



Arab-German Yearbook 2014

Construction and Consulting



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-  Credit payments
-  WorldShop product awards

Quick Info

- ▶ Programme name:
PartnerPlusBenefit
- ▶ Target audience:
Small and medium-sized businesses with headquarters in Germany
- ▶ Number of members:
Over 25,000 (As at: 2014)



PartnerPlusBenefit
Lufthansa

Arab-German Yearbook 2014

Construction and Consulting

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Preface

We proudly present the fifth edition of the Arab-German Yearbook—Construction and Consulting. As in previous editions ground-breaking projects of Arab-German cooperation in the field of construction and consulting are taken into the focus which state eloquent examples of the quality of Arab-German business relations.

The Arab countries reaching from the Moroccan Atlantic coast to the Gulf of Oman are at different stages of industrial development and, therefore, offer a broad range of opportunities for German companies: from the provision of basic infrastructure like railways and water treatment to creative architectural designs. About \$100 bn is forecasted to be awarded on projects in the infrastructure sector in the GCC countries in 2014. Saudi Arabia projects about \$55 bn of contract awards, Kuwait and the UAE about \$33 bn-worth projects each, and Qatar will also be a major market with many planned projects for the upcoming 2022 World Cup. The Housing Complex in Basmaya with a contract value of \$8 bn in Iraq or the Egyptian project New Giza worth \$1.8 bn are just some of many construction projects in the Arab world.

Obviously, Arab countries are considering German companies as reliable partners with respect to design and implementation of projects and are inviting them to contribute to the continuing economic growth process. Due to their unique and globally renowned experience and know-how, German engineers, architects and constructors have a considerable impact on the way of construction in the Arab world. Jointly accomplished projects illustrate the continuing intensification of the cooperation between Arab and German partners which is characterized by mutual understanding and high benefits for both partners.

The success stories presented in this book encourage us to pursue our goal of flourishing Arab-German business relations and inspire us in our daily work. Based on its invaluable heritage and its commitment, the Ghorfa Arab-German Chamber of Commerce and Industry has a powerful network consisting of both institutional and entrepreneurial decision-makers from the Arab countries and from Germany. As the competence center for business relations between Germany and the Arab world, the Ghorfa promotes and strengthens business relations between Germany and the Arab countries in the fields of trade, industry, finance, and investment. The Working Group “Infrastructure, Construction and Transport” meets regularly in Germany and in the Arab world to facilitate Arab-German cooperation in this field. It offers a valuable platform to share information, exchange experiences and to facilitate cooperation.

This Arab-German Yearbook would not have been possible without the contribution of numerous German companies considerably engaged in the Arab world. We sincerely thank Ms Rafaela Aguilera Alvarez for her commitment and dedication to this publication and all matters of the working group. We also would like to thank Ms Petra Reisdorf, Ms Traudl Kupfer and Ms Stefanie Lehmann for their work and effort to realize this book project.

We hope you enjoy reading this book and wish you many new and fascinating insights, ideas for your own future business activities and inspirations for further reference projects in Arab-German business relations.



