



***Special.***

**BALANCE BETWEEN  
PEOPLE AND TECHNOLOGY**  
The engineers behind the projects

***INROS LACKNER.***



Dear reader,

17 years ago we had five email addresses; now we have over a thousand. Indeed, the number of staff doubled during this period, but the numbers in the IT field have grown far more quickly. Digitalisation has had an enormous impact on our daily work, e.g. in the interlinking of our planning and design processes. But the control of the system remains in the hands of the responsible persons at all times, as they use the software, technology and machines. The know-how and social competence of our engineers and architects, on which the successful execution of our projects relies, is thus the focus of this edition.

Our discussion with Prof. Ingo Müller, Dean of the Faculty of Engineering at Wismar University, makes clear how Industry 4.0 and Smart Building are affecting work processes and education. The demands on engineers are becoming ever more complex – a development to which we in our company must continually respond. Ingo Aschmann, company director, talks about activities and challenges in the area of human resources. Then we present some current projects, in Germany and around the world, and the people behind them – the members of our staff who exemplify the capability and commitment of our entire team. It is they who ensure the success of our projects. In the end, it comes down to achieving the right balance between people and technology.

This year, the IGA international horticultural exhibition took place in Berlin – a spectacular garden festival that was visited by millions of people from all over the world. We are honoured to have been able to provide planning and design services for this prestigious, once-in-a-decade event.

Enjoy your read,

Dr. Klaus Richter,  
Executive Director

Torsten Retzlaff  
Executive Director



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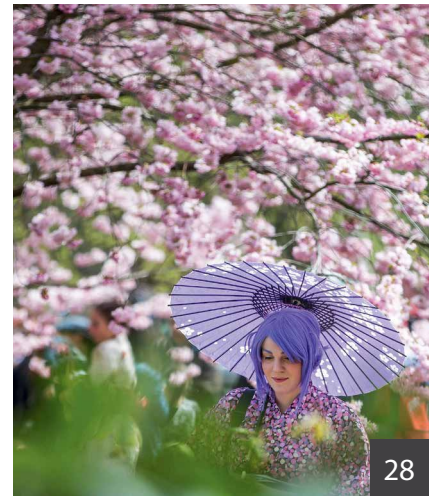
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## Architecture and pedagogy

The construction of Oder-Spree's new 450-student secondary school, south of Berlin, is a fine example of the integration of modern developments in the field of education and teaching in school design. The school will have an open, transparent design, with a strong focus on requirements relating to inclusion, integration, full-day services and a practice-oriented approach to teaching. The building will have an accessible design, and will be energy self-sufficient. The school will cover an area of 12,483 m<sup>2</sup>, with the project's scope including not only the school itself but also its sport and recreation areas and a two-field sports hall. Inros Lackner SE has been appointed in the role of General Planner for the project, for which construction is planned to commence in mid-2018 and handover is scheduled for June 2019.

## Delegation from Somalia

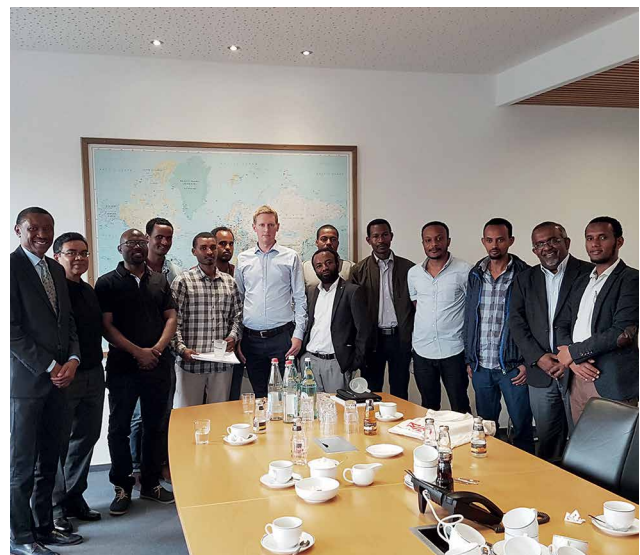
In June 2016, as part of the "Somalia Core Economic Institutions and Opportunities (SCORE)" project, financed by the World Bank, a contract to develop a master plan for the ports of Mogadishu and Bosasso was advertised. The joint venture "Inros Lackner SE - HEFI (Horn Economic and Finance Institute) - AE (Africa Enablers)" was awarded the contract in early 2017. The first results of the work have already been presented to, and discussed with, representatives of the Federal Government of Somalia

and the Mogadishu Port Authority, in a series of workshops. The first of these took place at the start of May 2017 in Nairobi, and another was held, at the end of July 2017, at Inros Lackner's offices in Rostock. During the visit to Rostock, the Somali delegation also visited the sea ports of Hamburg and Rostock to gain an impression of the development and operation of these modern international ports. The master plan is expected to be completed at the end of 2017.



## "Ph.D. Summer Camp"

Professors and students from a number of technical universities in Ethiopia and the United States recently visited Inros Lackner's office in Bremen. They are part of a post-graduate programme that was established by the Ethiopian Ministry of Education with the support of GIZ (the German society for international cooperation). The programme's goal is to support students during their studies and to establish civil engineering "Centres of Excellence" at selected Ethiopian technical universities. The "Ph.D. Summer Camp" is run by Texas Tech University (USA) and Jimma Institute of Technology (Ethiopia). This year, the participants are spending three months at Bremen University, because it was not possible for the Ethiopians to travel to the United States. Inros Lackner is supporting this programme at the Bremen University campus. The company's Dr. Heiko Spekker, for instance, spoke to the students about technical organisation and current infrastructure projects in East Africa. And in September, a visit will be arranged to the Bahrs Plate floodwater protection construction site in north Bremen.





## Bukasa Port project

A delegation from the Bukasa Port project in Uganda visited Inros Lackner's Bremen office in May this year. The port construction project is one of East Africa's most significant current infrastructure projects, and Inros Lackner is proud to have been awarded the contract to develop a master plan for this inland port on Lake Victoria in Kampala. Twelve representatives of the Ugandan Ministry of Works and Transport, accompanied by staff of the company Gauff Engineering from Kampala and Nuremberg, visited the planning and design team in Bremen, and also visited Brake Port on the Weser river, in order to gain an impression of the key elements of the future port. The delegation then travelled to Duisburg to see the world's largest inland port.

## Modern logistics solutions

Inros Lackner (Germany, Vietnam) and the Institute of Shipping Economics and Logistics (ISL) in Bremen have created, for a limited competition, a concept for a master plan for the development of the Cai Mep Ha logistics park in Vietnam. The park will have an area of 1,100 hectares, and is to be built between the sea port of Cai Mep and Phuonc Hoa city. The involved international investors and the responsible decision ma-

kers of the logistics sector wish to develop a modern, sustainable multi-modal logistics centre. In order to achieve this objective, the concept of zoning with "superblocks" was chosen, giving users of the centre various usage options. The master plan was deemed by the client and its jury to be the best and most innovative concept of all the entries to this urban planning and spatial development design and benchmarking competition.



(From left to right) Uwe Lemcke, Managing Director, Prof. Dr. jur. Bodo Wiegand-Hoffmeister, Rector of Wismar University and Prof. Dr.-Ing. Ingo Müller, Dean of the Faculty of Engineering

