



SPECIAL



GENERAL PLANNING

Comprehensive and smart!



Dear readers,

How will the role of General Planner develop in the future? This is a question we must ask ourselves, especially considering our responsibility to future generations. Sustainability and digitalisation present new opportunities and are key factors of competitiveness in the fields of planning, design and construction. Established value chains are also being challenged by the dramatic developments of recent years and by evolving trends. In addition to the shortage of skilled workers, these include price and interest rate increases as well as geopolitical conflicts. The necessary change process involves the continuous adaptation of familiar structures and corporate values and the corresponding development of roles and responsibilities. To some extent we are still doing pioneering work here, balancing between tradition and transformation. What is important? In this new issue of our magazine, we examine this question and provide an insight into some current projects on which we are providing General Planner services.

Company Directors
INROS LACKNER SE

2 EDITORIAL

4 NEWS

6 KICK-OFF

▶ 8 GENERAL PLANNING: COMPREHENSIVE AND SMART!

8 What is important? In conversation with Univ. Prof. Dr. Ing. Katharina Klemt-Albert, RWTH Aachen, and Lutz Hempelt, INROS LACKNER SE

12 Factors affecting change

14 PROJECT INSIGHTS

14 **Building with vision**
Individualisation of the use of building space in Schwerin's Technology and Commercial Centre

18 **West End Ferry Terminal on Tortola**
Construction of a new ferry terminal in the British Virgin Islands

20 **Supreme People's Court of Vietnam**
General Planning for a government building

24 **Fishing port of Nouadhibou**
Focus on sustainable fishing industry in Mauritania

26 **Coastal protection in Helgoland**
Dyke enhancements on Germany's only non-coastal island

28 **Sel de Mer Hotel, Da Nang**
The first high-rise building that we designed in Vietnam

30 **Berlinertordamm Bridge in Hamburg**
General Planner services for replacement construction

34 CLIENT PORTRAIT

34 **Eurogate**
Moving the global economy

36 PERSPECTIVE

36 **HTG AWARD**
Sustainable design concept for modular onshore power supply systems in ports

39 IMPRINT



NEWS



Development of Skandinavienkai Terminal
Extension of Berth 5 to meet the needs of bigger ships: Skandinavienkai is one of Europe's largest Ro-Ro and ferry ports, with connections from northern Germany to Scandinavia and the Baltic States. The infrastructural heart of the port are its ferry berths, each of which is designed to meet the needs of certain ship types. Developments in the shipping industry require these berths to be adapted from time to time, preparing the port to meet future needs. Following Inros Lackner's provision of extensive planning and design services for the extension and development of Berth 5, the team was also responsible, within the framework of the adopted collaborative partnering model, for the local site supervision. Since the extended berth entered service in June 2023, the terminal is now optimally equipped to meet the needs of ships with a length of up to 250 m and a width of up to 38 m. The berth is also being equipped with an onshore power supply system, with Inros Lackner providing technical supervision services.



Delegation from Togo

Visit to German port infrastructure: As part of a technical excursion supported by GIZ, representatives from the port of Lomé visited the cities of Bremen and Hamburg in October. This trip gave the participants the opportunity to visit port and logistics infrastructures at the Jade-Weser-Port and the Freight Village (GVZ) in Bremen. The intensive examination of German port structures promises to provide valuable impetus for the operation of the port of Lomé. Inros Lackner has accompanied the development of the port in Togo since 1960, which has been continuously adapted to current needs over the years. Today, it is a key transit port for the Sahel countries of Burkina Faso, Niger and Mali. The excursion was successfully organized by Hamburg Port Consulting and Inros Lackner in Bremen.



Port of Dar es Salaam

Modernisation sets milestone in Tanzanian trade: The port of Dar es Salaam is currently undergoing a remarkable transformation based on a successful partnership between the Tanzania Port Authority (TPA), the construction company CHEC and Inros Lackner. This cooperation began in 2012 with the preparation of a feasibility study for the redevelopment of the port by Inros Lackner and is now nearing completion with the final work to deepen the access channel. The focus was on expanding handling capacities; a new Ro-Ro terminal has gone into operation and existing harbour infrastructure has been renovated and modernised. Inros Lackner not only carried out the feasibility study, but was also commissioned by TPA with project management and construction supervision, underscoring the company's comprehensive involvement and responsibility.

Radisson Hotel Group

New development in Rostock City Harbour: The new Radisson Hotel building is being built in the Silohalbinsel area of Rostock's city harbour. The modern five-storey building will have 180 rooms and an adjoining office complex for the neighbouring company, Centogene. The hotel will offer its guests a fitness and wellness area, event rooms, underground parking, dining facilities in the inner courtyard and a roof terrace with a view over the Warnow River. Inros Lackner is responsible for the soil investigation work, for the design of the building structure and the technical building systems, and for site supervision. Completion is scheduled for the end of 2024.



Cooperation with Djibouti

East Africa as a key region: Dr. Klaus Richter, Executive Director of Inros Lackner SE, travelled with representatives of BLG Logistik and dbh Logistics IT AG to Djibouti in the Horn of Africa. They were welcomed by the Chairman of the Djibouti Ports and Freezone Authority (DPFZA), Aboubaker Omar Hadi, and the Ambassador of the Federal Republic of Germany, Dr. Heike Fuller. The discussions covered a wide range of topics on possible cooperation in various key maritime areas. These included the training of engineers, the optimization of cold chain logistics and the expansion of intra-African transport corridors and the necessary infrastructure. In addition to the talks, the delegation visited various port infrastructures in Djibouti. This meeting followed a visit by representatives of the Djibouti Ports and Freezone Authority to Bremen in the spring of this year. The professional exchange underlines the intensive cooperation in the maritime sector between the two countries.

