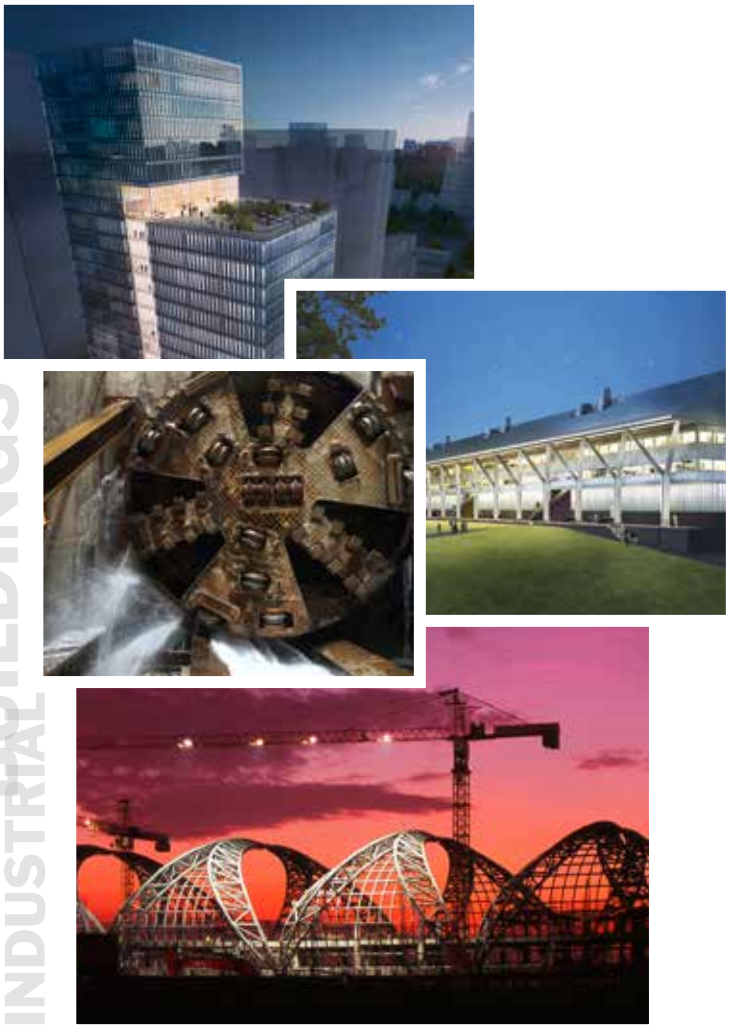
INFRASTRUCTURE WATER & ENERGY
INDUSTRIAL BUILDINGS



MADE IN GERMANY

ARCHITECTURE ENGINEERING CONSTRUCTION

Your partners of excellence

FEDERAL CHAMBER OF GERMAN ARCHITECTS

VBI VERBAND BERATENDER INGENIEURE

DIE DEUTSCHE BAUINDUSTRIE BAUEN UND SERVICES

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FOREWORD
BERLIN, JANUARY 2017

Construction of buildings and infrastructure is a vital link in the value chain. It encompasses construction of roads, broadband networks, factories and affordable homes as well as sustainable and integrated urban and neighbourhood planning. The construction industry is thus a key pillar of all economic processes. In Germany, this sector provides innovative and sustainable solutions for achieving overarching societal objectives such as integration and inclusion, and for contributing to effective climate action and environmental protection.

German construction companies are highly valued throughout the world for their skills and knowledge in sustainable construction. Wide-ranging engineering expertise, outstanding competence in planning and implementation, reliable project management and innovative strength in green technologies are the hallmarks of these companies. This makes them excellent partners on international markets. In emerging growth regions with rising populations, intelligent solutions are needed in mobility and other fields. We must seize this opportunity to open up major markets for German products and services.

For decades, the construction industry and planning professions have been instrumental in the swift, efficient and needs-based expansion of our infrastructure. The construction industry leads the way in building-related patent applications – both in Germany and Europe as a whole. The sector makes a huge contribution to value added in Germany.

German urban planners, architecture firms and building contractors that have achieved international success in planning and building liveable, resource-efficient and climate-friendly cities are ambassadors of sustainable, integrated urban development. This approach incorporates the unique characteristics of cities into urban planning. We support the initiative of the German construction industry and the planning professions to implement the United Nations' New Urban Agenda at international level.

Good global cooperation and innovative capability depend on knowledge being shared throughout the world, which in turn needs open markets and fair conditions. This would secure existing jobs and create new ones. In this light also, the German government welcomes the international initiative of architects, engineers and the construction industry.

