduled shutdowns for plant maintenance.

Mohamed Saffour, General Manager REMA TIP TOP Middle East, on how to plan and execute scheduled shutdowns successfully.

Mr. Saffour, what are the challenges when executing scheduled shutdowns?

Every day a plant is down for maintenance costs a business time and money. That's why it is essential to plan scheduled shutdowns in order to keep the downtime as short as possible. Shut downs are highly complex and require specialised planning and efficient execution.The duration of a shutdown depends on various variables: what work needs to be done? What parts need to be serviced, which ones need to be sourced and replaced? The challenge is to have a clear idea and action plan of the project beforehand to avoid unexpected events leading to huge costs.

What solutions and services does REMA TIP TOP offer its customers?

REMA TIP TOP supports its customers along their entire business value chain from planning and implementation to operation and beyond. To ensure smooth operations, we offer our customers services for predictive maintenance and scheduled shutdowns, backed by our know-how and experience from countless service projects worldwide. As supervisors, our experts help properly plan and control maintenance projects and guide service-teams, but also can manage the shutdown activities with our global service network.

Maintenance of conveying systems © REMA TIP TOP AG

What is the added value of involving REMA TIP TOP in scheduled shutdowns?

We help our clients to minimize the risk of unforeseen downtime and gain more planning reliability and control through regularly scheduled shutdowns and preventive maintenance plans even during operation. With our experience, expertise and proven methods in planning and project management, as well as tailored technical solutions, we successfully reduce downtime - in one project, we were able to significantly reduce the shutdown by using specialised engineered equipment speeding up the belt replacement drastically. Our customers save significantly more than they invest in our support, and the proven time savings are remarkable. What more could you ask for?

REMA TIP TOP AG
Gruber Str. 65
85586 Poing | Germany
Phone +49 8121/707-100 info@tiptop.de | www.rema-tiptop.com

REMA TIP TOP MIDDLE EAST FZCO
P.O. Box: 17181
Jebel Ali Free Zone, Dubai | U.A. E
Phone: +971 488 76989
sales@rematiptopme.com | www.rema-tiptop.com

Mohamed Saffour
General Manager REMA TIP TOP Middle East

REMA TIP TOP AG

Scaling green hydrogen: positive impulses for the MENA region and Europe

ILF Consulting Engineers

In more and more countries worldwide, hydrogen from renewable energies, called green hydrogen, is becoming the focus of energy and climate policy. It can be produced without emissions, store large amounts of energy, and ideally re-release it without emissions, or at least with low emissions and in a climate-neutral way. In contrast to other generation methods, it does not produce waste products such as CO2, that have to be disposed of at great expense and stored forever. Green hydrogen thus contributes to decarbonisation above all where renewable energies and electrification have their limits: in storability and transportability.

But green hydrogen has the disadvantage, compared to conventional fossil energy sources such as natural gas or petroleum or hydrogen from fossil sources, called grey hydrogen, that it is still expensive to produce. There are two reasons

© ILF Consulting Engineers

for this: fossil energies, created over millions of years, are cheaper when viewed indiscriminately than energy produced today from wind and sun. And electrolysis plants that produce hydrogen and oxygen through electrical energy are relatively small and thus hardly competitive with fossil plants, tens of times larger.

To make green hydrogen competitive with grey hydrogen or natural gas, proposals such as raising CO2 prices, introducing purchase quotas or subsidies have been discussed for years. The risk of social problems that CO2 prices can cause is well known. Subsidies are only possible in countries with the necessary budget and are usually affordable for smaller pilot or demonstration plants during a market start-up phase. And quotas have the negative connotation of planned economy control, which can lead to market distortions elsewhere.

Comparing renewable energies and fossil energy sources such as oil and natural gas seems unusual at first glance. Electricity is transported in power grids, natural gas and crude oil in pipelines or in large quantities by ship. Hydrogen harmonises these energy carriers because electrical energy is converted into chemical energy. This is very similar in its properties to those of hydrocarbons such as natural gas and crude oil.

Production

Three main factors influence the production costs of green hydrogen, i.e., the expenditure or cost price for the production: the electrolysers, which are not a new but still expensive technology; the electricity price of the electrical energy, in real terms after taking into account irradiation values and wind occurrence before energy storage in batteries or electricity grids and before balancing other electricity sources such as conventional power plants; and the size of the plants and quantity of hydrogen produced.

More and more frequently and in more and more regions, including or mainly in the MENA region, renewable energies are becoming the cheapest form of energy. On the one hand, this is due to earlier subsidies, quota or tariff regimes, and technological and production advances. On the other hand, many regions are favoured in either their solar or wind potential. Some countries in the MENA region, e.g., Oman, Egypt, or Morocco, even have both. However, these market forces may now be used.

An important component for the production of hydrogen is the production capacity and technological development

of electrolysers. In the first half of 2021, enquiries for plant sizes of 100 MW were still answered hesitantly. This is likely to change in the next few years, as well-known manufacturers of electrolysers have announced that they intend to expand their production capacities to orders of magnitude of one GW per year. In addition, the first beneficiary countries in the MENA region, e.g., Saudi Arabia or Algeria, have announced their intention to build their own production capacities.

When the production of green hydrogen reaches dimensions that we are already, more or less, used to from oil and natural gas production, it is fair to make a cost comparison again. In some white papers, studies, and projects, ILF Consulting Engineers pursues the view that scaling up can make green hydrogen competitive with grey hydrogen or natural gas. That this requires an appropriate legal and financial framework is something ILF has explored with competent partners.

The view that scaling is vital also seems to be shared by the European Union as it intends in its hydrogen strategy to generate 80 GW of hydrogen production capacity by 2030. As half of this is to be imported from non-EU countries, this presents a market potential for the MENA region. The steel industry, among others, points to the potential need for enormous quantities of hydrogen, the production of which can hardly be realised with renewable energies in Europe.