G20 Investment Summit

Focus on the African economy: The important G20 Investment Summit to promote private sector investment in Africa as part of the 'Compact with Africa' initiative took place in Berlin on the 20th of November. Federal Chancellor Olaf Scholz and Economics Minister Robert Habeck welcomed numerous African heads of state and government, ministers and ambassadors as well as many representatives of the German business community. Dr. Klaus Richter, Managing Director, and Christian Esser, Managing Director in Togo, took part on behalf of Inros Lackner. Inros Lackner has been successfully implementing infrastructure projects in more than 30 African countries for over 50 years and has extensive expertise in cooperation on the African continent. The meeting underlines the German government's commitment to promoting sustainable economic development in Africa.



Total renovation of Hachmann Quay

Site supervision with special demands in the Port of Hamburg: Hachmann Quay ("Hachmannkai") in the Port of Hamburg is currently the scene of a demanding construction project in which a new quay wall is being constructed in front of the existing heritage-protected one. On behalf of the Hamburg Port Authority (HPA), Inros Lackner is responsible for the local site supervision. One particular challenge is to install the main structural components of the new structure of length 465 metres – consisting of 180 steel pipe elements with a length of up to 27 metres – with great precision and without causing vibrations. Another complication is the requirement to keep the existing quay wall, which is over 100 years old, free from heavy loads – meaning that the quay cannot be used for the construction work. As a result, the work is being carried out from a jack-up barge on the water. In addition to the company's project responsibilities, Inros Lackner is also supervising, in the course of its site supervision work, a master's thesis on the subject of Building Information Modelling (BIM).

GENERAL PLANNING

Comprehensive

The work of the General Planner is characterised by coordination and integration, interdisciplinary thinking and the early involvement of all parties. As General Planners, we can provide many specialist engineering services in-house and we also offer client representation, interface management and project management services. This involves the evaluation and use of new forms of collaboration and the consistent integration of digital planning and design processes.



Smart

In the context of technology, smart systems are characterised by efficiency and effectiveness. A "smart factory" is a production facility that brings together people, machines and extensive data in a single digital network. It learns from experience, and analyses and interprets data sets. Applying the term "smart" to the role of the General Planner signifies the development and use of intelligent, efficient planning and design processes that involve a high degree of automation.



> 20
specialist departments

> 800
general planning projects

> 85 years
of experience



► Planning and design processes will continue to develop quickly in the coming years. Digitalisation, the demand for climate-neutral production and AI are key factors in this regard and present great opportunities to increase efficiency.

WHAT IS IMPORTANT?

The planning and design processes of the future are intelligent, adaptable, efficient and sustainable.

New markets, digitalisation and our responsibility for the future demand new focuses and perspectives. For the General Planner, it relates to how complex value chains are viewed with their diverse structures, processes, resources, project participants and interactions. What opportunities to optimise can we take advantage of in making our work, and the wider industry, more sustainable?

In conversation

What challenges are currently shaping the planning, design and construction industry?

One of the major challenges facing the industry is to reduce the negative impact of construction on the environment, considering the structure's entire lifecycle. This requires the use of sustainable processes and environmentally friendly building materials while saving energy and resources. The efficiency of construction processes, and productivity, must also be increased. Far too often, construction projects are characterised by delays and cost overruns. However, the application of innovative technologies and optimised planning, design and construction processes can improve efficiencies, enabling projects to be completed in a more predictable manner. The aforementioned challenges are exacerbated by the shortage of skilled labour. The demand for qualified workers in the planning, design and construction industry is high, but the supply is limited. Therefore, it is very important to attract and retain talented and well-educated employees in order to enable project demands to be consistently met.

How can the industry meet these challenges?

A strong focus on digitalisation is essential, but this necessitates a change of thinking in the industry. The coronavirus pandemic demonstrated how a crisis can provide the impetus for new ways of doing things and new perspectives, and for moving digitalisation forward. As with any change, it is crucial to bring the involved people along. Reservations and concerns must be taken seriously for the changes to be accepted and implemented. This requires open and transparent communication. Staff should be equipped with the knowledge and competence needed to support the change. At the same time, the expectations and capabilities of the younger generation must be integrated into the company's everyday work

**Univ. Prof. Dr. Ing.
Katharina Klemt-Albert**
*Institute of Construction
Management, Digital
Engineering and Robotics
in Construction at RWTH
Aachen University*



so that fresh perspectives and innovations can be brought in. In this way, the challenges presented by the changes in the construction sector can be met successfully, facilitating sustainable and future-proof development.

"It is up to us to identify opportunities and to make planning, design and construction processes more sustainable and more efficient!"

How can digitalisation contribute to the development of sustainable solutions and processes?

The combination of digitalisation and sustainability presents particular opportunities for improvement. The use of digital technologies enables, for example, energy consumption and material selection to already be considered during the design phase, supporting the efficient use of resources. Simulations enable different scenarios to be evaluated and new materials to be tested, thus supporting decision-making that increases eco-efficiency. Automated processes can help to conserve resources while reducing waste and emissions. They simplify the identification and documentation of materials and

components, which can be very helpful, for example, when these are removed from existing structures and may be used for further projects. Large amounts of data are processed quickly and efficiently. Digitalisation and sustainability complement each other and offer many opportunities to conserve resources in the construction and operation of structures, thus making a positive contribution to the environment and to society.

What does that mean for the role of the General Planner, for example?

As General Planners, we have to take a holistic approach, considering all aspects of a project. This means that we integrate the concept of "circular construction", and a view of a structure's entire lifecycle, into the planning and design right from the start. We must develop a comprehensive approach to managing the interactions between the various trades and specialisations, and take into account new methods for assessing and integrating sustainability considerations in the planning and design processes. It is up to us to identify opportunities and to make planning, design and construction processes more sustainable and more efficient. By using digitalisation as a tool we can make a significant contribution to moving the industry forward. And that is what we will do.

significant in the context of our work as a General Planner, where the bringing together of information from the design models of various individual specialisations into one overall model, and the unerring application of digital quality controls, are of fundamental importance. And finally, the industry must come to terms with an increasing shortage of skilled workers. Employee retention must remain an important focus, and our mission statement, our corporate goals, our management philosophy and our approach to sustainability are important in this regard. In this entire change process, more and more management tasks come into play for us as architects and engineers, in addition to our technical work.