Frank-Walter Steinmeier
Federal Minister
for Foreign Affairs

Sigmar Gabriel
Federal Minister
for Economic Affairs
and Energy

Alexander Dobrindt
Federal Minister
for Transport and
Digital Infrastructure

Barbara Hendricks
Federal Minister for the
Environment, Nature Conservation,
Building and Nuclear Safety

THE GERMAN CONSTRUCTION VALUE CHAIN STANDS FOR QUALITY, INNOVATION AND SUSTAINABILITY

As the global economy and population is grow, an increasing number of the world's population is still in need of adequate housing, modern commercial properties and facilities, sustainable social infrastructure, long-lasting transport networks and efficient water and energy supplies. In the 21st century, economic activities, social and cultural interactions as well as environmental and humanitarian impacts are increasingly concentrated around cities, resulting in massive challenges, particularly for sustainable urban development. Whilst Western industrialised societies primarily have to cope with the consequences of demographic change and ageing infrastructure, emerging and developing nations need to manage their growing industrialisation and urbanisation. All countries face the common challenges of climate change and global warming.

German architectural, consulting and construction services are ideally suited to meeting sustainable development needs by offering the latest engineering and construction technologies, which, in turn, provide cost-efficient solutions and thereby meet the complex demands of international clients. In recent decades, German architects, consulting engineers and contractors have earned an excellent international reputation based on their engineering skills, high-quality project management and strengths in developing innovative solutions: This is also testified by our international partners with whom we worked closely together on the reference projects shown in this brochure. This technical expertise is coupled with extensive experience of the social and cultural characteristics in the respective international markets where German firms work hand in hand with their local partners to satisfy their clients' demands.

- German architects accompany their clients from initial design concepts to multifaceted turnkey solutions and assume responsibility for even the most complex construction products and processes. The services they provide are not anonymous, rather they develop the project in close cooperation with clients, specialist planners and other stakeholders in the project. This communicative process, which combines ideas and expectations with achievable economic outcomes whilst also taking into consideration the social and cultural issues related to the project, creates a new concept which we refer to as "good architecture".
- German consulting engineers participate in the delivery of basic services such as transport and energy networks, water supply and sanitation, community services and environmental protection. They support their clients in developing the initial concept, analysing the timeline and evaluating future needs in order to provide an all-inclusive package for the project. They draw up the technical roadmap and guarantee their clients efficient and timely implementation as well as proper operation of the project.
- German Contractors provide know-how in implementing technically ambitious projects in the fields of infrastructure, special foundation work, civil engineering as well as energy and water supply/disposal in both industrialised and developing markets. They implement the project design and also establish a sustainable and resource-friendly basis for economic growth and social inclusion.

With a presence on six continents – either through direct business or with local subsidiaries and affiliates – all members of the German Construction Value Chain undertake a firm commitment to ensure quality management, innovation and sustainability in their international operations.
This is done in a spirit of partnership with their local clients and partners. This new brochure aims to provide you with a general overview of the broad scope of the international operations of German architects, consulting engineers and construction companies as well as giving an insight into the high quality of German building and civil engineering skills.

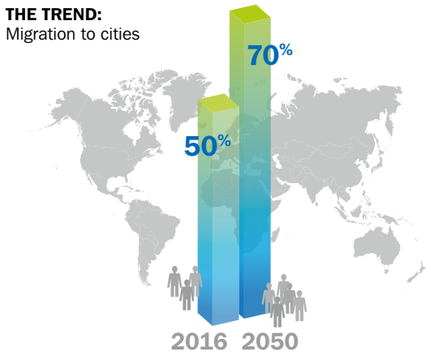
Barbara Ettinger-Brinckmann
President of the German Chamber of Architects

Volker Cornelius
President of the German Association of Consulting Engineers

Peter Hübner
President of the Central Federation of the German Construction Industry

MAKING A DIFFERENCE

THE TREND:
Migration to cities



THE METROPOLIS IS BECOMING REALITY

No one knows what shape the future will take. But we do know where it will predominantly take place: in cities. Nearly 50% of the world's population currently lives in cities. By 2050, this proportion will have risen to around 70%. A global megatrend that goes hand in hand with big tasks: in the industrialised countries, infrastructure must undergo further development and be adapted to new ways of life and living. But in other parts of the world, much more is involved: provision of sufficient living space, power and clean drinking water, the construction of an intelligent transport network and, last but not least, public space that is designed with the public in mind.

REPRESENTED THROUGHOUT THE WORLD

AN ESSENTIAL COMPONENT WORLDWIDE: "MADE IN GERMANY"

Whether it's infrastructure projects, energy and water, civil engineering or commercial construction: within these sectors, demand for major projects is rising steadily throughout the world. The German Construction Value Chain is meeting this global challenge together with its wholly-owned and partly-owned subsidiaries and in a wide range of cooperation forms and networks, always working together closely with local companies. No matter how varied the individual contract and constellation – together with our partners we have just a single objective: ensuring the maximum level of customer satisfaction. We achieve this with well-qualified personnel working on behalf of our local companies, backed up by sustainable concepts, the latest technology and the time-honoured virtues of quality, reliability, innovation and punctual delivery. Concentrated performance "Made in Germany", with an excellent track record in over 90 countries on six continents.