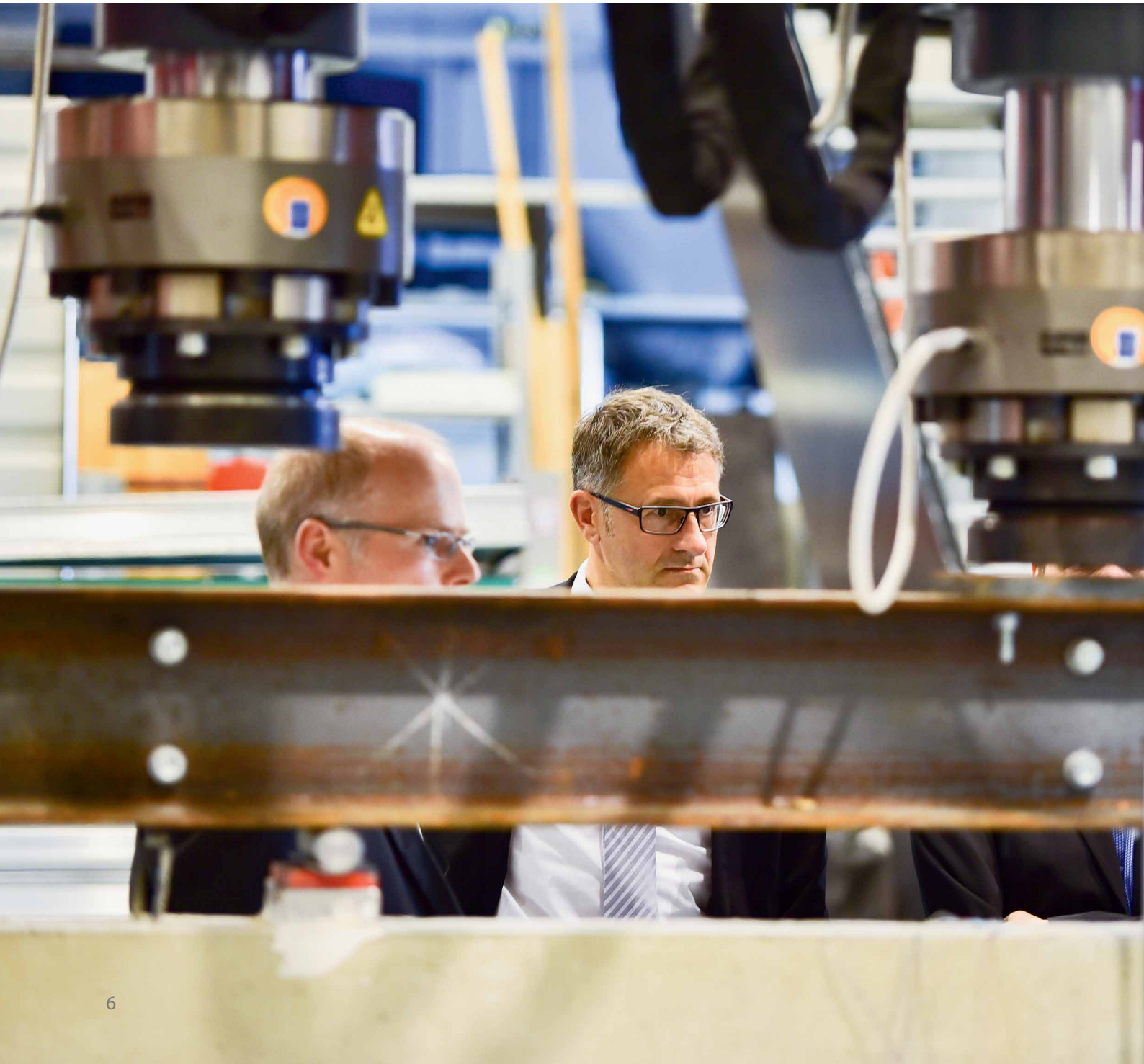
## Cooperation with Wismar University

At the end of February this year, Wismar University and Inros Lackner signed a cooperation agreement, bringing academics and practice closer together. Inros Lackner staff will take on lecturing responsibilities and make presentations at the university, introducing a more practice-oriented focus to the civil engineering curriculum. And students will be able to move directly from learning in the lecture theatre to gaining practical experience – working on projects and agreeing subjects for their final thesis work.

Inros Lackner will also play a part in introducing a new course on technical building equipment and building automation, and support two top students with a scholarship. The expertise of Inros Lackner staff shall also play a role in developing the curriculum for a new cooperative work/study Master's programme relating to hydraulic and port engineering.

# BALANCE BETWEEN PEOPLE AND TECHNOLOGY

It is a thousand years of history that connects people with tools and machines. “Today, machines communicate and make decisions; this requires a change of thinking in relation to the interface between human being and machine”, explains Prof. Ingo Müller of Wismar University. How are Industry 4.0 and Smart Building influencing the work processes and education of engineers?



*Albert Einstein said: “We shall require a substantially new manner of thinking if mankind is to survive”. Prof. Müller, the engineering sciences are faced with the challenge of dealing with rapid technological change. Digitalisation, Industry 4.0 – the expressions are in widespread use and affecting both the personal and the working world. What fascinates you most in the current developments?*

I am fascinated by the great leaps forward made between 1800 and today, from the first to the fourth industrial revolution – from the use of hydraulic and steam power, the introduction of mass production with the use of electricity, the use of powerful computers to the progressing digitalisation and intelligent use of enormous amounts of data. Today we live very naturally with smart technologies that communicatively interconnect our world. At first, the focus was on private use – the people’s Internet via social media.



### **Prof. Dr.-Ing. Ingo A. Müller**

Dean of the Faculty of Engineering and Head of Electrotechnology and Computer Science, Wismar University

Prof. Müller studied Technical Cybernetics and Automation Technology, from 1983 to 1988, at Rostock University, and worked there as a member of the technical staff as well as at the Technical University of Hamburg-Harburg. He received his PhD in 1993, and was then employed as development engineer and development manager in various companies. In 2002, he was appointed Professor of Electronic Circuit Engineering at Wismar University. Since 2007 he is the university’s Head of Electrotechnology and Computer Science, and since 2009, Dean of its Faculty of Engineering.

>> Industry 4.0 and Smart Building will not make the human being obsolete in the work processes; without people, value cannot be created. <<

In more recent years, individualised use of such media and search behaviour has found application in a business context – the Internet of Things. Cars, machines and buildings are being increasingly connected to the Internet. Smart technologies integrate work processes in companies and factories. The vision of the so-called Smart Factory will revolutionise business models and work processes. Machines communicate with each other and make decisions; this requires a change of thinking in relation to the interface between human being and machine.

*Do these developments have an impact on teaching and curriculum?*

In these automated value creation processes, the human being remains the most important decision maker, and this poses new challenges for engineers and for professors in their academic teaching. The typical engineer of the past, with specialised knowledge of specific subjects, will be replaced by engineers with a broader knowledge base – including, in particular, information technology. Wismar University’s Faculty of Engineering is well equipped to offer multidisciplinary courses with corresponding synergy effects, with courses including civil engineering, mechanical engineering, electrical and electronic engineering, multimedia technology, process and environmental engineering and marine engineering.

In civil engineering, Building Information Modelling (BIM) is representative of a continuous engineering process – from planning and design to costs and monitoring and even including maintenance following completion of construction. Multidisciplinary teams work on the same automated 3D design, using the same software. This demands increased attention to individual steps in the design’s development, with every change in the design having consequences for other aspects, such as static design calculations or costs. These are complex issues, which we have integrated in the curriculum.

*What attributes should a graduate have when starting a career today?*

The civil engineer is increasingly becoming, in the modern automated engineering process, a manager of the whole system, and makes decisions as required when problems and challenges arise. Therefore, a good understanding of related subjects is essential. For example, building construction today is typically one third to do with technical building equipment such as ventilation, heating and control technology. Engineers must be able to deal with the client via these interfaces. So it is important that young engineers should have good communication and social skills.

*What role does cooperation with companies play in this? Why is it important that companies become involved in the transfer of knowledge today?*

Cooperation between industry and education is extremely important, today more than ever before. The industry needs well educated engineers, and the demand today is not being met. According to VDI, the Association of German Engineers, for instance, Germany currently has between 60,000 and 80,000 unfilled positions. There is a clear shortage of suitably trained people on the market. Industry needs the education sector, and vice versa. In Wismar, we cooperate with large regionally and internationally active companies. These offer internships and provide guidance for degree and Master's theses, giving our graduates excellent opportunities. The industry is also very interested in making use of the results of current research. As a university, we represent the latest developments – for example, in the increasingly complex field of equipment technology.

As with a number of other companies, we have a contract of cooperation with Inros Lackner. This enables budding engineers to develop a connection to the company, from an early stage. At the same time, we are integrating Inros Lackner staff in our teaching, and using their specialist knowledge in developing our new cooperative work/study course relating to port engineering.

*In the future, will one of the biggest challenges relate to conveying complex technical developments – e.g. in the field of technical building design – to a multidisciplinary project team?*

Considering the increasing complexity of modern technical building equipment, the human factor is critical – especially when it comes to working together as a project team in an integrated engineering process covering all stages and aspects. Teamwork and knowledge transfer are critically important in the cooperation between building technicians and structural engineers. If the interfaces do not function well, this will result in delays and higher costs.

A large proportion of the work required relates to technical building equipment such as energy, ventilation, heating, solar radiation, sensor technology, automation and data collection. Enormous quantities of data are generated. The demands are growing and becoming ever more complex, also in relation to the use of the technology and the data. This is a challenge, not only for academics and teachers, but also for technicians and tradespeople.

*In your opinion, what will change in the next 20 to 30 years? Will technology be able to make the complex decisions that we humans do today?*

>> The use of digital technologies must become more natural, more goal-oriented and, above all, more team-oriented. <<

In the 1980s, who could have foreseen the developments made in mobile technology. The rapid developments in smartphone technology have made us reachable, and able to access data, wherever we are. This development will continue at high speed. There will likely be major changes in the area of personal mobility, e.g. in the automobile industry. The trendsetter in the construction sector will be automated building construction.

There should always be a balance between people and technology. Industry 4.0 and Smart Building will not make the human being obsolete in the associated work processes. But job profiles are changing, and the use of digital technologies must become more natural, more goal-oriented and, above all, more team-oriented. The engineers behind the projects will always be needed for their knowledge and capabilities – without them, it is hard to imagine how value can be created. For young people choosing a career path, this perspective should both help with orientation and be an impetus.





# ENGINEERS NEED A NEW UNDERSTANDING OF THEIR ROLE

The rapid technical interconnection of our world is not only impacting on work and planning processes, but also placing a new focus on the involved human beings and their professional and social skills. How is the Human Resources field reacting to this?

*Mr. Aschmann, what challenges and opportunities does the 4th industrial revolution present for the field of civil engineering, in particular for companies like Inros Lackner?*

The working world is changing rapidly; modern robots and algorithms increasingly determine how things are done, substantially changing production processes and fields of work. With the help of intelligent and digitally networked systems, it should be possible to achieve highly self-organising production.