What is the focus of your work in the company?

In terms of the company's daily business, I am responsible for our Complex Buildings department with the specialisations of architecture, structural design, building services and construction management. In terms of company-wide responsibilities, my duties include quality management and technical management. A key objective is the adaptation of our work processes to suit changing conditions, with an increasingly strong focus on our work as General Planners. We also aim, together with our employees, to optimise our processes with the help of surveys and workshops, thus enhancing the quality of our work and increasing our productivity while also further improving internal communication. The trends I already mentioned show that we as a company are in a constant process of change. I find this exciting and am glad to have the opportunity to help shape these changes.

How can digitalisation affect the success of General Planning work?

Digitalisation is having a strong influence on the planning, design and construction processes. The introduction of the BIM approach is central to this. Compared to conventional planning and design methods, this modern alternative enables complex projects to be implemented more efficiently, thanks in part to digital collision checks and other check routines. Another advantage is the transparent communication between the design partners and with the client, facilitated by virtual 3D representations and reviews. This improves coordination during the various planning and design phases. We introduced the BIM approach to our work processes at an early stage, and invested in developing the required IT capabilities, human resources and responsibility structures. A central challenge in this ongoing process is the technical realisation of a uniform data structure – among the project's planners, designers and constructors, and then for use by the structure's users – within the framework of a General Planning project.

How can compliance with the principles of ESG (environmental, social and governance) be integrated in the company's work practices?

As a company, we attach great importance to fair corporate governance and social commitment. We continue to develop our corporate values in close consultation with our staff, establishing appropriate strategies for the future. Our ESG compliance is therefore

constantly under scrutiny and an integral part of our corporate philosophy. As part of our effort to expand our expertise relating to climate, we established our Sustainability Working Group in 2019 to improve the awareness of our employees about emissions and the efficient use of resources – especially as this may be relevant in their planning and design work. As a consultant, we have a responsibility to keep our knowledge up to date and take a holistic approach to our work so that, together with clients, we consider not only the initial construction costs but also the total lifecycle costs.

"The increasing integration of BIM methods in our project work will significantly change the planning, design and construction process – affecting the way we work, how we communicate and how work product is delivered."

What added value does the General Planning approach offer clients?

The General Planning approach to contracting planning and design services differs from the traditional approach in that a single overall contract, covering a range of complex planning and design services, is awarded to the General Planner. This reduces effort for the client, who benefits from a well-coordinated, interdisciplinary planning and design team – resulting in time and quality advantages and increased cost reliability. The client has only one contract partner who is responsible for coordinating the work of the various specialist planners and designers. The General Planner is then responsible for any delays in completing the contracted work. The use of General Planner services is especially beneficial in the case of technically inexperienced clients or clients with a lean management team.

"In this entire change process, more and more management tasks come into play for us as architects and engineers, in addition to our technical work."

What do you see as the challenges of the near future?

Increasing digitalisation and the resulting potential use of AI in the planning, design and construction industry will affect processes as well as roles and responsibilities. The work carried out by our employees will continue to change. There will also be societal change and a new understanding of work/life models. Managing this change process in harmony with the company's values will be one of the major challenges of the coming years.



Lutz Hempelt
Executive Director

In conversation

What changes are currently shaping the planning, design and construction industry?

We are facing dramatic changes that are resulting from various trends. For example, current interest rate policies pose new challenges for the financing of construction projects, and high inflation is causing construction prices to rise further. The way we construct has also changed. There is an increasing demand for construction projects to be carried out in a sustainable and environmentally friendly way, considering the entire lifecycle and with a view to reducing CO₂ emissions. At the same time, the global production of construction materials can result in supply bottlenecks and scheduling difficulties. Another important trend is digitalisation. The increasing integration of BIM methods in our project work will significantly change the planning, design and construction process – affecting the way we work, how we communicate and how work product is delivered. This is particularly

FACTORS AFFECTING CHANGE

Efficiency

The General Planner's role on a project is centred on overall responsibility. The client entrusts a single partner, who assumes sole legal responsibility, with the job of managing all design and coordination processes. The close, intensive collaboration in the interdisciplinary team that comes together to deliver the project ensures efficiency, with the fast flow of information enabling solutions to be developed quickly, while minimising the risk of delays and cost overruns.

Expertise

In principle, it does not matter much whether the services are provided by one company or whether subcontractors are used. What really matters is the experience previously gained in working on projects with other firms, the company's level of expertise, a tried-and-tested IT system, and a well-established culture of productive communication. The biggest challenge in the coming years will be the shortage of skilled workers and the resulting effort required to maintain high levels of technical expertise.

ESG criteria

General Planners have a responsibility to help shape the future of construction, regardless of legal requirements. To this end, it is important to firmly anchor the principles of sustainability in how work is carried out – both in-house and in all working relationships. This creates trust, enabling the benefits of implementing sustainable measures, e.g. using alternative building materials, to be convincingly communicated.

Digitalisation

There is no alternative to systematic digitalisation. Germany is falling behind when it comes to the consistent use of digital planning and design tools for all processes from the initial concept to the structure's service phase. The ability to efficiently share information and work product among various disciplines is a clear advantage of the General Planning approach – achieving interoperability using systems that work together smoothly.



**GENERAL
PLANNING**



BUILDING WITH VISION

Individualisation of the use of building space in Schwerin's Technology and Commercial Centre

The office and production floor space of the Technology and Commercial Centre (TGZ) in Schwerin is currently being expanded. The need has increased for new space for start-up companies, whose founders have been realising and developing their business ideas here since 1990. Especially for technology-oriented companies, the TGZ constitutes an important network in the state of Mecklenburg-Vorpommern. The new building, with a gross floor area of approximately 6,650 m², is characterised by its efficient and sustainable design. The rooms can be individually adapted to the needs of start-ups, increasing the cost-effectiveness of their use. The architectural focus is on the combination of functionality and aesthetics – for example, in the design of the set-back stairs structures, the glazing of the west-facing connection elements and the "protruding frame" design of some of the otherwise structurally identical windows.