GERMAN CONSTRUCTION VALUE CHAIN:

EXPERTS IN URBAN CONSTRUCTION

Urbanisation is a highly complex and extremely dynamic process; at least if it is the result of properly planned development and not left purely to chance. In order to resolve the intricately interwoven tasks, a partner is required who works innovatively yet strictly efficiently: with intelligent concepts, pooled skills and solid networks. All these qualities are represented by the German Construction Value Chain – architects, consulting engineers, design planners and construction companies, who, together, plan and realise integrated construction processes. From the initial idea to completion, comprising financing, operation and demolition; and always tailored to the people, their needs and the local infrastructure. This also involves close cooperation with local partners, employees and suppliers. It's true: anyone engaging German planners and construction companies for a construction project can be assured that responsibility for these complex tasks and processes remains in just one pair of hands. Because we represent the greater whole. Our work isn't normally restricted to just a certain phase of the construction works. It usually commences before the actual contract has been awarded and even by completion of the building still isn't over. In doing so, we develop our services in a communicative exchange with our building contractors and clients, integrating their ideas and taking into consideration social and cultural features.

BUILDINGS

CITIES ARE THE FUTURE – EVEN IN THE PRESENT DAY, THIS FACT PRESENTS AN ENORMOUS NEED FOR CONSTRUCTION: EVER MORE PEOPLE REQUIRE EVER MORE LIVING SPACE, SPORTING AND CULTURAL FACILITIES OR BUSINESS PREMISES, AND THIS TENDENCY IS INCREASING.

The German Construction Value Chain is accompanying this development with solutions that distinguish themselves through economic efficiency and all-round approaches. In doing so, it is not only the individual building which stands in focus: it is always set in relation to its geographical, urban and cultural environment. Construction “Made in Germany” combines German virtues such as reliability and adherence to schedules with an unfailing commitment to quality.

German House, Ho Chi Minh City, Vietnam – see page 14 for more information about this project

LUSAIL CITY DOHA, QATAR

The urbanisation project Lusail City, north of the Qatari capital, Doha, is one of the most prestigious urban development projects in the Arab world. The concept behind Lusail vastly exceeds that of a typical modern city. It represents more a futuristic design of a high-tech city, utilising outstanding technologies and innovative planning. The unusual aspect of this planned city is that it will be constructed on an approximately 38-square kilometre desert area, beginning on the West Bay Complex Canal in north-east Doha. One day, this area will house 200,000 people, another 170,000 will work there and finally 80,000 visitors and tourists will be accommodated. It ranks among the Middle East's largest residential developments and is an integral component of the 2022 World Cup in Qatar, whose enormous stadium will offer space for 80,000 spectators.

TECHNICAL SOLUTION
Lusail City covers an area of 38 km^2. The area has been divided into several construction packages to enable contractors to work in parallel. Interaction between contractors is coordinated by the client. Project services: Construction management, Design review, Construction supervision consultancy, Monitoring progress and quality on site, Review and approval of submissions. A last edge IT project management structure allows the construction of that mega project in one phase at on time.
CONSTRUCTION PERIOD
2012 to 2030 inclusive operation and maintenance

GRAND MOSQUE DJAMAA EL DJAZAIR ALGIER, ALGERIA

The world's third-largest mosque is currently under construction in the Bay of Algiers. It brings various cultural and religious institutions together. The height of the minaret (approx. 265 metres) and the size and dimensions of the entire complex make it a source of impetus for new urban development in Algiers. The Prayer Room is an immense cube, with a capacity of up to 35,000 people. Through the choice of material, the understated décor and the indirect lighting, the interior treats visitors to an impressive experience.

TECHNICAL SOLUTION
246 base isolators and 80 viscous dampers, planning in accordance with Eurocode 8, chapter 10 with prEN 15129 "Anti-seismic devices".
CONSTRUCTION PERIOD
2011 ongoing

SCIENCE CITY QINGDAO, CHINA

The urban development draft for Qingdao Science and Technology City envisages sustainable urban living space for 100,000 inhabitants that combines a high quality of life with plans in line with ecological aspects. The design for the approx. 600-hectare construction site in the north of the port city of Qingdao embraces a compact centre and four urban quarters with mixed usage. A 125-hectare strip of greenery extending along the river from north to south forms the backbone of the area.

TECHNICAL SOLUTION
Prioritizes pedestrian traffic and public transport system, contains a rainwater collection and recycling system.
CONSTRUCTION PERIOD
2011 ongoing

GERMAN HOUSE
HO CHI MINH CITY, VIETNAM

The 25-storey Grade “A” office building represents a symbol of modern German architecture abroad. A cost-effective design, low energy consumption, the use of ecological building materials and LEED certification (Leadership in Energy and Environmental Design Gold) and DGNB certification are important features of the concept.