Transport

The MENA region has contributed significantly to Europe's energy supply for over a hundred years. It is located at a distance from Europe that is technically and economically surmountable for energy transport. Some major gas corridors and shipping trade routes for natural gas and oil have connected the regions for a long time. This means that both sides have both the experience and the infrastructure needed to quickly take technical and commercial measures to enable the export of new energy carriers such as green hydrogen. With the call for cheap electricity, the MENA region is also favoured: It has one of the most attractive electricity generation costs from renewables in the world.

But what quantities per year are we talking about when scaling up? Today, around 75 million tonnes of hydrogen are produced and consumed worldwide per year. The production occurs almost entirely through steam reforming, whereby hydrogen is mostly produced from natural gas, and a considerable amount of CO2 is produced. Moreover, the required hydrogen is produced directly at the consumer's site, so that hardly any transport is necessary. In concentrated regions with high hydrogen demand, such as the Benelux countries, there is exceptionally a limited hydrogen transport network.

The production and import of 40 GW of green hydrogen , that the EU is aiming for, amounts to around 3.5 million tonnes per year, assuming that on average the production

© ILF Consulting Engineers

plants are working at half capacity. This utilisation rate is based on the assumption that the sun only shines for a small part of the day so that plant capacity is only slightly utilised, and wind makes up the production deficit. In contrast to fossil power plants, which can produce electricity practically around the clock, this is an important starting point that also determines the size of the plant.

Against the backdrop of scaling, a production volume of several million tonnes of green hydrogen per year can certainly be compared with the output of fossil energies such as oil or natural gas. The MENA region has facilities for transporting and exporting natural gas that are designed for such and larger quantities. These include LNG terminals in the Middle East such as Qatar or pipelines from North Africa such as Algeria. Admittedly, there are some technical and commercial hurdles to overcome to make these facilities usable for hydrogen transport. The same premise applies to transport costs as to production costs: bigger is cheaper. High utilisation of the transport systems is the key.

A cardinal mistake would be to play off pipeline transport against ship transport, as is done in some literature. It is not a question of an either-or but a both-and scenario. Both

© ILF Consulting Engineers

Europe and the MENA region are large regions with very different connections: some countries have sea access, others are inland. A land connection is, in some cases, much shorter than a sea route. Ships are highly flexible but contribute to visible traffic, while pipelines run underground and are self-contained, secure systems.

The question of which transport system is suitable for which quantities over which distances must be answered individually for each connection between a MENA country and a European country. The use of existing infrastructures such as a natural gas pipeline for hydrogen transport can be favourable if the hydrogen is "only" blended, and it is not relevant on the demand side what proportion the hydrogen forms in the natural gas-hydrogen mixture.

However, if pure hydrogen is in demand, the ship definitely has advantages over a pipeline up to a certain transport volume because the investments and operating costs are absolutely lower. A pipeline, especially if they cross seas like the Mediterranean or the Black Sea, needs large diameters in one-meter order and more to be economical. Here, 3.5 million tonnes of hydrogen per year would not be a large amount, and all the hydrogen would have to be transported through just one system.

But why build large new pipeline systems when there are already existing pipelines? What happens to existing gas pipelines when gas production declines, gas composition changes, or demand for natural gas falls in the medium to long term? Then pipeline capacities become free, as a number of leading gas pipeline operators have shown in their European Hydrogen Backbone. In this case, the gas pipelines could be converted to transport hydrogen only.

The fact that pipelines can transport less hydrogen than natural gas in terms of energy, or that the transport requires more energy, can be assessed on a case-by-case basis, taking into account that the pipeline already exists and is depreciated, so the capital costs are low. In contrast, ships for the transport of hydrogen must first be designed, approved, and built. Even if it sounds obvious, the transport of liquefied hydrogen is much more expensive than the transport of liquefied natural gas.

For the transport of hydrogen from the Middle East, pipelines reach their limits due to the distance. In reality, only the gas corridor from Azerbaijan via Turkey to Italy exists. Building large pipeline systems from other countries like Saudi Arabia or Egypt to Europe are efforts that are decades old and still face obstacles. It could be quicker to build and deploy ships for gas and liquid transport. Serious developments are underway, some with concrete time horizons and milestone successes.

Conclusion

It is often enough emphasised in the literature or the media that the production of green hydrogen is expensive. This

is only partially true. In fact, electrolysis technology is even more expensive than steam reforming, and hydrogen from renewable energies more costly than natural gas. And whether the perpetual storage of CO2 is cheaper than its avoidance remains to be proven.

But green hydrogen need not and will not always remain more expensive than alternative sources. There are positive factors that lead to making green hydrogen competitive without relying on subsidies in the long term. These factors are market factors, such as electricity from renewable energies as well as electrolysers for the production of green hydrogen becoming cheaper. In addition, incentives for scaling up are provided by both, politics and industry.

In the middle of 2021, gigawatt projects still seem like pipe dreams, but there is not much missing that they will be realised as soon as a demand for hydrogen materialises. And this is driven by the need to implement the Paris agreements and actively contribute to the energy transition.

With every flood and every drought, whether in Europe or the MENA region, the need to reduce CO2 emissions increases. Hydrogen offers the possibility to use the abundance of sun and wind in the MENA region and make them available to Europe with manageable effort.