As well as taking on the role of General Planner, Inros Lackner is responsible for site supervision and the building's external facilities. The project is being partially funded by the government's department of trade and industry and the City of Schwerin, which are supporting the growth of this important technology and commercial centre as project partners.

Efficient modular construction

A special feature of the new building is its design with four individual modules and a set-back top floor. The similarly designed modules are connected by shared stairs structures. The new build-

ing offers 1,500 m² of production space and 1,700 m² of office space. Its frame construction facilitates flexible use of the production areas of area 55 m² to 130 m². These are equipped with lighting and heavy-voltage current, and compressed air and air extraction plant. A 630-kVA transformer is available for power supply. The size of the office spaces can also be individually adapted to suit the tenants' needs, from small to large rooms. This ability to customise the rented space provides flexibility for start-ups, enabling them to keep costs low at first and then giving them room to expand at a later stage. A highlight is the conference room of area 200 m², which spans across the two middle modules and offers guests not only modern technology but also a wonderful view of Lake Ostorf.

Structural design

The new building is being constructed of reinforced concrete, with robustly designed services cores stiffening the overall structure. Prefabricated elements are being installed to form slabs, exterior walls, columns and beams, with in-situ concrete and aluminium façade panels also being used. Designs and materials were chosen with sustainability and energy efficiency in mind. For example, the use of reinforced concrete and aluminium, which each offer a long service life, will minimise maintenance requirements.

A special feature of the new building is its set-back top floor. The similarly designed building modules are connected by shared stairs structures.

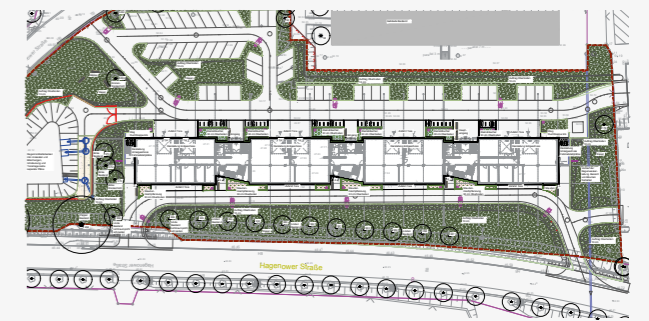
Energy efficiency

A strong emphasis was placed on exceeding the statutory energy standards and on facilitating lifecycle-long recycling of the construction materials. The building envelope, which is very well thermally insulated and includes optimised glazing and shading features, together with the building's intelligent, energy-saving lighting system, make it possible to substantially reduce the need for heating, air conditioning and electricity. The connection to the local district heating system, with its excellent primary energy factor, also helps to optimise the building's heating. Window ventilation elements promote nighttime cooling and improve the building's overall energy balance. Pre-installed photovoltaic units facilitate the use of renewable energy. All proposed measures were first evaluated in a comprehensive energy plan.

Planning of demolition work

Anke Himmelreich
Project Engineer

My team managed the site clearance aspect up to the design development stage. The scope of the planning work included the demolition of a multi-storey residential and office building and a garage, both of which were built in the 1970s. During the site investigation, various pollutants were identified. Therefore, the planning included pollutant disposal in accordance with health and safety regulations, as well as the demolition-related structural analysis and the required construction site logistics. Further tasks included detailed planning for the disposal of the various demolition waste materials, including those contaminated with pollutants, as well as planning the disconnection of services and considering the relevant nature conservation issues.



Design of services infrastructure

Jana Schubert
Project Manager

As General Planner, we carried out extensive planning and design work (HOAI service phases 1 to 7) in the field of transportation infrastructure and engineering structures. This included work relating to the provision of underground services such as drainage systems, drinking water supply, district heating and electrotechnical systems, as well as modifications to existing infrastructure. In this process, we coordinated closely with the relevant public bodies, such as the utility companies and the fire brigade, and integrated their requirements into our planning and design work. Special challenges were posed by the ground profile, which included a height difference of up to 4 m between the east and west sides of the property, and the approach to soil management specified by the client involving the reuse of excavated materials and resource-friendly disposal. This planning and design work was carried out in collaboration with the company GIG (Gesellschaft für Ingenieurgeologie mbH). We are currently in the construction phase, and it is exciting to see how our design ideas are taking physical shape.



External areas

Around the new building, a distinctive ambiance is being created for the staff of the companies in the TGZ. The views of the green surroundings and Lake Ostorf are a key focus of the design. Only half of the property's total ground area of 10,000 m² will be sealed. A rainwater retention basin is required to slow down the flow of rainwater into the lake.

Balancing complex requirements

Gregor Treichel
Architecture Project Manager

In my work as a project manager, my main task is to consistently adhere to a demanding schedule while at the same time ensuring the high quality of the planning and design services, and to always be available to advise the client. By maintaining a good overview of the project as a whole, I can proactively address potential problems at an early stage. A deep understanding of the complex interfaces involved is essential in this regard. I also believe transparent communication is very important, as is proper consideration of the individual skills and capabilities within the team. This coordinated cooperation among all the team's members leads to a successful project outcome.

Project coordination

Inros Lackner's General Planner role on this challenging building construction project demanded close cooperation between all disciplines, right from the start, to ensure that all the individual design requirements could be met while maintaining high standards in terms of energy efficiency and sustainability. The company's responsibility for the project's planning, design, coordination and implementation will continue beyond the completion of the new building's construction. Interface coordination on a project of this scale is critically important, requiring clearly defined responsibilities, regular meetings and well-managed coordination processes.

A key requirement of this General Planning project was the ability to individualise the use of the building's floor space. This was achieved by the building's frame construction, which enables the floor plans to be easily adapted. Clever technical solutions were integrated to meet the entrepreneurial needs of start-ups.