People, machines, facilities, logistics and products communicating and cooperating directly with each other in Industry 4.0. The interconnectedness makes, or will make, it possible to optimise an entire value creation chain rather than just individual production steps. In the planning and design process, this idea is implemented by BIM (Building Information Modelling). The BIM method will have a great impact on future ways of working and on the initial and ongoing education of engineers and technicians in the construction industry. Not only must the technical skills needed to use BIM be acquired, but a new understanding of the role of those involved in the construction process will develop. Different disciplines (e.g. architecture, civil engineering, technical building equipment, facility management) largely work together on the same project throughout the project's life cycle. Inros Lackner has been focussing on the BIM method for many years, and is participating in a number of pilot projects. These include, among others, the BIM planning and design for the Schwelmetall Bridge on the A1 autobahn for DEGES and the planning and design of the Würzburg / Hedingsfeld railway station for DB Station & Service



## Ingo Aschmann

Executive Director, INROS LACKNER SE

Following completion of his studies in business administration with legal focus, Ingo Aschmann worked for many years in KPMG's auditing department. He has had a management role at Inros Lackner since 2007, and been a member of the company's board of management since 2011. He also leads the "Taxation in other countries" expert group of VBI (German association of consulting engineers), and is a member of the "International taxation issues" subcommittee of BDI (federation of German industries).

>> Behind all the machines, technical developments and processes are still human beings with all their strengths and weaknesses – with their personalities. <<

AG. The roads authority of the German state of Lower Saxony has also awarded us a contract to develop a so-called BIM protocol, which will form the basis for the organisation and awarding of BIM projects. In developing and supporting such innovations, Inros Lackner has taken a leading position in the German architecture and engineering industry. An essential question is, however: How much “new technology” can be introduced in a company, in what timeframe, without causing enthusiasm to suffer due to the increased workload? It is a challenge, for managers in particular, to find the right balance. On the one hand, each member of staff must be introduced to the change process, with consideration of the person’s particular capabilities and strengths. And on the other, the implementation of the change must be pushed forward in a coordinated way. Step by step, and without losing sight of the fact that application limitations are not related to technical feasibility, but rather to cost effectiveness and social acceptance. We must not forget that, behind all the technical developments, processes and machines, are still human beings with all their strengths and weaknesses – with their personalities.

*What impacts does the fast pace of technical development have on the field of Human Resources?*

The changes in planning and design processes, and the growing together of different functions and disciplines, will greatly enhance the importance of ongoing and further education. Employee know-how should grow in numerous directions, and be multidisciplinary despite any specialisation. Lifelong learning, and interdisciplinary thinking and acting, will be key requirements. In the future, specialists and managers in Industry 4.0 will also need even stronger soft skills than they do today, to enable them to quickly make wide-ranging decisions in their teams. As an employer, we create the framework for this and continually work to develop up-to-date solutions for the exchange of information. We support ongoing and further education, and in 2017, for instance, integrated a “learning campus” of sorts in our calendar for the first time. A learning day, during which all staff of our German offices come together and, from a broad range of options, individually design their own personal further education.

The flexibilization of the planning and design process also requires more flexible working time systems. For our part, for example, we support individual free time for the family – and not just as prescribed by law. For a long time already, we have been using flextime accounts, and in recent months we have introduced a new working life model.

*Companies compete for qualified employees in an ever more challenging international employment market. The classical recruiting processes alone no longer suffice to get the best. What new recruiting processes are you using?*

The “formula for happiness” here has not changed: “the right employee, at the right time and in the right place”. Today, applicants have a range of opportunities, and that is good. But what can we do to attract the right people? We learn from applicants and from our new employees. What was and is important to them – before, during and after the application process? Candidates like to feel well informed, and to know more about the potential new employer in advance. To which employers should I apply? Who is behind the company name and the projects? What is the future role? What goals does the company have, and what are its core standards and values?

The success of a job description depends on how well the company manages to clearly position itself with respect to these points, and thus to communicate a message. We are increasing our use of social media; in the last year, we have developed our company page on XING for the German-speaking world and on LinkedIn for the international market. We also offer a deeper insight into our company by presenting ourselves on Kununu, where we give applicants and employees the opportunity to describe their experiences with us. As recruiting via social

>> As a result of all such measures, we have managed to continue growing in spite of the general shortage of candidates; in fact, in early 2017 we received more applications than ever before. <<

media has gained in significance, we combine the new methods with other, longer-established recruitment channels. The most important of these are the job portals on the internet and our own website. But university information events and special jobs fairs are also significant. And at the start of 2017, for example, Wismar University’s Faculty of Engineering and Inros Lackner signed a contract of cooperation. Such cooperation and exchange are important to us, not just for attracting the right talent. They also enable us to contribute our practical experience, and to keep up to date with the latest technical developments. Furthermore, we regularly re-assess our company values, always with a strong focus on our clients, our staff and the quality of our services. As a result of all such measures, we have managed to continue growing in spite of the general shortage of candidates; in fact, in early 2017 we received more applications than ever before.

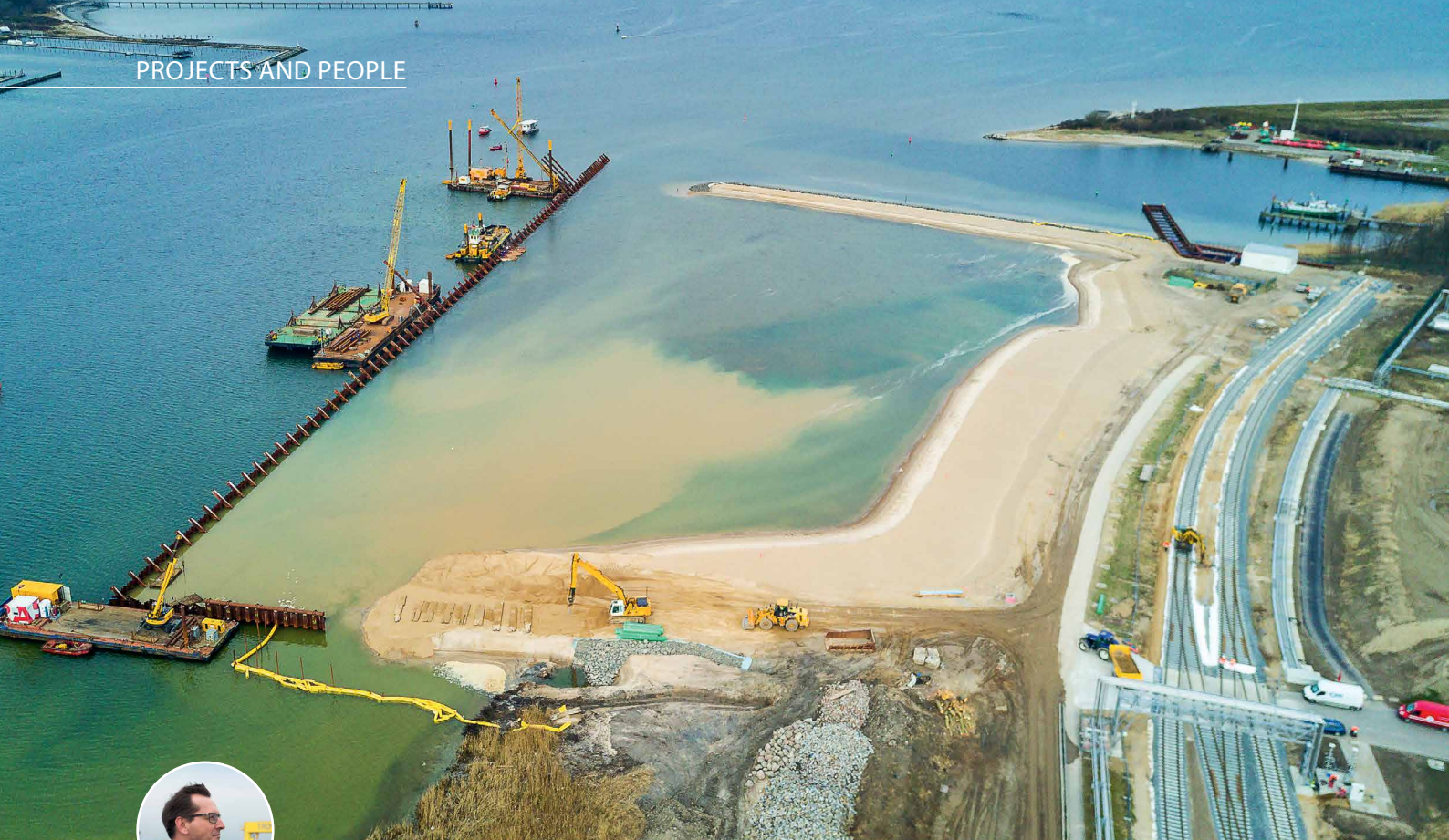


# PROJECTS AND PEOPLE



>> WITHOUT THE  
ENGINEERS BEHIND THE  
PROJECTS, VALUE  
CANNOT BE CREATED. <<





## EXTENSION OF WISMAR PORT

Wismar Port's extension, with berthing places for bulk carriers, will be approximately as big as six football pitches. It is currently the biggest quay wall construction project on Germany's Baltic Sea coast.