TECHNICAL SOLUTION
Reinforced concrete structure with double façade.
CONSTRUCTION PERIOD
2015 to 2017

HEADQUARTERS SIEMENS AG
MOSCOW, RUSSIA

The HQ of Siemens AG are situated on Leningradsky Prospekt, one of the big radial highways to the inner city. The high-class office development consists of two 27-storey, 110-m-high towers, containing mainly offices, each – with a footprint of 35 x 35 m – placed in a corner of a 5-storey podium building. The “class A” building has a gross floor area (GFA) of 105,000 m² for office use and special uses. Areas for the 2-storey entrance lobbies, cafeteria, VIP restaurant, office services and conference rooms are located around a 19-m-high glass covered atrium in the podium building with a view of a public park.

TECHNICAL SOLUTION
Implementation of the 5-storey underground garage in top/down construction. Constructive execution according to international standards for increasing user qualities.
CONSTRUCTION PERIOD
2006 to 2010

CONVENTION COMPLEX
KIGALI, RWANDA

The Kigali Convention Complex, one of the largest building projects of the last 15 years in Africa, encloses the domed building of the Convention Center for approximately 2,600 people, a hotel, a business park and the Rwanda Museum. On 8th July 2016, after a construction period of seven years, the KCC was officially opened by the President of Rwanda, Paul Kagame, on behalf of the African Union Summit. KCC is the most important project on Rwanda's way to becoming a modern service hub in East Africa. The intricate, spiral cupola built in the tradition of circular architecture is not only a landmark for Kigali, but for the country as a whole. The entire site also serves as a benchmark for sustainable construction in tropical regions.

TECHNICAL SOLUTION
The dynamically ascending spiral construction, in the form of a double helix, also functions as the dome's supporting structure. The congress hall is designed as a self-supporting cupola utilising a network of steel bars. It elegantly straddles the 60-metre wide arena underneath and at the same time restricts itself to only the essential constructional elements.

CONSTRUCTION PERIOD
2009 to 2016

ODEL WARD PLACE
COLOMBO, SRI LANKA

Odel Ward Place is situated in Colombo Seven in the town centre and unites a unique shopping location with spa facilities, entertainment, leisure and exclusive spacious premium apartments. Odel represents sustainable retail architecture, incorporating local themes and a cosmopolitan flair. Lushly planted terraces and protuberances as well as a green boulevard form a visual connection with the park across the way – creating a seamless transition from outside to in. Various protruding and receding architectural elements break up the façade. The resultant progressive form combines with traditional terracotta to create a blend of new and old elements. Here, the beauty of variety and diversion is tangible.

TECHNICAL SOLUTION
Ventilation concept including heat recovery and enthalpy wheels for temperature control, collected rainwater to provide cooling, reduction of heat radiation from lighting through the use of LED technology, cooling plant ensures air exchange, a photovoltaic system supports the energy supply.

CONSTRUCTION PERIOD
Completion in 2018

INFRASTRUCTURE

EVERY HEALTHY ECONOMY IS BASED ON AN EFFICIENT YET FLEXIBLE TRANSPORT INFRASTRUCTURE – A PREREQUISITE FOR GROWTH, WELL-BEING AND A COUNTRY'S PROSPERING INTERNATIONAL TRADE.

The Construction Value Chain meets this requirement with transport networks "Made in Germany", which logistically and economically open up new (transport) routes. Perfectly planned and efficiently implemented – all over the world.

Suvarnabhumi International Airport Thailand –
see page 23 for more information about this project

HARAM INTERMODEL STATION
MECCA, SAUDI ARABIA

A variety of differently sized domes are combined and span the wide expanse of the station. The design therefore captures the intrinsic dome structure and also the combination of different domes as seen, for example, on the Blue Mosque in Istanbul. Arches will emerge from the domes' intersecting points, the ends of which will be reminiscent of stalactites and continue to form delicate pillars, which are another central element of Islamic architecture. Fully differentiated spatial situations are therefore created in the interior.

TECHNICAL SOLUTION
The intermodel station as a public building is designed for a working life of 100 years. The architectural concept of the roof is based on intersecting spheres. The sphere sections forming the upper and lower surface of the roof cladding have different radii. The radius of the upper surface is larger, which results in a larger available height at the intersections.
CONSTRUCTION PERIOD
2016 to 2019

PUENTE CENTENARIO BRIDGE
PANAMA

The Panama Canal was opened in 1914 and therefore celebrated its 100th anniversary in 2014. The opening of the new locks in 2016, to allow the passage of the large Post-Panamax ships, makes the canal fit for the enormous logistical challenges posed by world trade. The Centennial Bridge ("Puente Centenario") is the second bridge over the canal and serves as an emblem of modern architecture and innovative building technology on the Panama Canal.