Jens Kottsieper
Development Manager

ILF Consulting Engineers

© ILF Consulting Engineers

» The services are being provided in a spirit of collaboration and partnership with aim of always finding optimum solutions readily with a challenging time bound environment with multiple Contractors and Multiple major developer. «

Chris Turnbull, Project Director Diriyah Gate Dorsch KSA

Urban Building & Public Space

Bank Regional Headquarter © Gerber Architekten

Architecture in competition

Gerber Architekten

Our goal is a significant conceptual idea that is supported by every single architectural element. An overarching design idea that is so strong that it can hold its own against many other solutions in the competition. Success does not come from the graphics of the competition plans, but rather from a rational, functionally intelligent, innovative, yet formally expressive and striking concept.

Architectural competitions are an opportunity to develop a wide variety of concepts for a given task and, in the subsequent discussion and consideration, to find the optimal solution according to the respective opinion. Architectural competitions are the main discipline for the generation of sophisticated projects. Especially in international competitions, in which a high-ranking, internationally experienced field of architectural offices submits its designs, the quality of the ideas and designs is particularly high, but even here most entries remain at the design stage and are not realised. Yet architectural competitions are a complex subject in themselves. In principle, there is only one winner in a competition. In reality, however, there is sometimes no 1st prize at all, but two 2nd prizes. In Saudi Arabia, in

Camel Festival Venue © Gerber Architekten

some competitions no winners are nominated at all. And it is not always the 1st prize that is actually built, but another competition participant is sometimes commissioned. Sometimes none of the submitted competition entries are realised at all or the implementation remains open for a long time.

Winning a competition is therefore not always a guarantee that the project will be commissioned, and not winning is no indication of the quality of the competition entry. For this reason, this article is dedicated to some of the competition entries by Gerber Architekten and their design ideas that have not yet been realised.

Bank Regional Headquarter - Flourishing growth à la Fibonacci

The design for the high-rise building was awarded 1st prize in 2018. The competition was for a regional headquarters for a financial group. The building, which is visible from afar, staggers in narrow slices to a height of 170 metres. Its façade is designed as a highly energy-efficient and low-maintenance glass façade. The main objective is to create a building envelope that provides daylight inside the building with a highly transparent appearance that is deliberately not mirror-like from the outside.

Gardens to the top

The building rises to the sky in 21 steps, following the curve of the Fibonacci sequence, a rhythm inherent in most natural phenomena. Each step provides a generous green outdoor space for relaxation and informal interaction for the Bank's staff, totalling more than 2600 m² of roof gardens and terraces. The building's main entrance is located exactly where the façade reaches its highest point. It leads into a spacious entrance hall, above which an atrium filled with daylight rises to the full height of the building. The atrium

Camel Festival Venue © Gerber Architekten

spans between the 8 freestanding glass lifts on one side of the lobby and the floor levels on the other, following the curve of the Fibonacci sequence. It connects the individual levels, contributing to the special atmosphere of the fully networked working environment and to the informal exchange of information. The railings of the bridges connecting the lifts to the floor levels are designed as planted green walls, bringing lush nature into the building in the form of hanging gardens, contributing to the quality of space inside the building.

With 52,400 m² GFA and a footprint of around 3000 m², the new tower covers only 26% of the entire site. For most of the remaining open space of about 8,500 m², generous public gardens and squares were envisaged to offer residents space for a variety of leisure activities, similar to the square in front of the King Fahad National Library, which has long become a popular attraction in Riyadh.

Camel Festival Venue - An oasis of the 21st century

The design for an international cultural oasis developed in collaboration with Dan Pearlman won 1st prize in 2018. It is dedicated to Saudi Arabia's symbolic animal, the camel. As the first interactive camel theme park, the design focuses on education, entertainment and leisure.

A modern oasis is planned on a total area of 760,000 m² as a symbiosis of Arabian heritage and innovative vision of the future.

The desert as an oasis

The landscape design is a unifying factor for the entire site. Two giant camel figures, one facing east and one west, form a large gate through which visitors enter the oasis. There are markets, sports facilities and an amphitheatre for large

K 12 International School © Gerber Architekten

events. In the Camel Experience Museum, visitors will learn about the scientific side of camel breeding as well as its importance for the art and culture of Saudi Arabia.

Large sand dunes create an environmental infrastructure that divides the sprawling site into a system of main routes and smaller enclaves. Two areas in particular bring the heterogeneous mix together: the centre, which contains a variety of integral functions and attractions, and the east-west access route, the Medina Path, which takes the form of an elongated souk. These two areas form the backbone of the Camel Oasis. The dune landscapes provide natural cooling and create a pleasant microclimate. The lush green oases nestle between the dunes, sheltered from the wind and sun. The oasis, a traditional site of Arab culture, is transformed through the use of state-of-the-art technology. This enables the year-round use of the mixed-use resort also for an international target group.

K 12 International School

The design for the 2020 competition, which did not win a prize, adapted a traditional motif: in the palm groves of Saudi Arabia, irrigation mounds of clay are found around the individual palm trees, creating a fine pattern. This pattern resembles cellular structures, the basis of all living and growing organisms.

Cellular structures as a natural link

It is this pattern that inspired the basic idea of the design, coupled with the notion of taking root, growing, maturing and bearing fruit. It is reflected in the pentagonal structure of the K 12 International School and unites all the schools' buildings into a single structural unit. In this, each school and facility maintains its own unique form within the whole to best suit its needs. The individual areas and buildings

King Fahad National Library © Gerber Architekten

of the school complex are closely interconnected as in a natural organism, resulting in a cohesive organism. This also helps to strengthen the students' sense of community and belonging.

A key principle for 21st century learning is the concept of flexibility and visibility. In all schools, glazed partitions allow visibility so that students can watch their classmates and teachers at work. At the same time, a hierarchy of enclosed, semi-enclosed and open spaces is provided so that students and teachers have the opportunity to design their own learning landscape with flexible furniture.