The volume of goods shipped through Wismar's sea port has experienced above-average growth in recent years – in part due to the success of the wood-processing and chemical industries that have located nearby. The extension project is being supported by the German state of Mecklenburg-Vorpommern, the city of Wismar and the German government. Germany's current Federal Transport Infrastructure Plan includes a proposal to increase the depth of the Wismar sea channel from 9.5 m to 11.5 m below sea level. The extension project will enable bulk carriers of length up to 250 m to dock at Wismar's sea port. Currently, the port's most important construction project, the extension of the Natron Quay, is ongoing. It is the biggest quay wall construction project on Germany's Baltic Sea coast, and Wismar's biggest investment project of the last two decades.

A new port area is being constructed, with an area of 47,300 m<sup>2</sup> – the area of six soccer pitches. With the sea channel made deeper, the quay achieves a drop in ground level of 13.5 m – roughly the height of a five-storey building. It will primarily be used for the transshipment of timber products, which place very high physical demands on such infrastructure. Loading and unloading will ini-

tially be done by mobile harbour cranes, but if the goods volumes increase as anticipated, a rail-bound crane will also be provided. The quay area will also have a direct railway connection, which can be used to transport both solid and liquid goods.

### Key measures:

- Driving of approx. 2,000 t of steel sheet piling and 600 t of steel rear anchorage piles
- Creation of approx. 400 reinforced concrete deep foundation piles of length 20 m
- Construction of a quay facility using approx. 5,500 m<sup>3</sup> of concrete and 710 t of reinforcement steel
- Placing of approx. 400,000 m<sup>3</sup> of sand to form the quay area
- Installation of 215 km of vertical drainage to improve soil conditions
- Dredging of approx. 300,000 m<sup>3</sup> of silt to improve access for ships from the sea
- Creation of 47,300 m<sup>2</sup> of new port area
- Renewal of railway tracks of total length 2 km

The project's multifaceted demands necessitated collaboration in a multidisciplinary team of engineers specialised in hydraulic construction, civil engineering, geotechnical engineering, building design, building services, electrotechnology, railway track construction, environmental design and tendering. The rerouting of a pipeline for highly explosive methanol was planned by a subcontractor. The planning and design, complete with tender documentation, were completed on schedule. To satisfy nature conservation requirements, compensative renaturation measures are being taken, as agreed with the local nature conservation authority and the "Klützer Winkel" office. Currently, the responsible team for site management and local site supervision is on site on a daily basis. Work began on site in the autumn of 2015, with the first piles being driven and the construction of a water passage. By early 2017, the piling work for the hydraulic construction measures had been almost completed. This complex, interesting and demanding construction project combines all aspects of

modern port construction: sheet piling, dredging and disposal, soil improvement and consolidation, concrete construction, and construction of railway tracks and ground surfaces. The port extension work is expected to be completed in 2018.

#### Notable occurrences during the construction period:

- During a search for unexploded devices from the second world war, over 800 possibilities were identified. These were officially examined, with time-consuming removal required in some cases.
- During dredging work in the northern part of the project area, a 13th century ship – a Hanseatic cog – was exposed. Dredging work was stopped in this area to allow a detailed inspection of the wreck by divers of the cultural heritage authority.



Tobias Günzl,  
Head of Maritime and Hydraulic  
Engineering

**“The sea and I – we have  
a very close relationship.”**

#### *Why did you want to become a civil engineer?*

I was very much influenced in this way by my family. My sister and my brother are both civil engineers, and as the youngest in the family, I followed in their footsteps. My stepfather was also a civil engineer, and he worked at Inros Lackner. For me, it was a choice between shipbuilding and civil engineering, and in the end, the more attractive subject won. Today, I work as an engineer in the area of maritime and hydraulic structures, so have at least remained faithful to the “water” aspect. And the family tradition continues, with my eldest son now wanting to study engineering.

#### *What types of structure most fascinate you?*

Of course, port structures are high on my list. I find ferry docks, in all their complexity, particularly impressive. Numerous trades and specialisations come together here, with interfaces between bridge building, steel construction, maritime and hydraulic engineering, propulsion technology and control technology. Apart from the technical finesse of individual (port) structures, a civil engineer is always interested in the architecture of buildings and associated facilities. As maritime and hydraulic engineers, we have a responsibility to strike this balance, particularly if no architectural guidance is provided. Of course, it is helpful here to



always consider the broader context. The relationship between port and city is interesting to me – e.g. the cruise into Warnemünde Port, and other features of cities that are located on the water.

*How did you end up working in maritime and hydraulic engineering?*

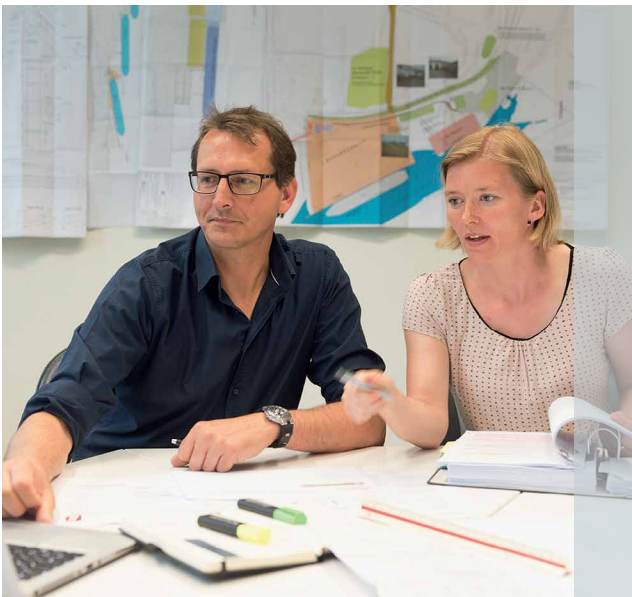
In a manner of speaking, it came to me. In my degree studies at Rostock University I designed a student residence in timber frame construction. But for my Master’s degree in Glasgow I studied Water Resources Management, a first step in the direction of water. Back in Germany I worked for an engineering consultancy in Stralsund, in the field of structural design with a focus on “checking engineer” work. Then, 18 years ago, at the time of my first son’s birth, I moved back to Rostock, and have been working in maritime and hydraulic engineering at Inros Lackner ever since.

*You live on the sea and have a professional connection to water – what does the sea mean to you?*

We have a very close relationship – I have a great passion for the sea. I started windsurfing and sailing as a student, and now I am on the water with my board and sail as often as I can and the wind is playing along. My passion for water sports is shared by my two eldest sons (the youngest is just 11 years old and so is still a bit young). My wife also likes to be at the sea – but prefers to have the ground beneath her feet there.



>> I find the complexity of ferry docks particularly impressive, with the interfaces between bridge building, steel construction, maritime and hydraulic engineering, propulsion technology and control technology. <<



Inros Lackner engineer Claudia Klein in conversation with project manager Tobias Günzl. She was responsible for the entire tendering process and awarding of contracts for the Wismar Port project:

“The contract award process for the Wismar Port project was a real challenge. First of all, we conducted three Europe-wide negotiated procedures in accordance with German SektVO requirements. Then came two open procedures, and four national tender procedures. The time taken from the first advertisement to the last contract award was four months.”



## ELDE VALLEY BRIDGE

The new 507m-long Elde Valley Bridge on the A14 autobahn is one of the biggest bridges in the German state of Mecklenburg-Vorpommern.

The construction of the A14 autobahn has special significance, forming part of the Trans-European Transport Network (TEN-T) from the Baltic Sea via central Germany to the Czech Republic. Section 6 ("VKE 6"), with four traffic lanes and a length of almost 10 km, is part of the connection between the A24 autobahn and the city of Magdeburg. It has eight bridges – including one for wild animals – and the new 507m-long Elde Valley Bridge. As one of the biggest bridges in Mecklenburg-Vorpommern, this bridge crosses valuable natural habitats, the Alte Elde river and the Müritz-Elde Canal.

**The crossing of the River Elde's lowland area – 650 m wide, up to 13 m deep and bordered by woods – presented some particular challenges:**

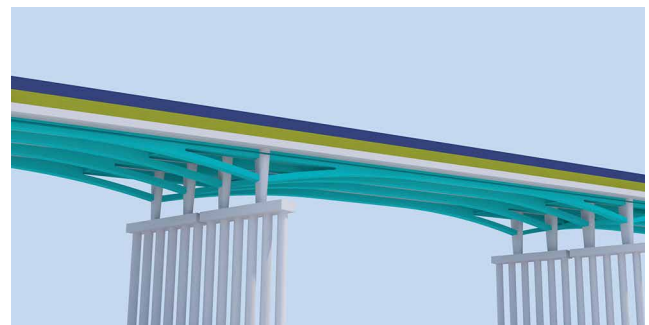
- Pier layout outside the uncompacted soil embankment – up to 1.2 m above ground level – of the Müritz-Elde Canal (resulting in semi-integral main span of length 78 m, continuously welded composite box girder)
- High groundwater levels – at ground level, or even up to 1 m above ground level during periods of heavy rain (requiring the placing of pads/fill during the construction stage)
- Load-bearing subsoil only at a depth of at least 11 m below the surface (resulting in the use of large-bore piles of diameter 1.5 m and lengths of up to 25 m)

- Compliance with prohibitions and provision of the required species protection certifications for large and small mammals, otters, beavers, birds and bats (with mandatory provision of a wildlife crossing and an irritation and collision protection wall of height 4 m and total length 1,216 m)
- Determinations relating to detailed installation and construction conditions, including static design required for approval

Construction work began in June 2015, and is expected to be completed by the end of September 2017.