TECHNICAL SOLUTION
Cable-stayed bridge with a span width of 420 metres and a total length of 1,050 metres. The vertical clearance for ships is 80 metres.
CONSTRUCTION PERIOD
2002 to 2004

TUNNEL GDAŃSK, POLAND

The underwater crossing, which consists of two arms, each of which has two lanes, is the first of its kind in Poland. The tunnel (part of the routes linking the airport to the seaport) with a total length of 2.16 km runs under the Dead Vistula River at a depth of 35 m at its lowest point. The shield section in the picture, comprising twin bores 12.5 m in diameter and 1,072.5 m in length, is connected with two 40-m-wide ramps 340 and 743 m long, including a large roundabout on the western side of the river.

TECHNICAL SOLUTION
The engineering solution selected for the protection and bottom sealing of deep excavation pits for the TBM start and end chambers and tunnel ramps was the result of the proposal to move from working in underwater conditions to operation inside a dry pit in order to cut construction time and reduce costs.

CONSTRUCTION PERIOD
2012 to May 2016

MAURITIUS CONTAINER TERMINAL (MCT) PORT LOUIS, MAURITIUS

The project was staged in 4 different sections to keep the port operational and to facilitate the supply and shipment of goods without any interruption. The contract comprises the construction of a new 244 m marine berth with an extended container yard of 90.000 m^2 incl. 4 small utility buildings and MEP works as well as the strengthening of 560 m of existing berthing structure.

TECHNICAL SOLUTION
The new berthing quay had to be driven into the seabed on tubular steel piles and sheet piles (combi-wall), construction of the concrete capping beam, installation of the wharf furniture and the relocation of 3 container cranes.

CONSTRUCTION PERIOD
September 2014 to December 2016

SUVARNABHUMI INTERNATIONAL AIRPORT THAILAND

Suvarnabhumi International Airport is a large international airport in Nong Ngu Hao, Samut Prakan province, Thailand. It is one of the largest infrastructure projects in South-East Asia and is situated about 30 km from Bangkok. With a handling capacity of 53 million passengers a year (in 2015), it is one of Asia's largest airports and also one of the best in the world.

TECHNICAL SOLUTION
This was one of the first installation for Airport Projects with area wide Floor-Cooling-System and an HUB Terminal.

CONSTRUCTION PERIOD
2003 to 2008

WATER & ENERGY

HOW BEST TO PROVIDE PEOPLE AND THE ECONOMY WITH CLIMATE-FRIENDLY ENERGY AND CLEAN WATER IS AN EXISTENTIAL QUESTION IN EVERY RESPECT. IN LIGHT OF SIGNIFICANTLY INCREASING WORLDWIDE DEMAND, ECOLOGICAL APPROACHES AND ECONOMICALLY EFFICIENT ACTION IS REQUIRED.

For example by protecting natural resources through the use of renewable energy, or harnessing the power of water, which is not only essential for life but also a means of transport, in a responsible and technically sophisticated manner. The German Construction Value Chain tackles these tasks for the future with a high degree of expertise and innovative spirit. And in doing so, it promotes positive economic and ecological developments worldwide.

STEP Link Sewer, Abu Dhabi, UAE –
see page 28 for more information about this project

SOLAR HARPER LAKE
CALIFORNIA, USA

A complete loop, consisting of two solar collector assemblies (SCAs), each measuring 240 m in length, has been integrated into a plant in California. One collector assembly consists of 10 solar collector elements (SCEs). The aim of the project is to achieve a reliable basis for fabrication and erection concepts and their respective costs. In addition, the collector efficiency will be measured under working conditions to provide certainty for the design of upcoming solar thermal power plants.

TECHNICAL SOLUTION
Design: optics, techno-economic optimisations, structure, drive technology, detailed engineering, tender documents, fabrication and site supervision.
CONSTRUCTION PERIOD
Completion in November 2012

WASTE WATER TREATMENT PLANT (WWTP) ALKIMOS, AUSTRALIA

The WWTP Alkimos was constructed to serve Perth's continuously expanding northern corridor. The design and construction stage 1 from Jan 2009 to Dec 2010 provides a capacity of 20,000 m^3/d and serves a total population of 90,000 inhabitants. The WWTP will – in its ultimate stage – treat an inflow of 160,000 m^3/d and serve a total population 750,000 inhabitants. The plant has culminated in one of the largest multi-faced projects ever undertaken by the Water Corporation of Western Australia. The raw waste water is first cleared of solids in the screening channels and grit via the grit removal system. It then proceeds to the bio-selector, where it is mixed with return activated sludge (RAS) and enters the oxidation ditches, and then into the secondary sedimentation tanks (clarifiers), where the settling of bio solids takes place. Treated effluent leaves the process through a seawater outfall pipe into the ocean. Wasted sludge is transferred to the sludge thickening tank and is stored in a storage tank until it is tankered off site.