In conversation

Why did you, as the client, decide to adopt the General Planning approach for this project?

One of the main reasons is the comprehensive support provided over the project's entire duration and the associated continuity in terms of personnel. All aspects of the project are coordinated by the General Planner – for example, definition of tasks and responsibilities; management of the interface between architecture and engineering design; supporting the tender and contract award processes; provision of local site supervision services; and the subsequent pursuit of possible warranty claims. This start-to-finish project management, provided by a single partner that can itself supply many of the planning and design services required, is a clear advantage. Clashes are avoided, and solutions to potential problems can be agreed at an early stage. We therefore decided to conduct an EU-wide tender process for the General Planner services.

What special features are characteristic of the project?

Together with the architects, we succeeded in planning and designing the building to serve its purpose well. We were able to optimise the ratio of total space to lettable space, minimising the amount of ancillary space. It is also possible to alter floor plans quite easily, enabling us to meet the needs of our tenants. We rent to start-ups, and often it is initially not clear where the journey will lead. The first step is usually to rent relatively small spaces in order to limit the economic risk. Our smallest production unit has an area of 55 m² and is technically equipped in a way that facilitates prototype development and low-volume production. The use of dry partition walls to create offices enhances flexibility – for example, office sizes can be changed at any time, or new doors can be added. This ensures long-term use of the building by diverse companies and industries. 3D models were used to coordinate the work required to develop this very distinct utilisation concept. These enabled us to visualise

► www.tgz-mv.de

Thomas Möller
Managing Director of the
Technology and Commercial
Centre (Technologie- und
Gewerbezentrum e. V.
Schwerin/Wismar)



what it would be like to move through the new building, helping our questions about specific areas to be answered more efficiently. The overall outcome of the project thus became more understandable and more tangible for us. That was impressive.

What is your current conclusion?

We are in the fortunate position that we are relieved of the substantial effort associated with communication during the various project phases – including between diverse specialisations such as structural engineering and building technology. If problems arise or decisions have to be made, the project manager steps forward and takes responsibility. That's why we opted for the General Planning approach, and it works. Even if serious challenges arise due to external influences, the project manager advises us competently and is always available to us. We can also talk to department heads or the company management if the need ever arises. It is very positive that this availability persists, even though Inros Lackner is now a large company.

"We are in the fortunate position that we are relieved of the substantial effort associated with communication during the various project phases – including between diverse specialisations such as structural engineering and building technology."





WEST END FERRY TERMINAL ON TORTOLA

New construction of the busiest ferry terminal in the British Virgin Islands

Until 2016, the ferry terminal in West End on the island of Tortola was the busiest seaport in the Virgin Islands, handling 170,000 passengers per year. About 40 percent of all arrivals in the territory were handled through West End. During the 2017 hurricane season, the ferry terminal suffered severe damage from Hurricanes Irma and Maria, causing significant disruption to travel between Tortola, Jost van Dyke and the U.S. Virgin Islands. Both residents and visitors arriving by ferry, water cab, private or charter yacht were affected.

As a result of the destruction, the terminal remained out of operation until August 2019, when it reopened with temporary facilities. In order to bring the terminal back into full operation, Inros Lackner was commissioned to create designs for a resilient, efficient and state-of-the-art passenger terminal in accordance with internationally

The General Planning project was implemented by teams within the Inros Lackner Group in Germany and Vietnam. The international collaboration led to an innovative and sustainable concept through the exchange of ideas and know-how.

proven standards. The planning and design phase was carried out in close collaboration with the Virgin Islands Recovery and Development Agency (RDA) and relevant stakeholders such as the BVI Ports Authority, Immigration, Police, Customs, Tourist Board, Health Authority and the ferry operators and cab drivers. The newly designed ferry terminal in West End, with an area of 12,000 square meters, will be twice as large as the previous facility and will be able to accommodate more passengers, several ferries and private yachts. It will be constructed using sustainable materials. This redesign aims to create a modern, technology-oriented ferry port. With a handling

capacity of 200 passengers per hour or 200,000 passengers per year and parking for 100 vehicles, the terminal is designed to provide a fast and efficient service and give visitors a positive first impression. Separate handling of passengers arriving by private yachts, charter yachts or water cabs will be implemented to further enhance their experience. This will boost both tourism and local commerce, create additional jobs and provide the community with an improved local ferry port.

Info

Design services:

- Demolition and removal of existing facilities and infrastructure
- Construction of a new terminal building
- Provision of infrastructure for the terminal site including utilities (electricity, fresh water, etc.) and waste water treatment plant
- Construction of a new wharf for two 120-foot and one 75-foot ferries
- Construction of a jetty for six private yachts with a length of up to 40 feet
- Construction of a barge ramp
- Installation of new revetments along the shoreline



SUPREME PEOPLE'S COURT OF VIETNAM

General Planning for a government building

In a record construction time of just 399 days, the new building of Supreme People's Court of Vietnam in Hanoi was built on a plot of area 6,417 m². The building was awarded the title "Building of High Quality" by Vietnam's Ministry of Construction.

"Vietnam's new Supreme People's Court, located in the historic city centre of the metropolis of Hanoi, manages to engage in an appropriate urban planning and architectural "dialogue" with the hundred-year-old Palais de Justice. In this project, Inros Lackner had the opportunity to design a government building for the first time. Excellent cooperation with the Supreme Court as the client, and with our planning and design partner Coninco, made the new building's quick completion possible."

Torsten Illgen,
Chairman, INROS LACKNER Vietnam LLC



Info

Equilibrium between old and new: The new building of the Supreme People's Court of Vietnam was designed in a contemporary "classical" architecture style based on the historical buildings and the character of the part of the city in which it is located. The new building is adjacent to the old, historic Palais de Justice with its French colonial architecture. The two structures together form a harmonious architectural ensemble with a green inner courtyard, in which the balance between old and new is expressed in space and form. The imposing courthouse was built in just 399 days on an area of 6,417 m². The total cost of the six-storey building with its four basement levels was around 30 million euros. The award-winning building was inaugurated at the end of October 2021, with the ceremony attended by the Chief Justice, Nguyen Hoa Binh, as well as the President of the National Assembly, Nguyen Thi Kim Ngan, and Vietnam's Deputy Prime Minister, Truong Hoa Binh. Collaborating in a joint venture with the Vietnamese company Coninco, Inros Lackner Vietnam took on the role of General Planner for the project.