**Span lengths:**

$36 - 55 - 42.5 - 52 - 78 - 52 - 37 - 2 \times 29 - 2 \times 26 - 23.5 - 20.5 = 506.5 \text{ m}$







Frank Bernhardt,  
Executive Director

**“BIM requires a high degree of technical competence and promotes a collaborative approach to project work.”**

*What do you find fascinating about bridge building?*

There are four key points: the complexity, the design possibilities, the demands and the uniqueness. Bridges are technically demanding structures, with multifaceted needs in relation to design, maintenance and renovation. These include, for example, planning and design, approvals, crossing agreements and demolition/removal. The work also requires constructive collaboration with people from other specialties, such as traffic facilities (road, rail), environment and noise protection, whether in connection with new construction or repairs and renovation. It is also special that we, as engineers, can develop our own design ideas. I very much value this creative side of our work, which involves making a contribution to our built environment.

Bridge structures typically stand for 70 to 100 years, and thus have a significant visual impact, e.g. on cityscapes and the environment. The design solution depends on the various traffic types – pedestrian, road and rail – and is at the same time unique in its use of construction materials and static design systems. Often, there are few suitable solutions that optimally bring together all aspects, such as constructability, economic feasibility and maintenance, throughout the entire life cycle.

*What bridge impresses you most?*

For me, there is not one particular special bridge. I am impressed, for example, by complex structures that do not attract attention by their size alone. It is often the individual, small but detailed solutions that fascinate me. But the focus should always be on designing a bridge that combines functionality, sustainability and a sense of timelessness. I am very interested, for example, in integral bridges, in which the connections between substructure and superstructure do not permit movement or rotation and which use different construction materials, e.g. composite steel and concrete. Considering my own projects, the construction of the A14 Elde Valley Bridge and the renovation of the 300-year-old Pöppelmann Bridge in Grimma were and are special to me.

>> I particularly value the creative aspect of bridge design. We make a significant contribution to our built environment by developing an optimal structural solution that fits perfectly in its place. <<

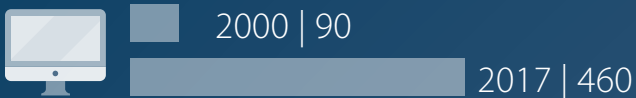
*How has BIM changed bridge construction work?*

BIM requires a high degree of technical competence and promotes a collaborative approach to project work. This was already demonstrated by our first “BIM projects”. A major advantage is the improved communication and coordination that results from using a single design model that brings together all relevant information. Any changes, and the resulting impacts, can be effectively and reliably communicated within the team and to the client. This reduces the potential for conflicts during the design and construction stages; interfaces are more clearly defined. BIM thus improves reliability with respect to quality, costs and schedule.



# INROS LACKNER: NUMBERS AND FACTS

## NUMBER OF COMPUTERS:\*



## NUMBER OF LAPTOPS:\*



## NUMBER OF SERVERS:\*



## IT EXPENSES (EXCL. PERSONNEL) T€:



## NUMBER OF EMAIL ADDRESSES:\*



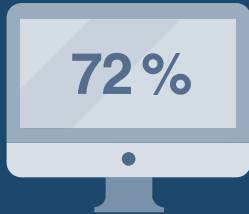
\* Number of employees: 2000 | 215, 2017 | 449

>> Almost 20 years ago, we were working on “286” computers. Such terms, and others such as cathode ray tube screens, have virtually disappeared from use. Today, we have a variety of mobile end devices at our disposal, which, of course, are used in addition to our workplace computers. And certain topics, such as the focussed application of software in optimising processes and improving collaboration with partners and clients, are gaining in importance. We apply ourselves, diligently and in a goal-oriented way, to meeting constantly changing demands. A design engineer without IT skills is inconceivable. The path to digitalisation, to the Cloud – once dreams of the future – has long been our reality. <<

*Bodo Liekfeldt, IT Manager*

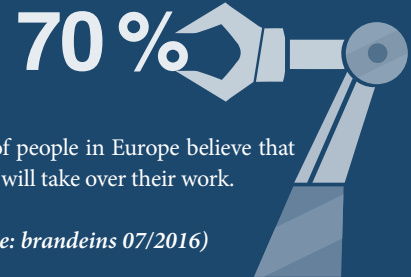


# NUMBERS AND FACTS



72 % of Germans use a computer. In the case of those under 30 years old, the figure is 97 %.

Source: The Forsa institute, as contracted by the German federal association for information technology, Bitkom.



70 % of people in Europe believe that robots will take over their work.

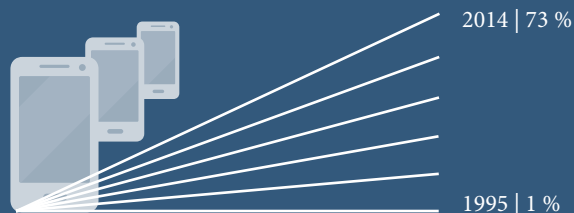
(Source: brandeins 07/2016)

## Proportion of Internet users, worldwide:

(Source: de.statistica.com)

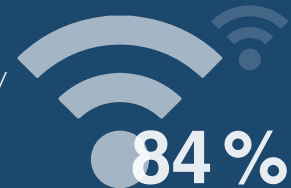


## Proportion of mobile phone users, worldwide:

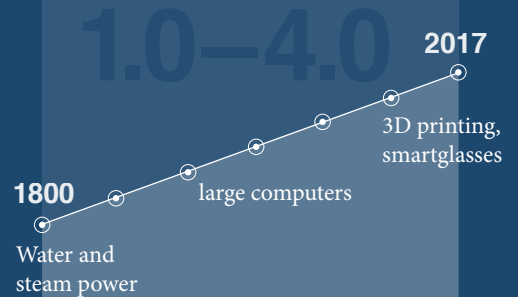


84 % of Germans are online

(Source: ARD/ZDF online survey, 2016)



## Industry 1.0 – Industry 4.0



## Investments in Industry 4.0 in Germany:



(©Statista 2020)



Number of mobile phone and smart-phone users increases in 2017 to over five billion.

(Prognose: eMarketer)



## SPARKASSEN-ERZGEBIRG STADIUM

The stadium in Aue in the German state of Saxony is being transformed into a football-only stadium.

This construction project is special in a number of ways. It is probably the only stadium in Germany that is owned by an administrative district (that of Erzgebirge) since German reunification, and is the home of the FC Erzgebirge Aue football team.

seated and 7,200 standing. Working in joint venture with the engineering and design company “Phase 10” and “Assmann bauen+planen”, Inros Lackner is responsible for the design and installation supervision of the building’s technical equipment.

flooding of 2002. It was thus necessary, during the planning and design stage, to verify that such regional flooding would not result in the stadium being flooded again – a task taken on by Inros Lackner’s hydraulic engineering team. A further special feature of the construction project is the fact that the work is being done under 25 individual contracts, rather than under a primary construction contract awarded to a single general contractor. The resulting necessary coordination of 25 companies requires a great deal of expertise on the part of Inros Lackner’s construction supervision team.



In the course of the current construction works, the stands for a soccer-only stadium are being built close to the edge of the playing surface. Before construction work started, the stadium had a capacity of 15,690 spectators, 9,390 of them seated and 6,300 standing. Following completion of the work, the capacity will increase to approximately 16,000 – roughly 8,800

The company’s building technology team in Dresden designed the heating, ventilation, sanitary engineering, electrotechnology and firefighting systems. The stadium is located in the valley of the River Lössnitz, and parts of its new north-east stand will span across the river. This aspect of its location also puts the stadium at risk of flooding, which happened, partially, during the severe regional

The planning and design work began in 2014, and work started on site in 2015 with the demolition of the west stand. Construction work started in early 2016, including the building of the standing terraces. Then followed the renovation of the north stand and the connected main building, which was taken into service in summer 2017. Currently, work is ongoing on the south stand, the new construction of a visiting supporters’ section to the east, and the external areas. To date, the project is on schedule and within budget, and is expected to be completed by the end of 2017.



*Why do you like building technology? Was it clear to you at an early stage in your studies that you wanted to specialise in this area?*

I started with an education in central heating and ventilation construction, which gave me a solid practical foundation. With this completed and my vocational diploma received, and my military service behind me, I studied building services and environmental engineering at the Glauchau college of cooperative education. It was important to me that my studies should have a strong focus on practical experience.

*What developments have most strongly influenced building technology and thereby also your work in recent years?*

Technology is constantly developing and it is precisely this dynamic that appeals to me in my work, which is always relating to change. In recent years, topics such as sustainability, cost developments in the energy sector, and related changes, e.g. in the German EnEV energy saving regulations, have had a strong influence. The integration of renewable energies is

Uwe Demnitz,  
Head of Technical Building Equipment

**“The dynamics of technical developments appeal to me in my job.”**

prescribed, and buildings are becoming increasingly complex – ever more technology is required in the same amount of space. This development places high demands on the coordination process among a project’s participants. A major challenge is presented by the fact that the complexity and the appropriate technical building equipment design processes are often not understood by those involved.

*What do you do when you close the office door behind you?*

I look forward to spending time with my family. I have two young children, and this

is a time that I greatly enjoy with my wife, but there is not much space in my life for recreational activities. But that will come again!