TECHNICAL SOLUTION
The plant consists of primary and secondary treatment and a sludge thickening facility. The main unit processes are band screens, grit removal by vortex tank and grit washer, bioselector with RAS mixing, oxidation ditches, secondary clarifiers, DAFT tanks and odour treatment by photoionisation. This innovative solution ist the first odour treatment by photoionisation in Australia. The treated waste water is discharged via a 4 km sea outlet.
CONSTRUCTION PERIOD
2008 to 2010

CORRIB PIPELINE TUNNEL IRELAND

To connect the Corrib Gas Field, situated 83 km offshore, with the gas terminal, an onshore gas pipeline was installed, part of which crosses the Sruwaddacon Bay. The client decided to install the 20-inch gas pipeline with all its relevant accessory components in this sensitive nature reserve in a tunnel.

TECHNICAL SOLUTION

The key criterion in the identification of the tunnel route was the trenchless underground construction of a 4.9-km-long section due to the environmental impact of its location. Upon completion of the tunnel, the gas pipeline, umbilical cables and other service lines were installed inside and pressure-tested before the tunnel was backfilled with grouting material. The project won the 2015 Environmental Initiative of the Year Award from the International Tunnelling Association.

CONSTRUCTION PERIOD

November 2010 to February 2015

STEP LINK SEWER
ABU DHABI, UAE

The programme is a direct response to the impressive growth seen in recent years and consists of a 40-kilometer-long deep waste water tunnel with a pumping station at its end and a network of link sewers connecting the existing sewage network and pumping stations to the waste water tunnel. The new waste water network will discharge the complete sewage from the city of Abu Dhabi with an approx. population of 1,000,000 people. The contracts comprised the design, procurement and construction of gravity link sewers measuring 27.4 km and 15.4 km, including access manholes/shafts covering the link sewers on Abu Dhabi Island and Yas Island and the main link sewers.

TECHNICAL SOLUTION

Pipe jacking method was implemented for the construction of the sewer tunnels.

CONSTRUCTION PERIOD

March 2012 to July 2015

NAGA HAMMADI BARRAGE
EGYPT

The Government of Egypt decided to replace the existing Naga Hammadi Barrage in Upper Egypt with a new structure incorporating a power plant. The old barrage was constructed between 1927 and 1930 to divert water for irrigation of farmland in the region. Over the years the riverbed had degraded, especially after commissioning of the Aswan High Dam, and the stability of the barrage may eventually be threatened during low flow periods. This led to the decision to construct a new barrage and make use of the water energy with a power plant. The location of the new facility is at a riverbend approx. 3.5 km downstream of the old barrage.

TECHNICAL SOLUTION

The new Naga Hammadi Barrage is a 300-m-long concrete gravity dam producing 64 megawatts of electricity and incorporating a 220-m-long double lock for the Nile ships. 400,000 m^3 of concrete was used. A cut-off wall seals the underground below the dam.

CONSTRUCTION PERIOD

2002 to 2008

INDUSTRIAL

MODERN ECONOMIES REQUIRE A MODERN ENVIRONMENT: QUALITY PRODUCTS, ESPECIALLY IN THE HIGH-END SECTOR, CAN ONLY BE PRODUCED IN PREMISES THAT MEET HIGH DEMANDS: BOTH AS SITES OF PRODUCTION AND WORKPLACES.

The German Construction Value Chain specialises in planning and implementing these qualities. With commercial premises and offices that enable efficient, environmentally friendly and above all sustainable interaction between humans and machines, throughout the buildings' entire life cycle.