Learning with nature

Different school gardens round off the didactic concept of the school. These include the so-called Bedouin Garden, which follows the pedagogical concept of active, playful and experience-based learning, as well as gardens specially designed for the respective age group. They provide opportunities for learning and social interaction through outdoor activities and play. Each school garden has age-specific play areas, such as Desert Dunes and Maze Garden for kindergarten and pre-school, and Bedouin Kitchen Garden and Energy Garden for middle and high schools.

Prof. Dipl. -Ing. Eckhard Gerber
Owner and Founder of Gerber Architekten and Gerber Architekten International

Gerber Architekten

Dipl. -Ing. Thomas Lücking
Managing Director

Gerber Architekten

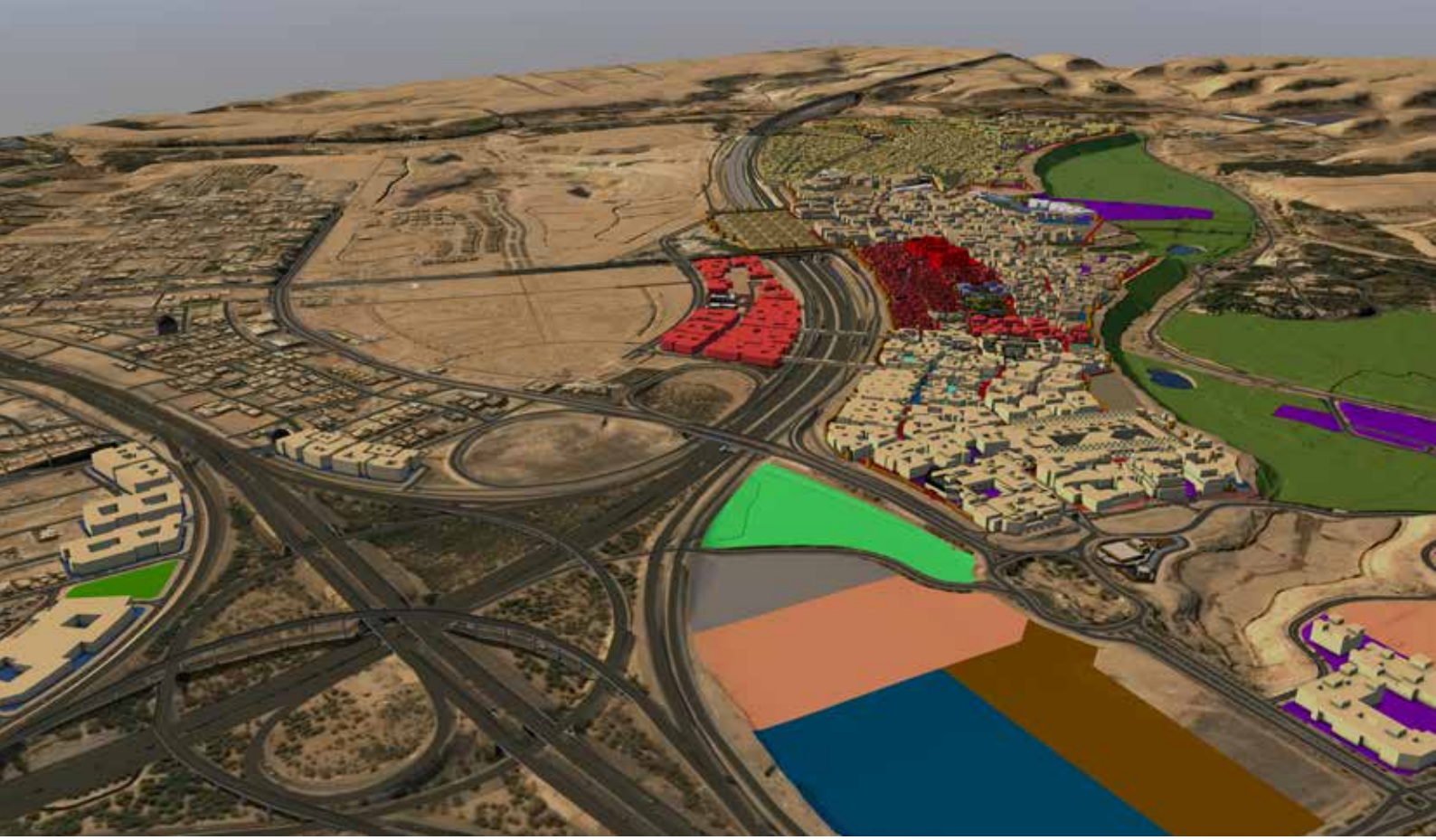
شـــروق
SHUROOQ

هيئـة الشــــارقـة
للاستثمـــار والتطـويـر
SHARJAH INVESTMENT AND
DEVELOPMENT AUTHORITY

@_Shurooq
ShurooqSharjah
ShurooqShj

Shurooq is the driving force behind Sharjah's transformation into a destination rich in culture, diversity and memorable experiences. Visit Shurooq's world-class destinations and discover the best in hospitality and exciting entertainment that Sharjah has to offer.

shurooq.gov.ae



© Dorsch Group

Diriyah Gate Development, Kingdom of Saudi Arabia Modern Infrastructure Enabling a Heritage Development

Dorsch Group

Smart infrastructure design can help maintain a region's cultural heritage, while introducing new opportunities for economic and social development. Diriyah Gate is a shining example of a how a historical site can be reimagined for future generations.

The Diriyah Gate Development is a SAR 64 billion development project and is being created adjacent to the UNESCO site containing the historical village with its distinct Najdi style architecture and cultural significance to the origins of the House of Saud. It will showcase authentic Saudi Arabian environments. The historic influences are being newly adapted for 21st century living.