>> A major challenge is presented by the fact that the complexity of the technical building equipment is often not understood. <<



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## SILK ROAD INITIATIVE: ONE BELT – ONE ROAD

China is aiming to build a global infrastructure network, the first projects of which have already been completed or are currently in progress. These include the construction of a new Express Highway in Turkmenistan, connecting the capital city, Ashgabat, to Turkmenbashi, and Turkmenbashi's new International Seaport.

China is aiming to build a global infrastructure network, the first projects of which have already been completed or are currently in progress. These include the construction of a new Express Highway in Turkmenistan, connecting the capital city, Ashgabat, to Turkmenbashi, and Turkmenbashi's new International Seaport.

The goal of China's new Silk Road initiative is to establish new trading routes, links and business opportunities by further connecting China with Asia, Europe and Africa along five routes. From the transport sector's perspective, the success of this One Road – One Belt (OBOR) initiative relies heavily on its success in optimising transport infrastructure and related services.

### Express Highway

The 564km-long highway, with three lanes in each direction, links the capital of Turkmenistan with Turkmenbashi's new International Seaport. There will be seven highway interchanges along the route, connecting it to all of Turkmenistan's major cities. With a total investment of approximately two billion USD, the highway is currently one of the country's biggest infrastructure development projects. The OBOR initiative is in line with the "New Eurasian Land Transport Initiative" (NELTI) of the International Road Transport Union (IRU). The NELTI-1 route runs through Turkmenistan to

Turkmenbashi, where the new seaport is currently being developed. The highway is also part of the 5,100 km-long central route from China via Kyrgyzstan, Uzbekistan, Turkmenistan, Azerbaijan and Georgia to the European Union. Although officially estimated travel time on this route varies from 14 to 18 days, monitoring results show that up to 27 days might be necessary. Turkmenistan's highway development is well on its way to becoming part of the OBOR initiative. The main corridors from north to south and from east to west are currently under construction, and are expected to enter service within the next ten years. Together with Turkmenbashi's new International Seaport, the new link will play an important role in revitalizing the historic Silk Road, and will boost trade and economic ties between Asia and Europe.

In addition to two major rest areas with petrol stations, shopping facilities, restaurants, vehicle service stations and hotels, there will also be several smaller rest areas, maintenance depots and police stations along the route, providing services and ensuring traffic safety. More than 200 civil engineering structures, such as bridges and culverts, are also part of the project. A toll collection system will be established to generate the funding required to maintain the highway. In total, the project will generate around 2,000 long-term jobs for the local labour market.

**New International Seaport at Turkmenbashi**

Meanwhile, the construction works for the new seaport in Turkmenbashi are progressing well. The land reclamation and dredging works have been completed, and pile driving has started for the quay construction. As the impressive dimensions of the 120-hectare seaport become apparent on the ground, the site is also becoming very visible from the sky, e.g. on flights between Ashgabat and Istanbul. In order to achieve the goal of handing over the seaport to the client within the agreed 48-month construction period, the responsible contractor, GAP-INSAAT, has over 8,000 workers on site.

>> Together with Turkmenbashi's new International Seaport, the new highway will play an important role in revitalizing the historic Silk Road. <<

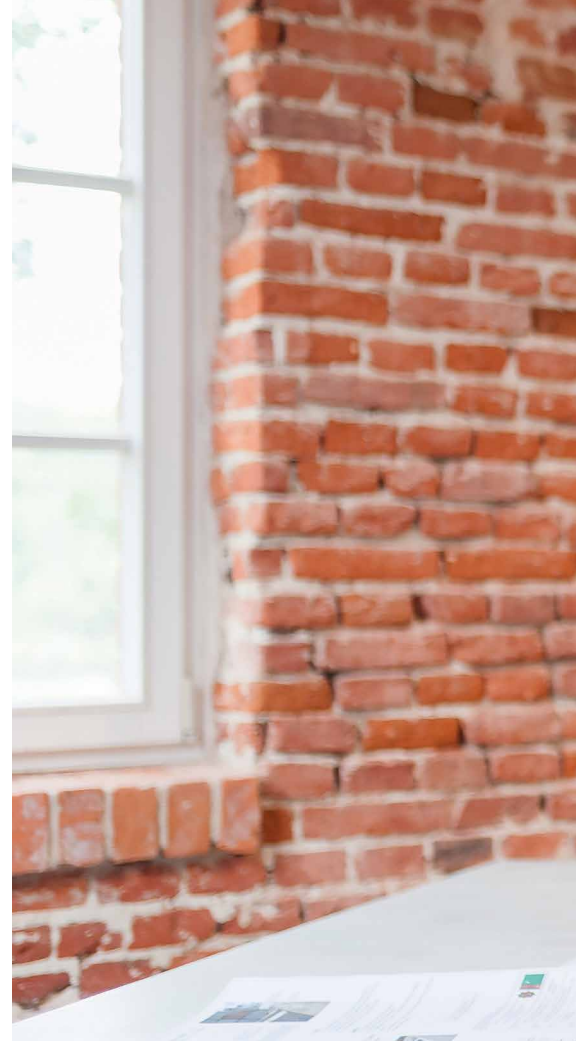
Once opened, the new international seaport will handle many types of cargo in its five terminals, covering container shipments as well as project or bulk cargo. The new Ferry and Passenger Terminal, with two additional berths for "Roll on / roll off" ships serving the Turkmenbashi - Baku route, will offer an airport-like travel experience for 300,000 passengers per year. The new shipyard will provide maintenance and repair services, both above water and underwater, for all types of ship operating on the Caspian Sea, and will have capacity to build four new vessels per year, each up to 160 metres long. Modern production facilities, with state-of-the-art equipment and technology, two outfitting quays and a ship-lift with a lifting capacity of 10,000 tonnes, are expected to increase the seaport's overall business potential and service capacity.

Container ships currently carry approximately 60% of the value of goods shipped by sea, and continue to make a major contribution to the ongoing growth in global trade. The new seaport will have a new container terminal with a capacity of 400,000 TEU per year, with its quay, of length 480

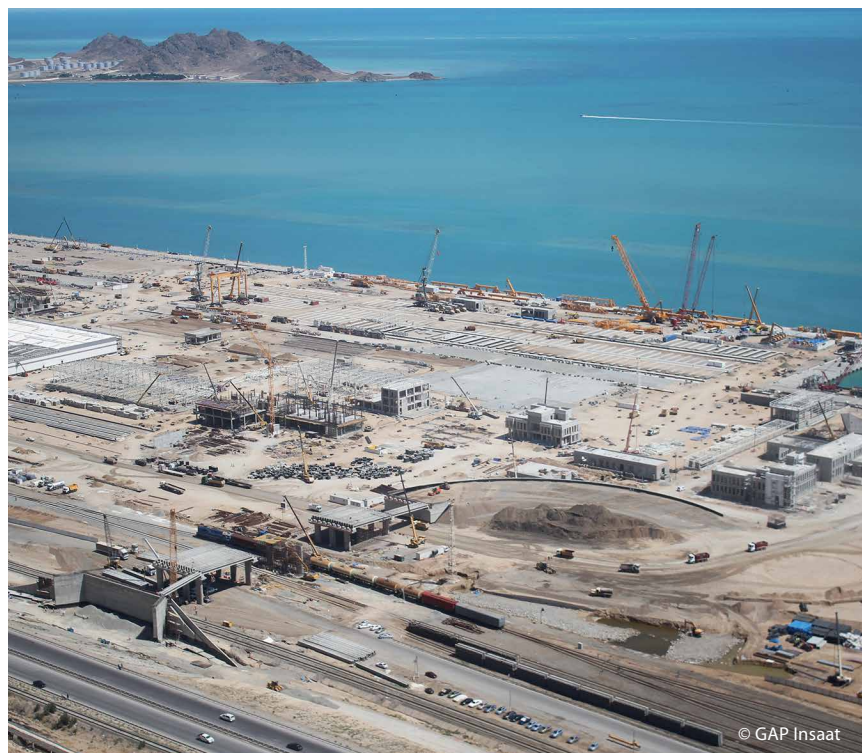
metres, allowing three container ships to be simultaneously loaded or unloaded. A real-time computerised terminal operation system will provide up-to-date information on events throughout the terminal and can be used to measure productivity gains and crane/yard operation times, and will be able to react immediately to any exceptional events.

The seaport also has two further terminals, for the shipment of general and dry bulk cargo. This cargo requires specialised equipment for loading/unloading and storage, such as cooled warehouses, silos and heavy-duty ramps. With a total quay length of 1,065 metres for both terminals, up to seven ships can simultaneously handle a wide range of cargo types – such as steel, crude metal, construction materials, grain, cement or other dry bulk goods – with a total capacity of 7,000,000 tonnes per year.

The seaport turnkey construction project is expected to be completed at the end of 2017, and the new Express Highway is expected to be opened to traffic just six months later. Both the seaport and the highway are being designed and built according to international standards using the most modern materials, equipment, systems and technologies, ensuring that these important new parts



of Turkmenistan's infrastructure will serve their purpose for many years to come.