Olaf Hoffmann



Abdulaziz Al-Mikhlaifi

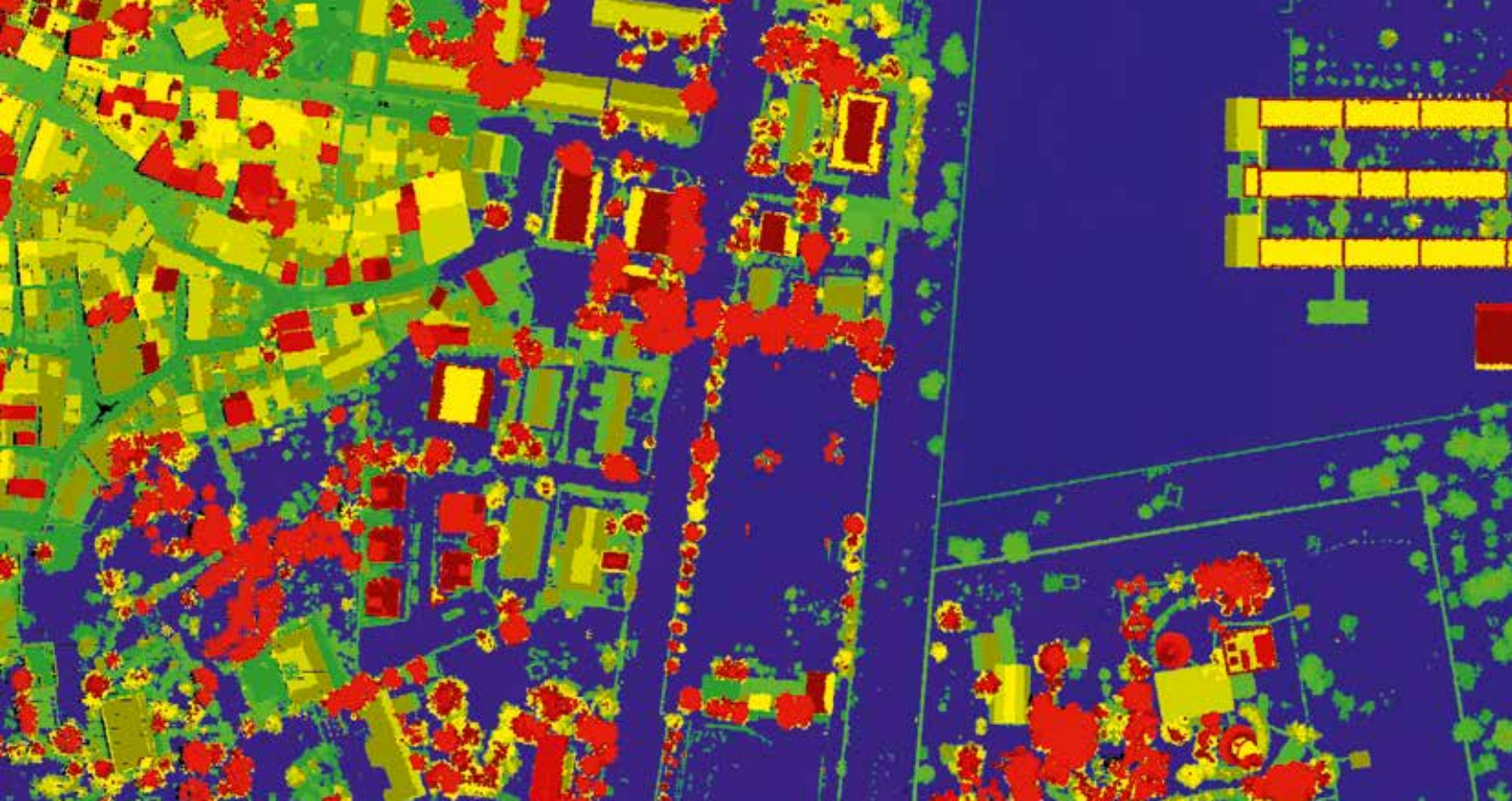
Olaf Hoffmann
Vice President

Abdulaziz Al-Mikhlaifi
Secretary General

Djibouti



Country Name: Republic of Djibouti
Population: 0.79 million
Land Area: 23,200 km²
Currency: Djibouti Franc (DJF), 1 DJF = 100 Centimes
Capital: Djibouti
Languages: Arabic, French (official)



Laser data colored by elevation

Airborne LiDAR Survey for the Design of Two Railway Alignments in Djibouti

Hansa Luftbild AG

The economic development of any country requires a reliable, fully functioning infrastructure, including road/rail networks, seaports/airports, and telecommunications. Djibouti is well positioned on the Horn of Africa, to be a center of trading activities, and therefore, has developed Doraleh Port in Djibouti city and Tajourah Port in the north.

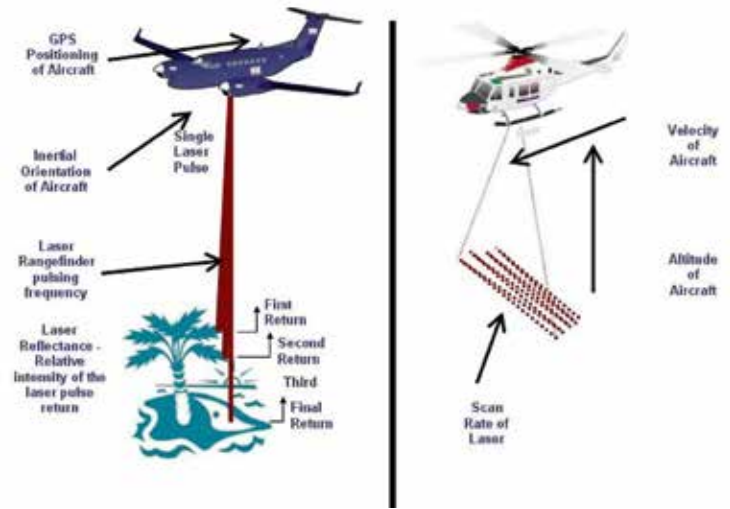
These two ports were developed because they are strategically located for the sea freight business; the state of Djibouti is situated at the center of the Europe–Far East sea route, the second largest sea route in the world. In addition, these ports are able to service the landlocked country of Ethiopia, the second most populous country in Sub-Saharan Africa. Currently all goods, arriving at ports within Djibouti, destined for Ethiopia, are transported on trucks. It is 700 km from Djibouti Port to the Ethiopian dry port at Modjo. Modjo is located 70 km from Addis Ababa. The road requires continuous maintenance to keep the flow of goods running without interruption. A better alternative would be a railway link between the two cities since this