The historically significant building from 1906, designed by the French architect Auguste Henri Vildieu, also remains in use by the Supreme Court as an administrative building. Its two historic courtrooms have been restored and opened to the public, and its impressive top floor has been converted into a Museum of Justice. A memorial to the victims of the December Uprising of 1946 was also integrated into the ensemble. The outdoor areas were restored to

Scope of services:

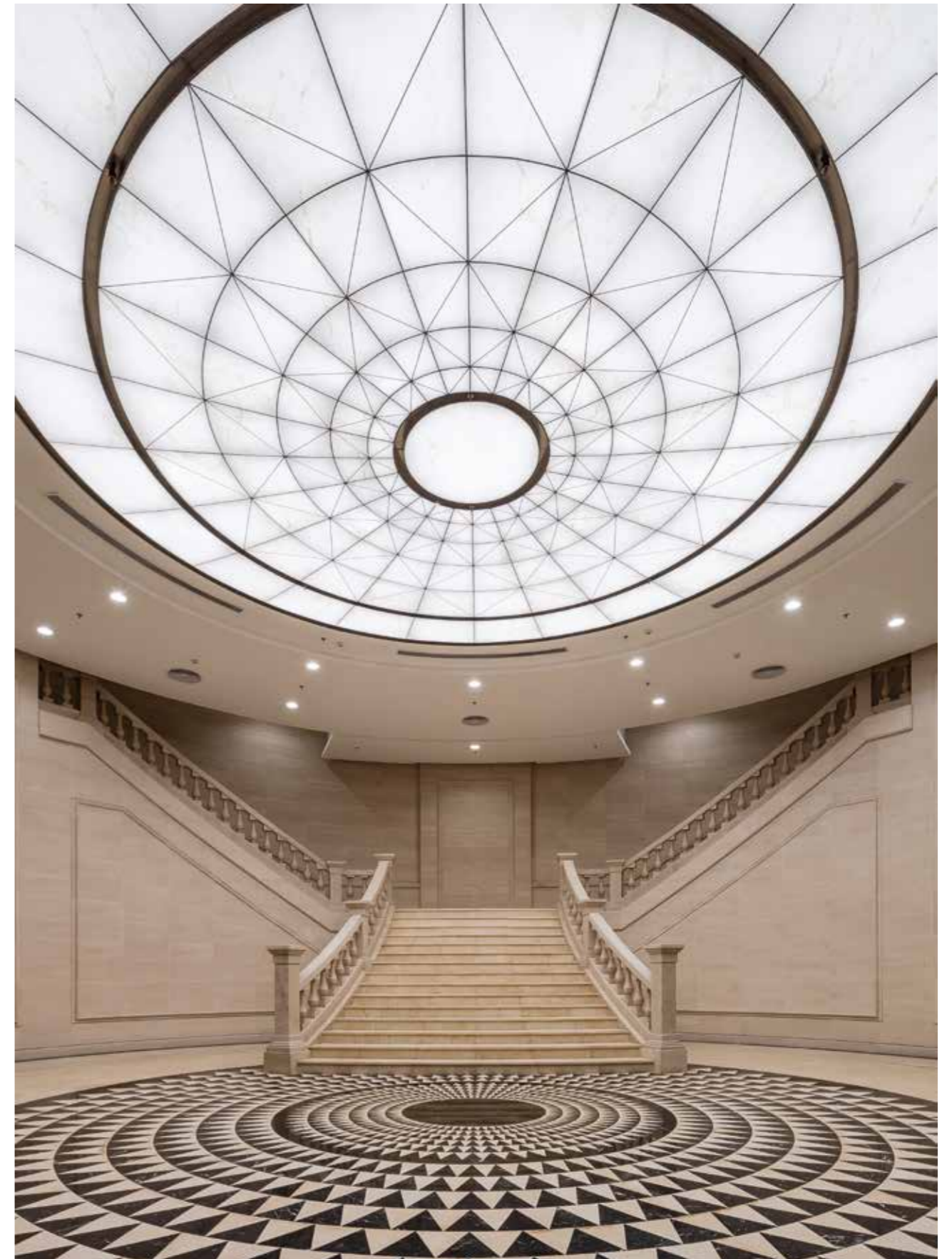
- Architectural design
- MEP design
- Structural design
- Interior design

Key data

- 32,000 m² of gross floor area
- 6,420 m² of land plot area
- 10 floors (incl. 4 basements)