© GAP Insaat





Torsten Retzlaff,  
Executive Director

**“We design a piece of our built environment that will be there for many decades to come.”**

*What do you particularly like about your job, especially in the international market?*

It's the wide variety of what hydraulic/marine engineering entails. In every project, we plan and design a piece of our built environment that will be there for many years. In doing this, we must consider and integrate many aspects, such as aesthetics, functionality, economic feasibility and sustainability. And every project is different. After a number of years' experience in this field I got the opportunity to work as an international consultant – a different,

>>One might only get one chance in an entire career to work on such a complex project as the international seaport in Turkmenistan.<<

challenging job. The work involves not only new technical and design aspects, but also new social and societal ones. And international work tends to be more varied and to involve a higher degree of responsibility.

*On which project have you enjoyed working the most?*

The planning and design work for the new international seaport in Turkmenistan is a wonderful project to be involved on. One might only get one chance in an entire career to work on such a complex project with overall responsibility for 1.5 billion euro in construction costs. We have played an important role in the construction of this all-purpose port, and the associated infrastructure, since the project's early stages, and will continue to do so until construction has been completed at the end of this year. At the moment, there are about 8,000 construction workers involved. We are working together with local companies on a daily basis, but the know-how of German companies – particularly in the area of technical facilities and equipment – is also contributing significantly to this major project.

*In your private life, are you able to just walk past a building site without paying it any attention?*

I do find building sites more interesting than completed structures; they allow the various construction steps required to be observed, and the structure's design and future quality to be assessed. I often ask my family if I can stop to look at a building site, and their interest level has developed, over the years, from just waiting for me to now actively looking at the site with me.

# COASTAL PROTECTION FOR THE CITY OF BEIRA

A new flood barrier is now protecting the port city on Mozambique's Indian Ocean coast, and improving the city's drainage.



Beira is an important port city on the coast of Mozambique, with a population of approximately 500,000 people. Large parts of the city are at are below sea level, and since the Indian Ocean in this area has a very large tidal range of up to 7 m, reliable coastal protection is of great importance. It is predicted that sea levels in this region will rise as a result of climate change, and that rainfall and dry periods will increase.

The Chiveve tidal river, which runs through the city for a distance of approximately 5 km, was neglected in the past, and became increasingly silted up, to the point that it no longer served as a drainage channel for the surrounding area. Rubbish was disposed of on the wetlands, and the standing water promoted the spreading of diseases such as malaria and cholera. During very high tides or storm surges in the adjacent ocean, combined with heavy rainfall, the Chiveve regularly overflowed its banks and flooded much of its catchment area – particularly the informal settlements along its banks. To address this problem, Inros Lackner designed a new flood barrier to protect Beira's city centre.

The controlled opening and closing of the barrier's gates not only protects the coastline behind the barrier, but also enables the area's drainage system to function far more effectively by creating a much-needed stormwater basin in advance of expected heavy rain periods. The barrier's effectiveness in this regard was put to the test at the end of February this year, when approximately 225 mm of rain fell on the area during a 24-hour period – a level of rainfall that, on average, is only expected once every ten years. No significant flooding occurred in the project area.

## Coastal protection and city drainage measures

Since 2013, the German development bank KfW has financed, on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ), the planning and construction of such flood protection and associated measures. Among other projects, these have included – in collaboration with GIZ (the German society for international cooperation) – the development and implementation of a drainage and waste management plan for the informal settlements.

The project also included a comprehensive plan to improve the river and the land along its banks, allowing nature to thrive there. This included dredging of the river and fishing port downstream, and planting of mangroves along the banks. Inros Lackner was contracted to provide planning and design services for all stages, from the initial feasibility study to the supervision of construction on site. The project, which was executed by a Chinese contractor, was completed on time and within budget. During the construction phase, many national and international media outlets, reported on the climate adaptation project. The site supervision

team was honoured to regularly welcome government officials, ambassadors and other delegations to the site. The opening of the Beira project, with official, traditional and religious ceremonies, took place on 31st January. The roughly 500 invited guests included the prime minister of Mozambique, the country's minister for public works, the governor of Sofala, the mayor of Beira and the German ambassador. At the start of February, the infrastructure was officially handed over by the client, AIAS, to the responsible city authorities. A second phase involves the creation of a green landscape park in the river catchment area from 2018.

Dr. Heiko Spekker  
Director International Projects

**“I have already worked on projects in about 25 countries in Asia and Africa.”**

*Why did you decide to become an engineer?*

When I was young, I watched the reconstruction of our farm in East Friesland after a big fire. I witnessed the progress being made every day, and was impressed by the various construction activities. We also lived very near the Ems dyke on Germany's North Sea coast, where I experienced a number of storm surge flooding events. So it is not that strange that I decided to become a hydraulics/coastal engineer.

*What was the subject of your Ph.D. thesis?*

The title was “Control of coastal protection elements along tidal rivers as basis for Flood and Risk Management”. It addresses the context of the analysis of the consequences of climate change. With the help of numerical simulations, I was able to show that, in addition to primary protection measures such as dykes and storm surge protection facilities, controllable flood channels and flood relief basins in combination with innovative control strategies can play a role as technical protection measures along tidal rivers. It was a demanding but very positive experience, my time as a civil engineering student and then as a research associate at the Leibniz University in Hanover.

*How did you end up working abroad? In which countries have you already had projects?*

My first trips abroad were during my studies, including some time in the USA when I received a grant to conduct research there. As

>> At the moment we work on major projects in Kenya, Tanzania, Uganda, Benin and India. <<



an academic employee, I organised student excursions to India and other places, and had the opportunity to participate in international conferences. In my time as project manager and head of department at Inros Lackner, I have already worked on projects in about 25 countries in Asia and Africa. At the moment, we work on major projects in Kenya, Tanzania, Uganda, Benin and India.

*What project do you have particularly strong memories of?*

I once had a very memorable experience during a visit to Sierra Leone for a study relating to an oil tanker quay. Somewhat unexpectedly, we spent the night in an African hut – one that didn't have electricity or running water, but that did have chickens and goats. Unlike my colleague, I managed to avoid catching malaria. Currently, our climate adaptation project in the port city of Beira in Mozambique, on which I have been working intensively since 2013, continues to be a very good experience.

**IGA**

**BERLIN**

**2017**

INTERNATIONALE  
GARTEN  
AUSSTELLUNG



# INTERNATIONAL GARDEN EXHIBITION BERLIN 2017

A sea of colours: The first International Garden Exhibition in Germany's capital city is taking place from 13th April until 15th October 2017. By the time it closes, it is expected that it will have been visited by approximately two million people.



© Frank Sperling

The newly created park landscape in Berlin's Marzahn-Hellersdorf neighbourhood is situated in a lovely scenic area centred on the Gardens of the World, the wooded Kienberg hill and parts of the water-rich Wuhle Valley. In front of the silhouette of one of Europe's biggest estates of prefabricated buildings, Berlin is celebrating, over a period of 186 days, a festival of international garden art. With the motto "A sea of colours", IGA Berlin 2017 captures the fascinating contrasts of the capital city – from intercultural themed gardens and sunny terraced slopes to big open-air concerts. In this breath-taking landscape, visitors to the IGA experience traditional garden design and inspiring exhibits promoting a green way of life. The design of the exhibition property, of area approximately 100 hectares, is based on the work of geskes.hack landscape architects, the firm VIC Brücken und Ingenieurbau, and Kolb Ripke. A cablecar system of the sort normally only seen in the mountains crosses overhead, providing an impressive bird's-eye view.

## The art of garden design in the "Gardens of the World"

The heart of IGA Berlin 2017 is the "Gardens of the World" – an area that was already internationally known but which has now been doubled in size. One of the main attractions there is the new

international gardens from all five continents, individually enclosed, which present current trends in the art of garden design. The new park areas also feature atmospheric water gardens, an English landscaped garden, a tropical enclosure with a Balinese garden and an open-air stage with room for an audience of up to 5,000 people. A modern visitor centre serves as a meeting place, venue and source of information. IGA has given new impulse to the movement towards contemporary urban development and green living. Most of the structural and landscaped additions in the IGA premises, with the extended "Gardens of the World" (previously 25, now 40 hectares) and the new Kienberg Park (approx. 60 hectares), will remain in place after the end of IGA 2017. The Kienberg Park will be freely accessible to all, and will, together with the expanded "Gardens of the World", be one of the area's unique tourist attractions.

## IGA Berlin 2017 GmbH

Blumberger Damm 130  
Access via Zinndorfer Strasse  
12685 Berlin, Germany  
Tel.: +49 30 700 906 -314  
[www.iga-berlin-2017.de](http://www.iga-berlin-2017.de)

## Design services for the IGA premises

The new park landscape was created by the company Grün Berlin GmbH in implementing the tourism master plan "Gardens of the World". Inros Lackner was contracted, following a competition process, to provide planning and design services in relation to the engineering structures and the technical equipment, both temporary and permanent. The contract also included construction monitoring services for the areas on the Kienberg hill and in the Wuhle Valley, and for the extension areas in the "Gardens of the World".



## BOOST FOR SHIPBUILDING IN INDIA

A new shipyard for ship repair work is being built on India’s biggest artificial island, close to the city of Cochin – one of the world’s most important historic port cities.

The shipbuilding industry in Cochin has a long tradition, but production there has declined in recent years, making it necessary to adapt to modern technical standards in order to thrive in the international market. The construction of the new repair yard is part of the expansion strategy of Cochin Shipyard Ltd. (CSL), which was established in 1972 as a state-owned company and has since then led the way in the Indian shipbuilding industry. It has acquired one of Cochin’s largest shipyards, and intends to expand the area’s ship repair industry to serve an important future market. In 2014, after a selection process that lasted over a year, CSL awarded Inros Lackner the contract to provide design and consultancy services for the construction of an international ship repair facility on Willingdon Island, India’s largest artificial island.