would streamline the transfer of goods, would be able to transport passengers, and at the same time would be environmentally friendly.

Djibouti and Ethiopia have been linked by a single narrow gauge rail line since the 19th century, however, the route is old and in many parts non-operational. In 2010, Ethiopia embarked on planning and constructing a double track railway line between Addis Ababa and Djibouti city. The railway line is being constructed to international standards. Once the railway line is constructed, it will reduce the travel time from Djibouti to Addis Ababa by more than half and will greatly contribute to the economic development of the Ethiopian hinterland.



Location of the two alignments (red: southern alignment; blue: northern alignment)



Airborne LiDAR with multiwave rangefinder and GPS positioning.

Project details

In 2011, Hansa Luftbild, an ISO 9001 certified mapping and GIS company, signed an agreement with the Ministère de l'Équipement et des Transports (MET) of the Republic of Djibouti to perform an aerial survey for railway construction in Djibouti. The survey covered two planned railway alignments using laser scanning (LiDAR) technology. The result of the survey was used for a feasibility study and the preliminary design of the railway lines.

One alignment was in the south of the country, the other in the north. The southern alignment was to connect Dewele on the Ethiopian border with Doraleh Port in Djibouti city, while the northern alignment should connect Elidar on the Ethiopian-Djiboutian border with Tajourah Port in Djibouti. The total length of the two alignments was around 265 km. The corridor width surveyed and mapped in 3D for each alignment was 500 m.

The MET's decision to opt for laser scanning (LiDAR) technology was based on considerations of accuracy and the speed with which results could be obtained. The MET also chose LiDAR technology because it wanted to connect the results of the Djibouti survey to the results of an aerial survey previously carried out for the Ethiopian Railways Corporation (ERC). In 2009/2010. Hansa Luftbild had aerielly surveyed seven planned alignments totaling 5,060 km in Ethiopia. These are now under development and some are being constructed, using the same laser scanning technology. Two of these alignments will connect at Dewele and Elidar to the two alignments planned for Djibouti.

Technology description

LiDAR technology consists of a high-accuracy laser range finder, which is mounted over an opening in an aircraft or helicopter. The range finder scans beneath the helicopter or aircraft, producing a wide swath over which the distance to the ground is measured. The angle at which the laser is scanned is also measured. High precision measurement devices in combination with the global positioning system (GPS) technology record the position of the aircraft or helicopter during data acquisition.

The laser scanning method of aerial surveying can be used in adverse meteorological conditions and is able to penetrate vegetation.

Laser scanning technology is often used when new alignments are planned or designed, or existing ones are to be modernized or upgraded. The technology is not solely confined to road or railway alignments, but can also be applied to the mapping of existing or planned high tension power lines, to managing flood plains as well as to the monitoring and management of open pit mines. In some cases, it is also used as a major input for the production of 3D city models.

Every laser acquisition project has different requirements, hence, it must be carefully planned to meet the customer's exact specifications. The Djibouti alignments were subject to high quality control standards in their planning, execution and final checking to ensure successful data capture and processing.

Project steps

The MET supplied the contractor with the final coordinates of the track alignments in October 2011.

The project consisted of the following steps:

- ground control points survey and determination
- airborne data acquisition
- data processing, orthophoto production and 3D mapping
- production of a video animation

Ground control

Ground control points were determined, surveyed and marked on the ground prior to the flight missions. The ground control points were used to tie the laser point clouds to the coordinates system on the ground and obtain the required aerial survey accuracy, which was specified at 10 cm and better. A total of 25 ground control points and two reference surfaces were established and surveyed along the alignments.

Airborne data acquisition

In December 2011, the German contractor mobilized its aircraft and laser system to Djibouti to acquire the airborne data. The acquisition of data for the two alignments was carried out over a period of four days in the same month. Each of the two alignments was planned and flown in order to deliver a point density of around nine points per square meter.