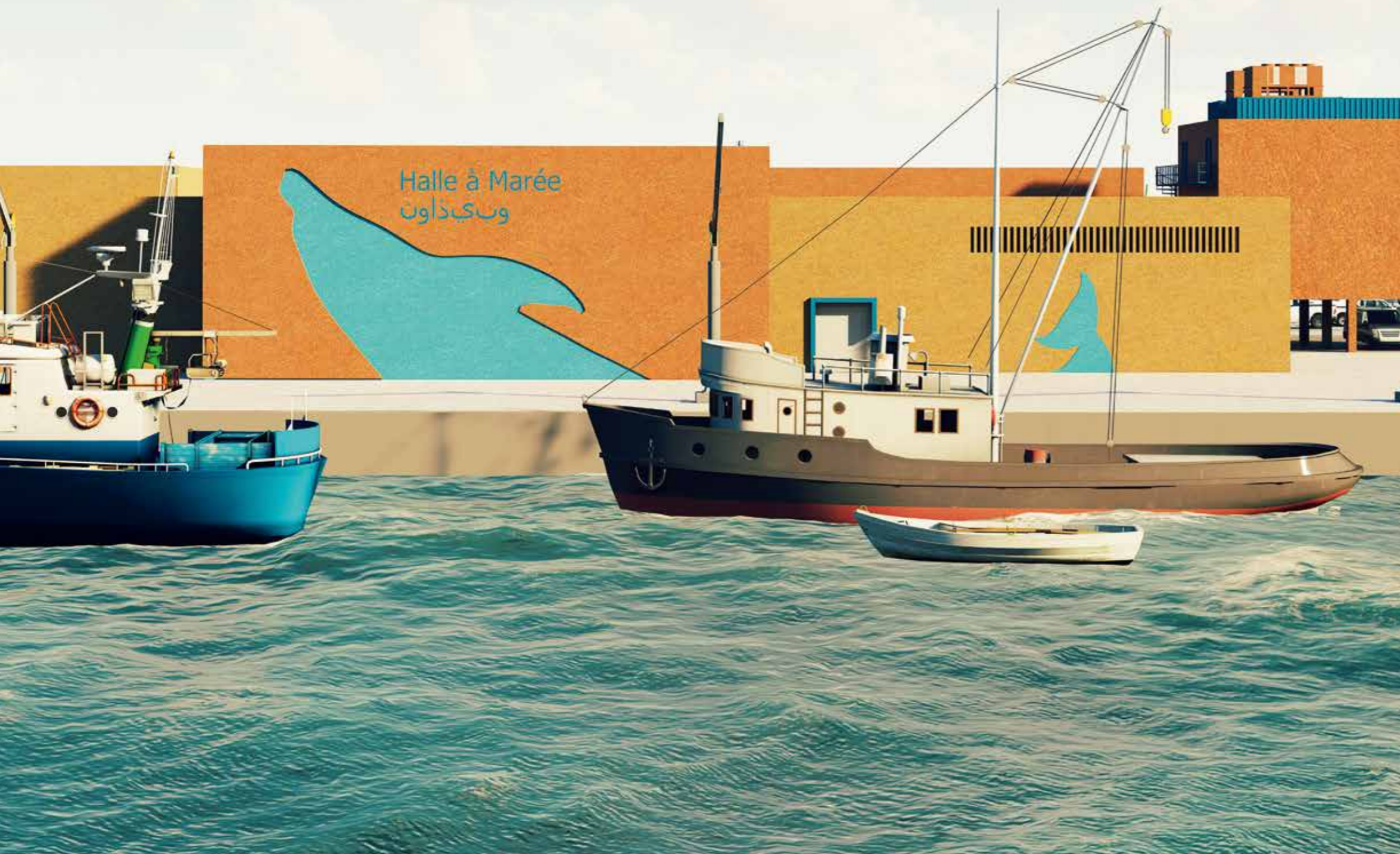
Award: Building of High Quality
(Ministry of Construction, Vietnam)

their original state as a tropical garden, and the century-old dragon plum trees provide shade in the redesigned courtyard. The reshaped courthouse complex of old and new is in keeping with the urban narrative of a tropical garden city in the early 20th century.



FISHING PORT OF NOUADHIBOU

Focus on sustainable fishing industry in Mauritania



General Planning for the modernisation of traditional structures

Inros Lackner, in consortium with Cofrepeche, is responsible for the modernisation of the artisanal fishing port of Nouadhibou, the second largest city in Mauritania. The key component of this project is the design of a new modern fish auction hall combined with over 400 storage units for the fishermen. It will provide much better protection from heat, sand, insects and toxins with all the necessary services (e.g. fresh water, ice and electricity) and uninterrupted product transfer between the boats and the auction hall. The functional layout takes account of the latest developments in the sustainable fishing industry. The modernisation also includes the expansion of the local infrastructure. The project exemplifies the cooperation between the German offices of Inros Lackner and the international locations in Togo, Vietnam and Cambodia.



COASTAL PROTECTION ON HELGOLAND

Dyke enhancements on Germany's only non-coastal island

The coastal protection measures on the north-east coast of the island of Helgoland are being adapted in accordance with rising sea levels – and specifically, today's design sea level. The flood protection dykes do not meet current requirements in terms of height or construction. The dykes, built between 1952 and 1955, were already damaged by the severe storm surge of 1962 and subsequently repaired. Now they are being adapted in accordance with the design flood level of 4.70 m above mean sea level (+4.70 mNHN).



Inros Lackner was contracted by the responsible state authority (Landesbetrieb für Küstenschutz, Nationalpark und Meeresschutz Schleswig-Holstein [LKN.SH]) to plan and design the dyke improvements over a length of approximately 1 km. First, wave overtopping calculations were carried out in accordance with the EurOtop manual. This manual contains case studies, example calculations and current techniques for predicting wave overtopping of dykes and other coastal protection structures. The theoretical calculations showed that the height of the dykes would have to be increased disproportionately in order to limit wave overtopping to the usual acceptable rate of 0.5 l/(s m). In consultation with the client, an alternative solution was developed which would meet the flood protection requirements while avoiding unnecessary impacts on the public and on local tourism during the implementation phase.

Evaluation of alternative options

In order to minimise the increase in the dyke's height and thus also the associated widening of its footprint, proposals were developed that deviate from the typical design of a standard earth dyke. For this purpose, physical model tests were carried out by the Coastal Research Center (FZK) at the applicable university institutions in Hanover and Braunschweig. The effectiveness of the different coastal protection proposals was evaluated on the basis of wave overtopping measurements. Force measurements were used to determine the required input values for the structural design calculations. The Inros Lackner team monitored the testing process closely, enabling design options to be refined as appropriate. Through the step-by-step optimisation of the geometry in coordination with both LKN.SH and FZK, it was possible to reduce the wave overtopping rate as required while keeping the height as low as possible.

Detailed design of the selected option

The next step involves the structural design of the walls and surge elements, with the reinforced concrete structures generally shaped and aligned for wave deflection. The focus is on achieving the design requirements as economically as possible. Special logistical challenges arise due to the island location, and the bombing of the island during World War II means that the construction work may be hindered by the discovery of explosive ordnances or widespread construction rubble.