The Development is 7 km² and will be a mixed-use historic, cultural and lifestyle destination. Diriyah will become Saudi Arabia's historic and cultural heart, proudly showcasing to the world the Kingdom's 300+ years of history through an engaging and inspiring set of heritage, hospitality, education, retail and dining experiences for residents, tourists, and frequent visitors.

The historic town of Diriyah, which is 15 minutes from downtown Riyadh, will be transformed into a global tourism destination with its main anchors rooted in its historic culture and heritage. It aims to be developed as an urban, mixed-use development inspired by the principles of both new urbanism and historical Najdi architectural typology. It will be home to more than twenty luxury and ultra-luxury hospitality venues offering genuine experiences that reflect the rich history and culture of Diriyah and the Kingdom of Saudi Arabia. Ultimately, the destination will include museums, galleries, restaurants, retail experiences, public squares, hotels, multiple recreational spaces, residences, educational institutions and offices.

As part of the operational phase of the project, there is also the restoration of Wadi Hanifa, a valley that runs for many kilometres and creates an incredible landscape where a major part of the project will include the replanting of about 20,000 historic palms and other authentic plans that historically grew in the area. Diriyah Gate Development will have free public spaces for all to enjoy.

Dorsch KSA are responsible as the Infrastructure Consultant to deliver infrastructure designs, performance specifications, and construction supervision of infrastructure in order to enable daily efficient operations of utilities within the new Development.

Introduction

Any Development requires a sound infrastructure basis to build upon and the prestigious Diriyah Gate Development is no exception. Dorsch KSA consulting services focused upon delivering the following:

- Design of infrastructure comprising: roads, potable water supply, sewerage, stormwater, irrigation, power, telecommunications, district cooling blowdown water pipeline, security and fire life safety, pumping stations, and reservoirs.

- Concept Design and BIM 3D model of 1.8km of high pressure desalination pipeline relocation.

© Dorsch Group

© Dorsch Group

» Performance based specifications for Design Build Operate (DBO) contracts comprising: gas storage farms and distribution network, sewage treatment plant, district cooling plant and distribution network.

» Construction Supervision of the designed infrastructure and DBO contracts (gas, sewage treatment plants, district cooling). Review of designs for Sewage Treatment Plant and District Cooling Plant.

» Operations & Maintenance strategy for infrastructure proposed within the utilities tunnels (7km). The Development has a unique underground network of tunnels for vehicles and utilities. The effective use of these tunnels enables the Development to have a calm customer friendly experience zones on the above ground areas with many walkways amongst the beautiful Nadji style buildings.

» BIM 3D modelling has been undertaken during the design and construction supervision of the infrastructure. This approach provides designers and constructors with a sophisticated visualisation tool to enable a smooth implementation of the new infrastructure. The BIM will be further developed by Contractors with As-Built information being added to enable effective asset management during operations.

Challenges Faced

There have been many challenges faced in the designing of the many types of infrastructure required for the Development. Some of the key challenges are described below:

» Programme: Consulting services began in March 2020 with a sequenced design approach required comprising a Concept Design, Schematic Design and Detailed Design to be completed within a tight time schedule. The start

date was essentially the beginning of wide-ranging lockdown around the world due to the COVID-19 pandemic. However, the Saudi government and project stakeholders pushed ahead with this giga-project in a very challenging time to send a great global message. Irrespective of COVID-19, it is business as usual and the focus is on Vision 2030 and realizing it.

» Consulting services were performed with a combination of personnel in the Kingdom as well as expert staff in various offices around the world. Using video conferencing and digital information transfers enabled the design to progress safely on time in a seamless and well-integrated manner.

» Interfaces to other Design Consultants was a critical to the successful integration of the infrastructure to other aspects of the Development including the Tunnels (Roads) and Tunnels (Utilities). With the presence of the Al Turaif UNESCO World Heritage Site, which sits at the heart of the development, great care was needed to maintain the historic integrity of the site and preserve its unique features. A complex network of underground infrastructure and transportation elements is required to maintain the traditional landscape and views above ground.

» Forecast demands, land use allocations, layouts emerging from multiple updates (evolution) of the Master Plan and new information provided from new developers of each Super Plot within the Development.

» Stakeholder Approvals for the infrastructure Detailed Design and key aspects of the Performance Based Specifications (Gas, Sewage Treatment Plant, District Cooling). Stakeholders often required special contact arrangements during the pandemic years and obtaining the necessary approvals was achieved with a successful partnering approach with the Client.

© Dorsch Group

© Dorsch Group

» Creating an up to date BIM 3D model of all infrastructure with the evolving nature of the design inputs described above. Ensure a clash free state of utilities within the complex design of the Tunnels (Utilities), in-ground utility corridors, and evolving development layouts.

Outcomes Achieved

The key outcomes for infrastructure are of course truly demonstrated during the future smooth operations of the new vibrant Diriyah Gate Development. From a project delivery perspective, key outcomes achieved to date include the following:

» Completion of infrastructure design on time and budget which is fit for purpose and will provide the necessary roads / utilities to achieve efficient and effective operations.

» Completion of Performance Based Specifications (Gas, Sewage Treatment Plant. District Cooling Plant) on time and budget.

» Environmental: sustainable outcomes achieved with the optimisation of assets and energy efficiency.

» Safety: Nil Lost Time Injuries to date.

» Value Management: significant lifecycle savings.

» Tender Documentation (Technical) prepared and procurement stage achieved on time.

» Four major contracts awarded during April to July 2021 comprising: Infrastructure General (Build only) Contracts Package A and Package B, Design Build Operate (DBO) Sewage Treatment Plant, DBO District Cooling Plant & Distribution Network.

» Developed a trusting collaborative relationship with the Client (DGDA) to continue work in partnership and to readily find solutions as necessary with any evolving Development changes to layout, land use allocations, or demands.