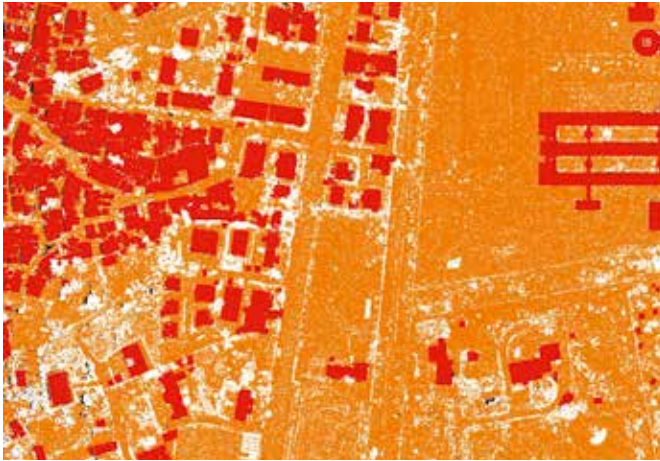
In addition to the laser data more than 5,000 aerial images covering the two alignments were captured. Following the airborne acquisition of data, all data was encrypted and saved on external hard drives, which were sent to Germany for processing.

Data processing

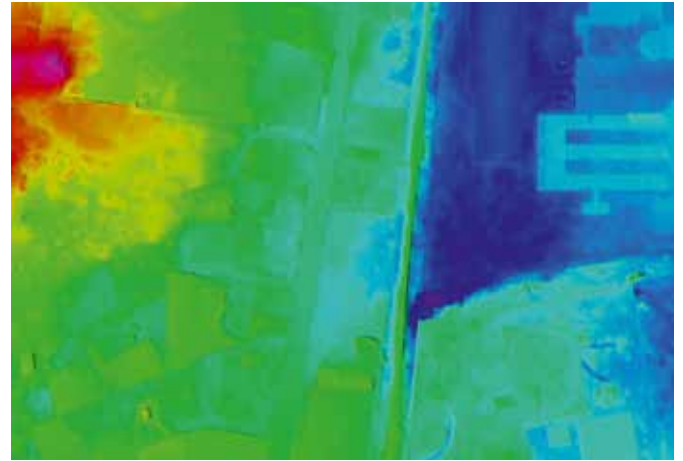
After the arrival of the data at the company's headquarters in Germany, the raw laser data was pre-processed, calibrated and geo-coded. In parallel to the laser data pre-processing, the aerial images were converted from their raw format to TIFF. In addition, the digital camera was post-flight calibrated in order to obtain better input parameters for orthophoto production.

Marking and surveying ground control points with GPS





Laser data colored by class



Digital Terrain Model

Orthophoto production

After the raw data pre-processing, the laser data was prepared for classification. Specialized software was used to classify the laser data into ground and non-ground points. In order to support the classification process, rectified aerial imagery was used as a backdrop to ensure that the classification of each laser point was correct. The heights of the laser points were adjusted to the ground using those ground control points that had been surveyed at the beginning of the project. Once this work had been completed, the Digital Terrain Model (DTM) and the Digital Surface Model (DSM) were generated.

Aerial image blocks were established for each of the two alignments and were adjusted using specialized software. These blocks and the DTM provided the input for the production of digital orthophotos. The accuracy of the orthophotos was checked against the project specifications, using the ground control points.

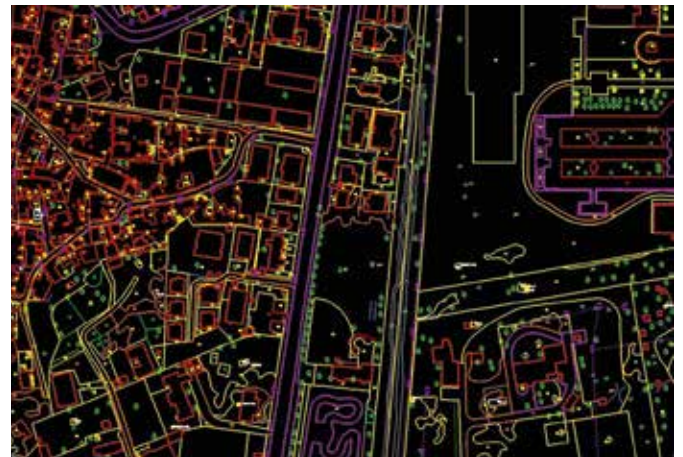
A total of 1,588,152,625 laser points were processed covering an area of 154,600,865 square meters. This resulted in an average point density of 10.27 points per square meter.

Orthophotos with 10 cm ground resolution were produced and delivered for each of the two alignments.