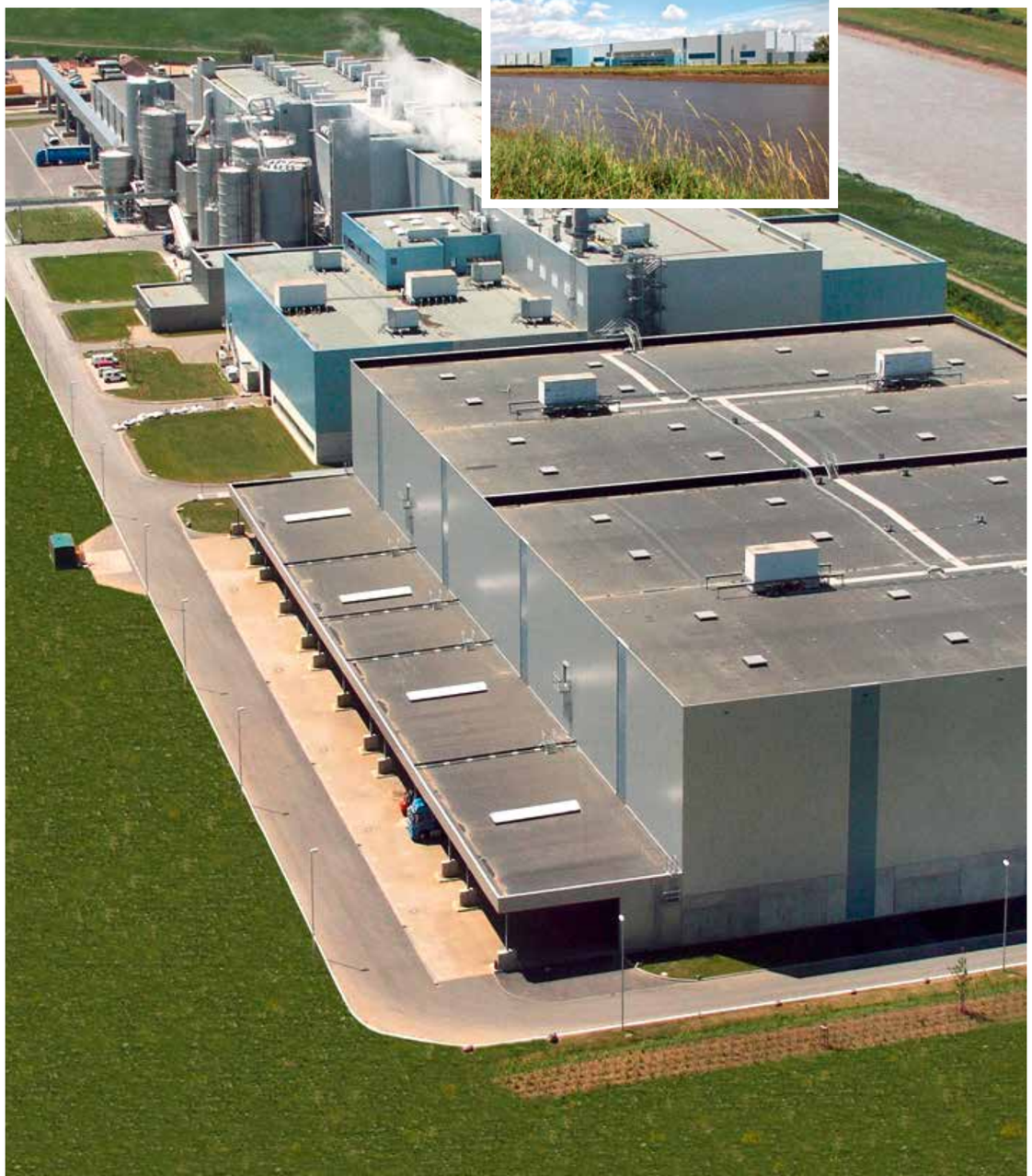
B. Braun Production Facility, Penang, Malaysia –
see page 34 for more information about this project

PALM PAPER PRODUCTION FACILITY NORFOLK, ENGLAND

Germany's largest paper company Papierfabrik Palm GmbH was granted planning permission for its UK subsidiary Palm Paper to construct a large-scale paper mill on the site of a former sugar plant in King's Lynn, Norfolk. A total of 25,000 machine parts were assembled and around 200 km of cables and 800 motors installed. In 2009, Palm completed its new PM7 machine at King's Lynn – the largest and most powerful newsprint paper machine in the world.

TECHNICAL SOLUTION
The mill was constructed from 600,000 sections of ready-made concrete combined with an additional 40,000 m^3 of concrete and 10,000 tonnes of reinforced steel.

CONSTRUCTION PERIOD
2007 to 2009



ZHANG JIANG HI-TECH PARK SHANGHAI-PUDONG, CHINA

The Zhang Jiang Hi-Tech Park in Shanghai's district of Pudong is based on a sustainable, interconnected urban development and infrastructural model called the Ecological Model Town Concept for China. The core idea is the elaboration of a master plan concept, in which all technical functions are tied together with transport infrastructure, city planning and construction technology to form an integrated network. This combines the strengths and advantages of the individual systems with one another and utilises them in an optimal and sustainable fashion.

TECHNICAL SOLUTION
Master plan concept, in which all technical functions (i.e., water, sewage, waste disposal, energy, communication) are tied together with transport infrastructure, city planning and construction technology to form an integrated network.

CONSTRUCTION PERIOD
2011 ongoing

MERCK SERONO S.A. LARGE SCALE BIOTECH VEVEY, SWITZERLAND

The Merck Serono S.A. Large Scale Biotech is a centre for the development and production of biotechnological substances and one of the most significant pharmaceutical production locations worldwide. The project comprised specific constructional features. Alongside the exploitation of the difficult geographical position, different old buildings had to be demolished disrupting ongoing production.