Two Year Look Ahead

The future looks bright as the infrastructure designs transform into constructed utility assets that will underpin the successful future operations of the vibrant new city of Diriyah Gate.

We will continue to provide our Infrastructure Design and Construction Supervision consulting services to our prestigious Client. The services are being provided in a spirit of collaboration and partnership with aim of always finding optimum solutions readily with a challenging time bound environment with multiple Contractors and multiple major developers.

Dorsch KSA has proven itself to deliver an international best practice infrastructure service during a challenging business environment. We aim to be our Client's partner of choice for the ongoing provision of such services. Achieving excellent results for both in the immediate short term (construction / commissioning stage) as well as the longer term (Operations) as Asset Management lifecycle optimisation initiatives are implemented is a key goal to be strived for.

Chris Turnbull
Project Director
Diriyah Gate

Dorsch KSA

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

We work to shape a future worth living around the world.

At GIZ International Services we do this by:

Working innovatively and pragmatically

Delivering immediate and sustainable results

Generating impact for our clients and partners

Together, we improve living conditions worldwide.

callins@giz.de Eschborn, Germany
+49 6196 79-2502

Ghorfa

BUILDING BRIDGES BETWEEN GERMANY AND THE ARAB WORLD

Ghorfa Arab-German Chamber of Commerce and Industry

Building Bridges between Germany and the Arab World

Times are challenging but Arab-German business relations are deeply rooted and full of opportunities. The trade balance between Germany and the Arab countries reached EUR 36,2 billion in 2020 with an increase of almost 11% in the first half of this year. While the ongoing Covid-19 pandemic placed the entire world under unprecedented challenges, opportunities in the Arab world still remain, especially in the construction, energy and consulting sector. The cooperation between Germany and the Arab world has a strong foundation that can withstand circumstances like the current one, and consequently shape a robust and prosperous future.

About us

The Ghorfa Arab-German Chamber of Commerce and Industry is the competence centre for business relations between Germany and the Arab world. It was founded in 1976 and has been located in Berlin since August 1, 2000. For over 40 years, the Chamber has been committed to promoting business relations between Arab countries and Germany and serves as the primary centre of expertise within the Arab-German business community.

Our mission

The Ghorfa pursues non-profit goals to enhance and strengthen business relations between Germany and the Arab world in the fields of trade, industry, finance and investment. Strategic partnerships based on mutual benefit and understanding, create new business opportunities that facilitate economic benefits for both sides. The Ghorfa, therefore, mainly focuses on networking, consulting and on providing information about relevant economic and industrial developments.

Our network

Based on its invaluable heritage and its ambitious commitment, the Chamber has a powerful network consisting of both institutional and entrepreneurial decision makers from Arab countries and from Germany. Under the umbrella of the Arab League and the Union of Arab Chambers, the Chamber operates and acts as the representative of all Arab Chambers of Commerce and Industry in Germany. The Ghorfa works closely with the Arab Chambers of Commerce and Industry, related governmental bodies and relevant business associations in the Arab states, as well as with Arab embassies in Germany. It is part of the worldwide organisation of Joint Arab-Foreign Chambers of Commerce and Industry. The Ghorfa cooperates with German governmental bodies on federal and regional levels and with German industrial associations. The close connections and effective collaborations with decision-makers and policy shapers enable the Chamber to deliver a broad portfolio of high-quality services to meet its members' interests.

Activities, Conferences and Events

The Arab-German Business Forum has become the most important platform for the initiation and promotion of promising business opportunities between German and Arab business partners. More than 600 high-ranking business leaders and political decision-makers from the Arab world, Germany and Europe participate in this annual conference. The Ghorfa has been organising this distinguished event since 1998 in cooperation with the Union of Arab Chambers and the Association of German Chambers of Commerce and Industry under the auspices of the Federal Ministry for Economic Affairs and Energy.

Moreover, the Ghorfa hosts conferences on different industry sectors such as health, energy, education, and sports to bring together Arab and German professionals from respective branches. These events provide a professional setting for analysing and discussing possibilities for business expansion and serve as a place to debate future trends in the Arab world and Germany. The Ghorfa also runs numerous country-specific events, ad-hoc conferences on arising topics, as well as B2B meetings and working groups.

Networking

- Quick access to economic and political decision-makers
- Connecting with matching business partners
- Forwarding business enquiries to relevant recipients from our database of 15,000 contacts
- Participating in high-ranking events, conferences and further networking platforms (e. g. Arab-German Business, Energy, Health, Education and Vocational Training Forum)
- B2B meetings with high-ranking business people through events, delegation visits and upon special request
- Exclusive member events such as roundtables and working groups
- Professional all-round assistance for trade fair participation

Consulting

- General and business-related intercultural consulting
- Specifying possible business cooperation and evaluation of potential business partners
- Country and branch-specific analysis

- Comprehensive and detailed market information
- Competent market entry assistance
- Mediation and arbitration in cases of business disputes
- Advice and guidance through the multitude of offers and competing products in the German and Arab market
- Raising the presence and visibility of Ghorfa member companies in the competitive market
- Visa and commercial documents support

Information

- Regular reports with relevant information about economic and business trends
- Information on the latest economic developments, promising markets and sectors; legal and political background
- Quarterly bilingual business magazine SOUQ, providing an overview on cooperation possibilities and activities within the Arab-German business community
- Complimentary copy of our Business Guides, Sector Specific Books (e. g. health, education, energy or infrastructure) as well as the Arab-German Business Directory

We welcome you to become part of the high-level network that we provide for professionals and business leaders from the Arab world and Germany. Join us and share our vision of prospering Arab-German business relations. For further information concerning membership in our chamber please contact us:

Ghorfa
Arab-German Chamber of Commerce and Industry e. V.
Garnisonkirchplatz 1, 10178 Berlin, Germany
Phone: +49 30 278907 – 0 | Fax: +49 30 278907 – 49
ghorfa@ghorfa.de | www.ghorfa.de

24th Arab-German Business Forum © Ghorfa/ El Sauaf

CONTRIBUTING COMPANIES AND INSTITUTIONS

BASF Maroc S.A

At BASF, we create chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility. More than 117,000 employees in the BASF Group work on contributing to the success of our customers in nearly all sectors and almost every country in the world. Our portfolio is organized into six segments: Chemicals, Materials, Industrial Solutions, Surface Technologies, Nutrition & Care and Agricultural Solutions. BASF has been producing sodium nitrate in Ludwigshafen for over 90 years. Along with its use in the solar industry, it is primarily used in the processing of glass and foods. BASF supplies its salt to all solar tower power plants around the world: clear proof of BASF's outstanding product quality.