Digital Surface Model



3D mapping from laser data and orthophotos



3D mapping

One of the largest component of the project, apart from airborne data acquisition, was the 3D mapping of objects and features. The topography was vectorized, ie mapped, using the laser data and the orthophotos. The legend for the features which were mapped was identical to that used in the Ethiopian Railways Corporation project and consisted of 51 feature types including buildings, roads, railway lines, power lines, land-use, trees, etc. The mapped features were later processed by a geographic information system (GIS) and delivered as a geodatabase to the MET.

Production of video animation

Due to the importance of the southern alignment, a 3D video animation consisting of a fly-through over the entire line was produced. The video provides a bird's-eye view of the alignment and a realistic impression of the terrain on which the railway line will be constructed.

Time-frame and resources

The project was completed within a period of five months by a team consisting of more than 50 engineers and technicians, who worked according to rigorous quality control procedures.

After the project completion, the results of the project were handed over to the Minister of Equipment and Transport in Djibouti.



Digital orthophoto

Conclusion

The utilization of modern technology enables a country to quickly obtain geodata to support the development of its infrastructure.



Tarek Zein
International Director
Hansa Luftbild AG

Handover of the final project report to HE Mohammed Moussa Ibrahim Balala, the Minister of Equipment and Transport, Mr. Tarek Zein, Hansa Luftbild Project Director, and Mr. Mohammed Khaireh Robleh, MET Project Manager



Building Bridges between Germany and the Arab World

The Business and Investment in Qatar Forum was held under the patronage of H. E. Sheikh Hamad Bin Jassim Al Thani, Prime Minister and Minister of Foreign Affairs for the State of Qatar in April 2013.



The Iraqi delegation at the 3rd Iraqi-German Business and Investment Forum in February 2014 was headed by H. E. Rowsch Nuri Shaways, Deputy Prime Minister of the Republic of Iraq.



Ghorfa Arab-German Chamber of Commerce and Industry

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 since 1 August 2000, it is located in Berlin. The Board of Directors and the Executive Board equally consist of German and Arab members. This guarantees balance and mutual trust. Not only major German and Arab enterprises are among our members, numerous small and medium-sized enterprises complete our top-class network.

Our network

The Ghorfa operates under the umbrella of the General Union of Chambers of Commerce, Industry and Agriculture for Arab Countries and represents all Arab Chambers of Commerce and Industry in Germany. Our chamber works closely with the Arab embassies in Germany, the Arab League and related governmental bodies in the Arab states. It is part of the worldwide organisation of Arab foreign Chambers of Commerce and Industry. The Ghorfa cooperates with German governmental bodies on federal and regional level and the most important German industrial associations.

What we do

We actively promote and strengthen business relationships among our members and within the wider Arab and German business community. We pave the way for stronger business cooperation in the fields of trade, industry, finance and investment between Arab and German business partners. Strategic partnerships based on mutual benefit and understanding create new business opportunities to facilitate economic benefits for both sides. We therefore mainly focus on networking, communication and on providing information about relevant economic and industrial developments.



Building Bridges between Germany and the Arab World

Networking

- Quick access to decision-makers from industry and politics
- Organisation of delegation visits
- Organisation of events, conferences and further contact platforms (e.g. German-Arab Business, Energy, Tourism, Health, Education and Vocational Training, Forum)
- Ghorfa joint booths at major Arab and German trade fairs
- Promoting member services and products to a wider business community

Consulting

- Connecting with matching business partners
- General and business-related intercultural consulting
- Country and branch specific analysis
- Mediation and arbitration in cases of business disputes
- Advice and guidance through the multitude of offers and competing products on the German and Arab market
- Comprehensive and detailed market information about Germany and the 22 Arab states
- Visa support and legalisation services

Information

- Early information about projects and tenders
- Monthly issued Arabic and German newsletters
- Quarterly bilingual business magazine SOUQ
- Arab-German Business Directory providing over 6,000 yearly updated company profiles
- Arab-German Yearbooks that focus on industry-sector specific topics
- Information on the latest economic developments, markets and sectors, legal and political background

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

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GCC-Germany Business and Investment Forum,
March 12th-13th, 2014

Contributing Companies and Institutions



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Multiport GmbH— Efficient, Steady and Eco-friendly Cable Ducts

Multiport GmbH was founded in 1991. The company develops, produces and sells recycles and final products made of plastic with an annual turnover of €26.5 million and 92 employees. By using secondary raw material, cost-intensive virgin material is replaced, and therefore, resources of the customers and the environment are preserved.