TECHNICAL SOLUTION
Realisation of an innovative architectural lighting concept for the frontage, planning of the infrastructure of the production area as a tank farm house, solvent store and waste water treatment as well as traffic and transportation infrastructure.
CONSTRUCTION PERIOD
2006 to 2011

B. BRAUN PRODUCTION FACILITY PENANG, MALAYSIA

B. Braun Melsungen AG produces medical technology products and surgical instruments. The available space on the island is limited, resulting in the need for very efficient use of floor space in new buildings. Stacking production areas proved to be a viable option. The climate is constantly warm and humid. The buildings therefore needed appropriate shading and roofing. Another requirement was to include the corporate identity and principles of corporate architecture in the design of the building. At the same time, local influences and culture had to be incorporated in a comprehensive manner.

TECHNICAL SOLUTION
Four-storey spine, pre-cast, reinforced concrete structure, rear-ventilated curtain wall.
CONSTRUCTION PERIOD
2010 to 2012

PRODUCTION FACILITY PULS CHOMUTOV, CZECHIA

PULS GmbH specialises in the development and production of electronic power supplies. The factory is composed of three essential sectors for use: Administration, Store and Production. The outer appearance of the building is intended to symbolise progressiveness and the innovative power of the company and its products. The Administration and Store feature an enclosure with metal cladding on the side, shaped by large anodised aluminium sheets with a semi-circular curve at the end of the structure.

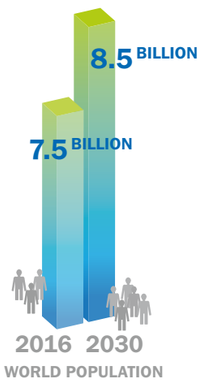
TECHNICAL SOLUTION
Innovative façade; cellular beams.
CONSTRUCTION PERIOD
2006 to 2007

OUR WORLD IS GROWING.

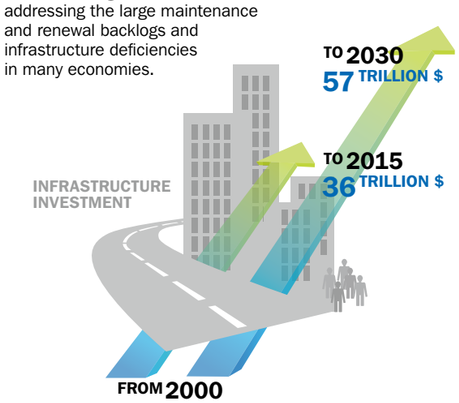
THE NEEDS OF EVER MORE PEOPLE HAVE TO BE MET. INCREASINGLY SO IN URBAN AREAS.
THESE GLOBAL MEGATRENDS DEFINE THE INTERNATIONAL CONSTRUCTION MARKET.

ENVIRONMENTALLY SOUND
SOCIALLY RESPONSIBLE
URBANISATION
MOBILITY
ENERGY-SAVING
LOCAL PARTNERS
RESPONSIBILITY
EDUCATION
QUALITY STANDARDS
BIM
TRANSPARENCY
COMPLIANCE

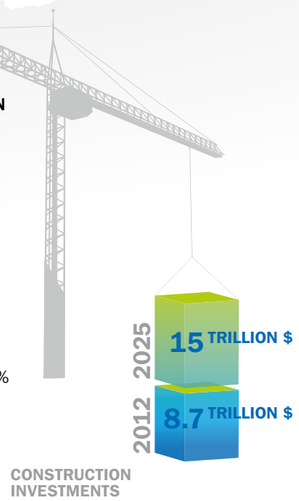
THE WORLD POPULATION IS EXPECTED TO GROW BY ANOTHER BILLION OVER THE NEXT DECADE AND TO REACH 8.5 BILLION BY 2030.
This demographic development will kindle global demand for building and infrastructure services, especially in the dynamic and fast-growing societies outside of Europe.



A BASELINE ESTIMATE BY THE MCKINSEY GLOBAL INSTITUTE FINDS THAT GLOBAL INFRASTRUCTURE INVESTMENT WOULD NEED TO INCREASE BY NEARLY 60%.
From the $36 trillion spent on infrastructure over the past 15 years to $57 trillion over the next 15 years, not accounting for the cost of addressing the large maintenance and renewal backlogs and infrastructure deficiencies in many economies.



FURTHER CONSTRUCTION INVESTMENTS WILL BE NECESSARY TO PROVIDE ADVANCED SOLUTIONS AND TECHNOLOGIES TO REDUCE THE CARBON FOOTPRINT OF THE CONSTRUCTION INDUSTRY AND TO MITIGATE THE IMPACT OF CLIMATE CHANGE.
Against that background, forecasts predict that the volume of global construction output will grow by 70% from $8.7 trillion in 2012, to $15 trillion by 2025, representing growth of $6.3 trillion.



Sources: Oxford Economics, McKinsey Global Institute, GCP – Global Carbon Project

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