Project: Solar Energy Station Noor in Morocco and Dubai

Contact: Khaldoun Bouacida, Managing Director BASF Maroc and Country Cluster Head North West Africa

BASF Maroc S.A
Tour Ivoire 3, La Marina, 2ème étage, 20000 Casablanca, Morocco
Phone: +212 522 669 401
Fax: +212 522 350 517
Email: khaldoun.bouacida@basf.com

DFS Aviation Services Bahrain Co WLL

DFS Aviation Services Bahrain supplies Air Traffic Management (ATM) personnel to the Bahrain CAA. The responsibility also covers standards, training, safety, electronics, engineering & regulatory personnel. DAS Bahrain is a subsidiary of DFS Aviation Services with HQ in Germany. DAS is a certified air navigation service provider (ANSP) and markets ATM products and services worldwide.

Project: From crisis mode to innovative growth in air traffic management

Contact: Moritz Manzel, Managing Director DAS Bahrain

DFS Aviation Services Bahrain Co WLL
Amwaj Islands, PO Box 144, Kingdom of Bahrain
Phone: +973 16002200
Email: moritz.manzel@dfs-as.aero
www.dfs-as.aero

Dorsch Gruppe – Middle East

For almost 70 years, the companies of Dorsch Gruppe have been respected consulting and engineering partners for industrial clients, private investors and public institutions. The Dorsch Gruppe with more than 2,600 employees is Germany's largest independent planning and consulting company. Our experts work in a future oriented and quality conscious way for people in all Arab countries. They offer an entire performance spectrum in the fields of project development, infrastructure, architecture, airports, oil and gas, urban planning, water, transport, marine, landscape and environment as well as asset management and operation maintenance.

Project: Excelling during a Pandemic

Contact: Hany Labib, Director, External Operations

Dorsch Gruppe – Middle East
Salam Street
Abu Dhabi | UAE
P.O. Box 26417
Phone: +971 2 6721923 I Fax: +971 2 6720809
Email: Hany.Labib@dorsch.com
www.dorsch.de

Gerber Architekten International GmbH

Gerber Architekten is a German architecture office with national and international projects in architecture, interior design, urban design als landscape design. With over 50 years of experience we can offer a wealth of expertise, competence and excellence. Our approach ist o develop the site with an integrated solution that meets the Client`s requirement on design, local needs, engineering and economic return.

Project: Architecture in competition

Contact: Prof. Dipl.-Ing. Eckhard Gerber, Executive Manager
Dipl.-Ing. Thomas Lücking, Managing Director

Gerber Architekten International GmbH
Haus zur Berolina
Hausvogteiplatz 12 10117 Berlin, Germany
Phone: +49 30 208 864 10
Fax: +49 30 208 864 122
Email: GAI@gerberarchitekten.de
www.gerberarchitekten.de

ILF Consulting Engineers

ILF Consulting Engineers (ILF) consists of more than 40 international and independent engineering and consulting companies. It operates in 150 countries worldwide with more than 2000 employees who help our clients to execute their energy, industrial and infrastructure projects. ILF has a track record of more than 6,000 successfully executed projects and constantly proves that engineering excellence derives from local presence, excellent know-how and the passion for excelling our clients' expectation.

Project: A new standard in the sustainable development of human habitat: The Red Sea

Contact: Tobias Walk, Fred Wendt
Managing Directors

ILF Consulting Engineers
Munich,Germany
Email: fred.wendt@ilf.com | tobias.walk@ilf.com

REMA TIP TOP

//ONE BRAND //ONE SOURCE //ONE SYSTEM

REMA TIP TOP is a globally operating system provider of services and products in the field of conveying and treatment technology as well as tire repair. The company has a global service network and offers a wide range of rubber products, linings and coatings for both the industrial and automotive sectors. Over almost a hundred years, the company has built up unique expertise in the development of materials and industrial services and is active in the belting, material processing, surface protection and automotive sectors.

Project: Globally operating system provider of services and products in the field of conveying and treatment technology as well as tyre repair

REMA TIP TOP AG
Gruber Str. 65
85586 Poing | Germany
Phone +49 8121/707-100
Email: info@tiptop.de | www.rema-tiptop.com

REMA TIP TOP MIDDLE EAST FZCO
P.O. Box: 17181 | Jebel Ali Free Zone, Dubai | U.A. E
Phone: +971 488 76989
Email: sales@rematiptopme.com | www.rema-tiptop.com

Rudolf Hensel GmbH

Based on more than 30 years of experience in the field of construction chemicals, AUDAX specializes in individual solutions for the building industry. In March 2016 AUDAX-Keck GmbH merged with Rudolf Hensel GmbH. The aim of the merger is to use current synergies to the benefit of their customers. Under the brand name RENITHERM® innovative fire protection coatings for indoor and outdoor use on structural steel, tested according to British Standard BS476 : Part 21 are offered. Also available: Fire protection coatings for concrete, wood, electrical cables and joints. The merger with Hensel provides access to RENITHERM®, HENSOTHERM® and HENSOMASTIK® fire protection coatings and will therefore benefit from both companies' decades of experience and in full compliance of EN ISO 9001 standard.