Multiport GmbH is located in Bernburg, Germany, on an area of 40,000 m², provided with a manufacturing equipment of four injection moulding facilities, one shredder, three reclaim extruders, and three recycling lines.

Since 1995 Multiport GmbH has experience with the production of plastic cable ducts. Alongside railway routes, power plants, airports or in telecommunications the availability of technical

facilities is dependent on power supply and information transfer. In order to guarantee a constant flow, a variety of damageable cables have to be protected effectively against influences from outside. The MPO plastic cable duct has been developed as a replacement for the mainly used concrete cable ducts.

Due to the used material and the technical construction the MPO plastic cable duct of Multiport GmbH offers considerable advantages compared to concrete, concerning transport, laying, handling, and adaptation. It offers an efficient protection against external influences for cables and pipes.

The MPO plastic cable duct unifies economic efficiency, steadiness and environmental friendliness.

Since 2002, about 550,000 m of our MPO plastic cable duct have been laid within Germany as well as abroad.

Example of a cable duct installation in Netherlands



MPO plastic cable duct





Head of company: Alexander Schwörer
 Dr. Fabian Kracht
 Dr. Ekkehard Gericke

Year of Foundation: 1969 by Artur Schwörer

Products: formwork, scaffolding, engineering

Contact:
 Jörg Hegestweiler | *Managing Director Middle East and Africa*

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PERI – Tailormade Engineering, Formwork and Scaffolding Systems

Since the expansion of PERI in the Middle East and Africa, we have been involved in various prestigious projects in this region and established additional offices in Kuwait, Lebanon, Nigeria, Qatar, Saudi Arabia, South Africa, the Sultanate of Oman, and the United Arab Emirates to further extend our service to our customers. With 6,700 employees, 55 national subsidiaries and more than 100 high-capacity storage sites across the globe, PERI serves its customers with innovative system equipment and a broad range of services to realize construction projects in the most cost-effective manner possible.

PERI, with headquarters in the south of Germany, develops and produces formwork and scaffolding systems, which rationalize working procedures and increase safety levels during every phase of construction. With its own technical design office using the latest CAD equipment and tailor-made engineering, PERI develops project specific solutions for each customer requirement. Our engineers design technically and economically optimized formwork and scaffolding solutions.

We provide the best possible support: from the start of construction right through to the last return delivery. Our services include site supervision and trainings to ensure a successful support for each project. Our close-knit network of logistic sites results in fast availability of materials and enables us to meet sale and rental demands timely and efficiently. The professionalism and know-how make PERI a strong and reliable partner of choice in the local, regional and international market.



Logistics and Products: in-time delivery of formwork, scaffolding and engineering.

Engineering: No matter how complex the project, our engineers will support you with comprehensive technical drawings, efficient material planning and constant design support.



Supervision and Training: Our professional support from supervisors ensure the efficient use of PERI materials from the very beginning of the construction sequence.





AJG Ingenieure are working as multipurpose consultants for the full scope of work spectrum within a team of architects and engineers. For more than 50 years, AJG have been designing all types of buildings. Our buildings meet highest architectural aspects and include energy efficiency and sustainability. Special fields: Safety of buildings (structural and fire safety design, blast-protection-design, etc).

AJG Ingenieure GmbH

Project: develoPPP—Building and Fire Safety for the Kurdistan Region of Iraq
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ALEXANDER & PARTNER

Alexander & Partner is a specialized boutique law firm with offices in Berlin, Germany, and Doha, Qatar, that emphasizes bridging both worlds and cultures. We specialize in construction, corporate and commercial law, project and contract management as well as litigation and arbitration, with a strong focus on the GCC countries. In addition, the firm advises Arab clients on investments in Europe.

Alexander & Partner

Project: Two Worlds of Thinking: Risk Allocation between Construction and Industry in Large Infrastructure Contracts
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architects, planners

AS&P combines innovative approaches in architecture, urban and transport planning with 50 years of international planning and building experience. The projects range from structural design, urban planning and urban and regional development to recreation and tourism planning, conceptual transport planning and project management as well as planning specific preparation of major events and expert opinions for policy advising.

AS&P—Albert Speer & Partner GmbH

Project: MCI Business Park in Riyadh, Saudi Arabia—A New Attractive and High Quality Public Place
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DB International

DB International advises railway and urban transport companies, governments and local authorities as well as private investors. The pronounced technical, business, rail and transport know-how, combined with experience from national and international projects, makes our employees to valuable partners since 1966. DB International's activities are divided into engineering, system consulting and business consulting.