The property, which has an area of 42 hectares and a waterfront of length 800 m, already has a quay of length 86 m, a dry dock of dimensions 66 m x 12.5 m x 4 m, and repair workshops dating from 1938. These facilities, which have to date been operated by the port – Cochin Port Trust – are now being supplemented by a new, modern ship lift (platform size 120 m x 25 m, lifting capacity 6,000 tonnes) with a transfer system, up to six shore-side repair spots and an outfitting pier of length approximately 535 m.

The execution design work is currently being completed, and the contract to supply the ship lift has already been awarded to a German mechanical engineering consortium. Construction

of the shipbuilding and hydraulic/marine infrastructure begins in autumn 2017, and construction work is expected to last approximately four years.

### Inros Lackner services:

- Development of a space usage plan including a shipbuilding design concept with respect to personnel and technical equipment
- Hydraulic modelling to establish sedimentation rates
- Proposal of measures to reduce the amount of dredging required for maintenance purposes
- Detailed feasibility study including cost estimates, construction schedule and preliminary design drawings
- Design calculations
- Preparation of individual tender documentation packages for the various trades
- Support during the tender phase
- Consultancy during contract negotiations
- Support of the client during construction, installation and entry into service for all trades

Oliver Schwarz,  
Director International Projects

**“In the last year, I spent 60 days in Asia – but without any holiday feelings.”**

*You are an engineer and a traveller – how many days did you spend in Asia in the last year?*

At least 60, which means about a week each month on average. I was in Myanmar, Indonesia, Cambodia, Sri Lanka, India and the Maldives. These are great places to visit, but unfortunately, with all my project meetings and meetings with clients and authorities, I had no time for holiday feelings.

>>For my first major project, I spent two years in Limbé in Cameroon, working on the construction of a new shipyard. <<

*What do you like about the international market?*

I like to travel, and love to immerse myself in my work in other cultures. It is a wonderful change, and supplement, to the everyday work life in Germany. Closeness to the project I am working on, and to the client, is also important to me. Planning and design

work is often done in Germany, but I like to closely follow the work on the ground, and work closely with the local project team. In each country, I get to learn about the mentality and cultural background of its people – which is always interesting, even if it sometimes presents challenges in my project management work. I also often have opportunities to utilise my engineering knowledge more freely, where demands are not as strictly defined as in Germany.

*What was your first project?*

That was a somewhat “unconventional” blockwork structure in Karachi, where my father was working as a civil engineer and lived with the family for several years. I learned a lot from my father, and still work on projects in Karachi today. For my first major project, I spent two years in Limbé in Cameroon, working on the construction of a new shipyard. After that I spent three months in Mozambique, and since then I have been based back in Bremen. Now, digitalisation makes it possible to move more easily from one project to another, but in the past it was common for engineers to live abroad with their families for extended periods.

*You are currently spending a lot of time in India. What does a typical workday look like for you there, and how is it in Bremen?*

People often expect that a typical workday in India must be very different, very exotic, but that is not the case. Of course, I participate in many meetings when I am in India. So I travel more, fly to Delhi or Mumbai to meet with the authorities, keep in touch with clients and make new contacts. As in Bremen, I am also office based in India, and the workday begins early and ends late. My trips abroad are relatively short, so I am very focussed while there on my project work and on client acquisition. Then, back in Bremen, I have more free time, especially for family and friends.





## SUSTAINABLE WATER MANAGEMENT IN VIETNAM

During the five-year execution phase of this project, Inros Lackner provided project management services for the new construction and renovation of a number of pump stations and for the building of a new “Water Resources University” for educating local specialists in optimally irrigating and draining agricultural areas.

Inros Lackner has many years of successful project experience in Vietnam – for example, in providing General Planner services for major projects in Hanoi such as the National Convention Center, the Hanoi City Museum and the National Assembly House. Projects in the south of Vietnam have included planning, design and on-site supervision of a new international container port. In addition to projects in the areas of complex buildings and hydraulic/marine engineering, we are becoming increasingly involved on infrastructure projects in Vietnam.

### Strengthening Water Management and Irrigation Systems Rehabilitation Project

In 2010, in cooperation with two Vietnamese engineering firms, Inros Lackner participated in an international competition for the “Strengthening Water Management and Irrigation Systems Rehabilitation Project” which was tendered by the Asian Development Bank (ADB). The tendered work included project management of

the improvement of irrigation and drainage of agricultural areas, and supporting the client in establishing a new “Water Resources University”. The German-Vietnamese project team came out on top against the international competition, and signed the contract at the end of 2011. The need to develop a sustainable water management system has resulted from the country’s fast-growing population and the increasing use of formerly agricultural land for building purposes, which have made the medium-term food security of several of the country’s provinces no longer certain.

The project area is 210,000 hectares in size, and one of the largest irrigation and drainage areas in the Red-Thai Binh River Basin. The extensive consultancy services provided by Inros Lackner to the Asian Development Bank, the Ministry for Agriculture and Rural Development and a number of local authorities in Hanoi and in various provinces, in relation to optimising the current situation, had three main focuses:



- Planning and design, tendering and supervision of the construction of ten new high-performance, low-maintenance pumping stations, and of the rehabilitation of two existing pumping stations, with extensive technical buildings and facilities,
- Establishment of a new “Water Resources University” with over 13,000 students for the education of tomorrow’s civil engineers who will sustainably improve, develop and operate the country’s water supply and distribution infrastructure, and
- Setting up of well-functioning management structures.

It was anticipated that the execution of the project would require a period of 4.5 years until the summer of 2016. The project team consisted of Vietnamese and German specialists in the areas of urban water management, hydraulics, tendering and contract award, the environment, relocation, building construction, technical equipment, business management, GIS, IT, SCADA (Supervisory control and data acquisition) and further education. Twice per year, the project was audited with respect to quality, schedule and costs and evaluated by representatives of the Asian Development Bank and the applicable government ministries and administrations. All three of the main goals were met within the project’s timeframe.

Dr. Marion Radegast worked on the project from 2012 until 2016, and spent numerous extended periods in Vietnam during this period. .

>> The execution of this extensive project in close collaboration with our Vietnamese colleagues came with an exciting and interesting learning process involving challenging technical work, in-depth comparison of the Vietnamese and German approaches to daily work processes, multifarious journeys of discovery into the Vietnamese culture and religion, respect for old Vietnamese traditions, wonderful memories of our time together and – last but not least – delicious food such as the typical Pho Ba and Pho Ga. Xin chao.<<





>> Between 1983 and 1985, I conducted research in the field of “remote sensing” using ultra-light aircraft – in Hungary, because there were aviation limitations in East Germany at the time. <<

Dr. Marion Radegast,  
Deputy Department Manager  
Infrastructure & Environment

**“I have participated on many interesting projects in my 32-year career.”**

*Dr. Radegast, why did you decide, in the course of your career, to obtain a Ph. D.? What was the subject of your thesis?*

With the thesis subject “remote sensing”, my Ph. D. supervisor offered me a chance to work in an area that is quite “different”. He also made it possible for me to commence the research study in the fourth year of my degree studies, while still studying for my bachelor’s degree, so I was able to defend my thesis in 1985 after three years of research.

Between 1983 and 1985, I spent time at the University of Debrecen in Hungary several times a year, flying over selected areas with ultra-light aircraft and various cameras and picture materials. We made our own images and tested materials for use in relation to different civil engineering issues. At that time, the use of ultra-light aircraft was permitted in Hungary, but not in East Germany, where aviation limitations applied that were only lifted after Germany’s reunification.

We also used remote-controlled small aircraft for similar purposes at the university in Nitra, now Slovakia. And I also spent time at the Sciences Institute of the Academy for Physics of the Earth

in Potsdam, evaluating multi-spectral images for the purpose of remote sensing. Of course, that was all challenging but very interesting.

*What projects from your long career do you have particular memories of?*

I have worked on many interesting projects in my 32-year career so far. In 1991, after the country’s reunification, I left the university and joined a large engineering firm, where I first designed complete wastewater disposal and rainwater drainage networks for entire towns and communities. That was an important milestone, but the projects I worked on in Vietnam have particularly fascinated and influenced me. This is particularly true of “my” project, “Strengthening Water Management and Irrigation Systems Rehabilitation“ for three provinces in the region of Hanoi, on which I worked from 2012 until 2016 and which I will always remember. The experiences I gained during my long visits to Vietnam were and remain very special – especially with respect to ability to work in a team, team spirit, respect for others, discipline, acceptance and perseverance.

*Why do you like working as an engineer?*

The career offers many interesting opportunities to work in very different fields. At Inros Lackner, which often takes on the role of General Planner on complex projects, the work tends to be interdisciplinary and varied. Every project is different and constantly demands new ideas.

*What do you do in your free time?*

I try to use my free time as wisely as I can. In nice weather, we are often fishing at the Baltic Sea or enjoying our garden. Since I am now a grandmother, our two grandchildren in Hamburg are our top priority, and I also try to spend a lot of time with my parents, who are almost 90 years old, and my mother-in-law. Boredom is not part of my life.

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