Contact:

Rudolf Hensel GmbH
Lauenburger Landstr. 11
21039 Börnsen / Germany
Phone: +49 40 72 10 62-48
Fax: +49 40 72 10 62-52
Email: contact@rudolf-hensel.de | info@renitherm.com
www.rudolf-hensel.de

Wilo Middle East

Wilo was founded in 1872 as copper- and brassware factory in Dortmund, Germany, and has evolved from being a local specialist to a global player. The Wilo group is one of the world's leading premium providers of pumps and pump systems for the building services, water management and industrial sectors. Our innovative solutions, smart products and individual services move water in an intelligent, efficient and climate-friendly manner.

Project: Wilo awarded Toshka project in Egypt

Contact: Morcel Burjas,Sales Director Gulf Region

Wilo Middle East
Jebel Ali Free Zone South
PO Box 262720 Dubai | United Arab Emirates
Phone: +97148239500
Email: Info.ae@wilo.com | www.wilo.com/ae/en

RENITHERM®
Fire Protection Coatings

Based on more than 30 years of experience in the field of construction chemicals, AUDAX specializes in individual solutions for the building industry. In March 2016 AUDAX-Keck GmbH merged with Rudolf Hensel GmbH. The aim of the merger is to use current synergies to the benefit of their customers. Under the brand name RENITHERM® innovative fire protection coatings for indoor and outdoor use on structural steel, tested according to British Standard BS476 : Part 21 are offered. Also available: Fire protection coatings for concrete, wood, electrical cables and joints. The merger with Hensel provides access to RENITHERM®, HENSOTHERM® and HENSOMASTIK® fire protection coating systems and will therefore benefit from both companies' decades of experience and in full compliance of EN ISO 9001 standard. Please visit our website www.renitherm.com.

Rudolf Hensel GmbH | Lauenburger Landstr. 11 | 21039 Börnsen / Germany
Tel. +49 40 72 10 62-48 | info@renitherm.com | www.renitherm.com | www.rudolf-hensel.de

IMPRINT

EDITOR

Ghorfa
Arab-German Chamber
of Commerce and Industry
Garnisonkirchplatz 1
D-10178 Berlin
Tel: +49 30 278907-11
Fax: +49 30 278907-49
E-Mail: ghorfa@ghorfa.de
www.ghorfa.de

COORDINATION

Nancy Ishak
Marketing
Ghorfa Arab-German Chamber of Commerce and Industry

LAYOUT

Fadhl Al-Romaima
Technical Director

Ghorfa Arab-German Chamber of Commerce and Industry

PHOTOS

Cover: © Dorsch Group
Page 7: © prostooleh - freepik.com
Page 13: © idea Ink Design - shutterstock
Page 21: © tawatchai07 - freepik.coma
Page 27: © LoggaWiggler - Pixabay
Page 37: © Dorsch Group

Other pictures: Kindly provided by the contributing companies, if not otherwise stated.

PRINT

DCM – Druck Center Meckenheim GmbH
Werner-von-Siemens-Straße 13,
D-53340 Meckenheim
Tel: +49 (0)2225-8893-550
Fax: +49 (0)2225-8893-558
E-Mail: dcm@druckcenter.de
Web: www.druckcenter.de

NOVEMBER 2021

Arab-German Yearbook 2021/22

Construction, Energy and Consulting

Ghorfa
غرفة التجارة والصناعة العربية الألمانية
Arab-German Chamber of Commerce and Industry e.V.

Dorsch Gruppe

For seven decades DORSCH GROUP is the engineering partner in various domains for industrial clients, private investors, and the public sector when it comes to implementing investment projects. First-class technical solutions, consistency of costs and adherence to schedules have always been our goal for the planning and implementation of each type of construction projects.

DORSCH GROUP's head office is located in Frankfurt, Germany, and deals with both the domestic and foreign markets. Our company maintains branch offices and subsidiaries in Germany, Europe, Middle East, Asia and Africa and has also a share in some affiliate companies worldwide.

Our worldwide Dorsch offices have approx. 2,600 permanent employees plus freelancers including engineers, architects, designers, project managers, economists, environmental, planning specialists and others who represent the company's real capital. Participation in interdisciplinary teams, coupled with the incorporation of experiences gained from multidisciplinary projects in more than 140 countries, ensures continuous thrusts of innovation.

Since 1987, DORSCH Middle East is providing though its utilization of its multinational and multidisciplined team of over 1,600 permanent employees, premium integrated solutions for local and regional clients with full appreciation of the local and regional market needs through its regional office in Abu Dhabi.

We offer a complete performance portfolio in the fields of:

- Aviation
- Industrial Engineering
- Marine Engineering
- Project Management
- Design Management
- Construction Management
- Building and Commercial Property
- Land Development, Urban Design and Urban Infrastructure
- Landscaping and Irrigation
- Water and Wastewater
- Operation & Maintenance
- Oil and Gas
- Transportation and Intelligent Transport Systems
- Highways and Bridges
- Geographical Information Systems
- Green Building and Sustainability
- Renewable Energies and Environment
- Assets and Facility Management

bringing visions to life. **Dorsch Gruppe.**

Dorsch Holding GmbH
Frankfurt Airport Center 1
Hugo-Eckener-Ring
Geb. 234, HBK 43
60549 Frankfurt am Main
Germany

Tel.: +49 (0) 69 - 13 02 57 - 0
Fax: +49 (0) 69 - 13 02 57 - 32
E-mail: mail@dorsch.de
Website: www.dorsch.de