DB International

Project: Qatar Integrated Railways Project
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DORNIER

CONSULTING

With 300 employees Dornier Consulting GmbH is consulting on projects of high national political and public interest for sustainable metropolitan and mobility solutions. We manage project volumes of about € 20 billion summarized. Our key customers are: World Bank, KfW, EU, governments, authorities, airports, infrastructure operators, automotive and aerospace industry, and utility companies.

Dornier Consulting GmbH

Project: Utilization of Rainwater for Sustainable Drinking Water Supply in Saudi Arabia
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Dorsch Holding GmbH – DC Abu Dhabi

Project: Bringing Visions to Life: Al-Graia'at Bridge Project in Baghdad, Iraq
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For over sixty years, the companies of the Dorsch Gruppe have been respected consulting and engineering partners for industrial clients, private investors and public institutions. The Dorsch Gruppe is Germany's largest independent planning and consulting company. Our employees work in a future oriented and quality conscious way for people in all Arabic countries. They offer an entire performance spectrum in the fields of project development, infrastructure, architecture, airports, oil and gas, urban planning, water, transport and environment.

Drees & Sommer

Project: Jazan Industrial City – the Future Consumer and Industrial Gateway to the Region
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FOGTEC Brandschutz GmbH & Co. KG

Project: Water Mist in Balamand
Contact: Rüdiger Kopp | *General Manager Fixed Systems*



FOGTEC Brandschutz GmbH & Co. KG

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Gerber Architekten

Project: Exchange of Cultures and Expertise: Architectural Infrastructure Projects in Saudi Arabia
Contact: Prof. Eckhard Gerber | *Founder and Owner*

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As a federal enterprise of the German government, GIZ provides services against remuneration to governments of other countries and international donor organizations. GIZ has more than 40 years of experience in delivering customer focused solutions and projects, using its access to Germany's technical know-how via its well-established partner network. GIZ carries out water projects ranging from water sector reform, water resources management, urban water supply and sanitation. Since 1980, GIZ maintains a partnership agreement with the Kingdom of Saudi Arabia.

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Project: Utilization of Rainwater for Sustainable Drinking Water Supply in Saudi Arabia
Contact: Dr.-Ing. Ingmar Obermann | *Senior Project Manager*

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Hansa Luftbild AG

Project: Airborne LiDAR Survey for the Design of Two Railway Alignments in Djibouti
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Ingenieurbüro Dr. Binnewies GmbH

Project: Zayed University in Abu Dhabi—Engineering for an Iconic Project
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INTEWO + Partners (Studio Michele De Lucchi, Studio Dr. Ulrich Hermanns) provide integrated design and project management services for its clients throughout the Arabian Peninsula. The consortium, with offices in Germany, Italy, Ethiopia, and Oman, has grown out of a combination of direct experiences in museum and cultural design around the world and a thorough understanding how best respond to the clients needs and opportunities.

INTEWO + Partners

Project: Oman Archaeological Museum—A New Experience of Oman's History and Culture
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KfW Development Bank



Project: Jordan Struggles with Dehydration
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KfW Development Bank

Project: Pioneer for a Brighter Future—Morocco is Building one of the Largest Solar Power Complexes of the World
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KfW Development Bank carries out Germany's Financial Cooperation (FC) on behalf of the Federal Government. In this way, it contributes not only to reducing poverty but also to shaping globalization fairly as well as to protecting the environment, and thus, ensuring peace. The goals of Financial Cooperation are ultimately to permanently improve the living conditions of the world's poorest people.

Lahmeyer GWK Consult GmbH



Project: Construction of the World's Largest Water Reservoirs in Qatar
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Lahmeyer GWK Consult is engaged worldwide in environmental engineering, with particular emphasis in the fields of water supply, wastewater treatment and disposal, regional development, and management support. Our services cover the full project cycle and range from project identification, feasibility studies, preliminary and final design, tender preparation and evaluation, to construction supervision, commissioning, and operation.

Omeras GmbH



Project: Enamel Art in Dubai's "Red Line"
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Professor Pfeifer and Partner German Engineering Consultancy



Project: German Engineering—Stability and Cost Optimization
Contact: Guido Noelle | *Civil Engineer, General Manager for Middle East*

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The company was established in 1989 by structural engineer Prof. Dipl.-Ing. Matthias Pfeifer and qualified architect Dipl.-Ing. Ute Pfeifer. The company has several branches in Germany and the Middle East with a total staff of more than 100 people. The extremely well-qualified team offers comprehensive engineering services and support in the planning and execution of construction projects of varying magnitudes and scopes.



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Project: Hazza Bin Zayed Stadium in Al Ain (U.A.E.)
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Siemens Energy

Project: Rehabilitation of the Control System for Al Hartha Power Station
Contact: **Hartmut Huber** | *Director Sales*

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Siemens EES Kuwait

Project: Efficiency Key to Managing Kuwait's Energy Demand
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skytron energy GmbH

Project: Kuwait's First Grid-Connected Photovoltaic Power Plant
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TRANSRADIO SenderSysteme Berlin AG

Project: High-power AM Site Upgrade in Tipaza — Preparing for the Digital World
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Werner Sobek Group

Project: An Unconventional High-rise—the Four Seasons Hotel in Bahrain

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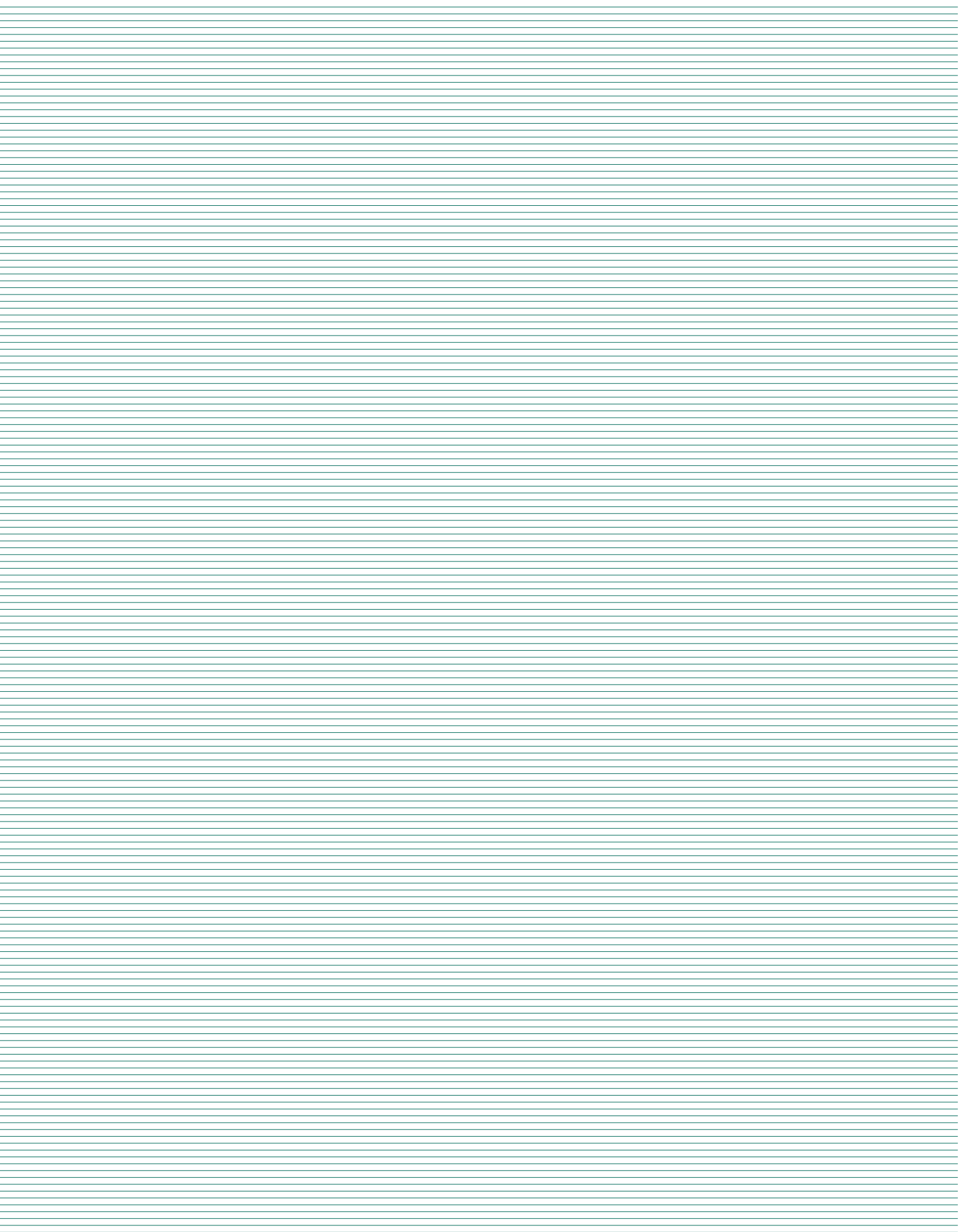
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June 2014





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