The special challenge is to harmonise the various technical aspects in optimising a solution that takes into account the results of the physical model tests and the demands of constructing in a protected area of a non-coastal island where the needs of the tourism industry must be considered.

Info

Client:

Schleswig-Holstein's state agency for coastal protection, national parks and marine conservation (LKN.SH)

General Planner services:

- Project design and structural design
- Technical supervision of physical model testing
- Tendering and technical supervision of subsoil investigations
- Preparation of the site investigation report
- Geotechnical calculations
- Surveying services
- Assistance with explosive ordnance disposal (optional)
- Local site supervision (optional)



Creative solutions are needed!

Tim Brunert

Project Manager in the field of hydraulic and coastal engineering

The mix of innovative technical solutions, environmental planning requirements and logistical demands can only be mastered with the commitment and the willingness to compromise of everyone involved. Being flexible and curious enables us to develop optimal solutions with the required technical expertise.

Complex maritime engineering work

The family-run Sel De Mer Group commissioned Inros Lackner Vietnam to design the hotel with 160 rooms – all with an ocean view – a spa facility with swimming pool, a rooftop bar, a medium-sized conference centre, and various shops and restaurants. The building's functional layout presented Inros Lackner's interdisciplinary team with a number of particular challenges. For example, the site on which the building was constructed had an area of just 900 m². Incorporating a development density of under 60 percent, a very compact hotel building was designed with 26 levels. All technical equipment areas are almost invisibly integrated at each level, and the car parking in the basement was designed to function automatically. Due to the building's footprint-to-height ratio, the structure's design required a specially developed combination of load-bearing walls and core elements without transfer beams. Inros Lackner Vietnam developed the design concept and prepared all the required designs relating to architecture, structural engineering and technical building systems.



SEL DE MER HOTEL, DA NANG

The first high-rise building that we designed in Vietnam



BERLINERTORDAMM BRIDGE IN HAMBURG

General Planner services for replacement construction

Hamburg's Berlinertordamm Bridge is located in the central district of Hamburg-Mitte, on the border between St. Georg and Borgfelde. It was built in several stages from 1902 onwards and has four parallel parts, with a length of about 86 m. The structure carries Berlinertordamm Road over three suburban railway tracks, two mainline tracks and Bürgerweide Road, with two traffic lanes per direction plus a turning lane as well as footpaths, cycle lanes and a cycle route. Structural inspections revealed deterioration that had the potential to affect the bridge's durability, and in some cases its structural safety, as well as the safety of the traffic it carries. To manage these risks until the structure could be strengthened or replaced, a load restriction was imposed for heavy goods traffic.

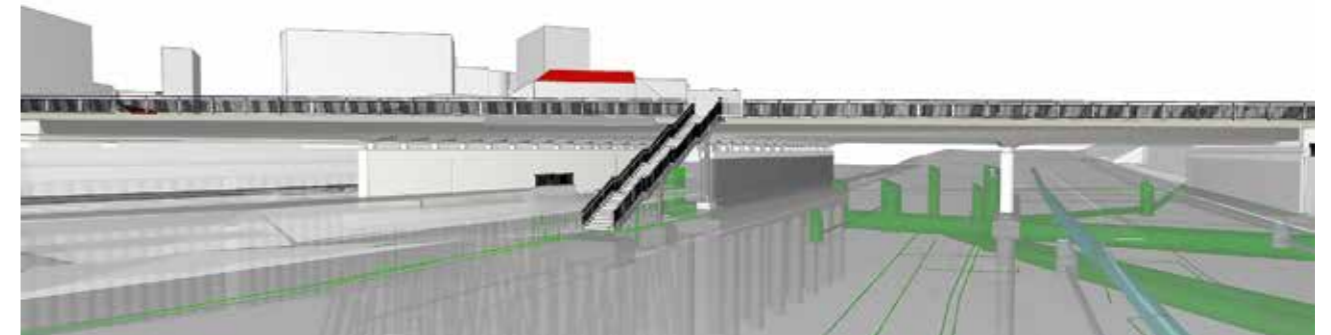
Construction of a replacement structure

Considering the poor condition of the 63- and 121-year-old structures, it would not have been possible to adequately address the problems by repair alone – an approach that would be very costly and associated with considerable risks. Due to the bridge's low structural classification and the structures' serious deterioration, and taking all other technical aspects into account, it was concluded that it would be most economical to construct a replacement structure. Inros Lackner was commissioned by the City of Hamburg, represented by the State Office for Roads, Bridges and Waterways (LSBG) to provide General Planner services relating to the planning and design of traffic

facilities and engineering structures. Various complicating factors had to be taken into account, including the adjacent control centre of the local elevated railway, the heritage-protected air-raid shelter to the south of the eastern abutment, the railway infrastructure of DB Netz, the suburban railway station of DB Station & Service, and various pipes and cables. Recognising that the project would have a significant influence on the area's urban landscape and heritage, the new structure's design was integrated accordingly into the existing built environment.

Structural details of the new bridge

Structural design:	Four-span continuous girders of composite construction (small box girders)
Foundations:	Both deep and shallow foundations
Bridge class:	Road traffic LM 1 according to DIN EN 1991-2/NA
Loading:	Traffic loads according to Eurocode
Angle of crossing:	74.80 gon (structure axis)
Spans:	26.73 m, 22.03 m, 21.01 m and 20.80 m (along structure axis)
Total length:	90.57 m (along structure axis)
Clear width:	76.79 m



Result of the evaluation of alternative options

A comprehensive study of the proposed design options concluded that the optimal solution, taking account of structural design, construction phasing and economic considerations, was a four-span bridge of composite steel construction. The 13 longitudinal steel girders, which are designed as small box girders with haunching at the column axes, together with the load-distributing deck slab of prefabricated reinforced concrete elements with in-situ concrete connections, create a very slender superstructure. The prefabrication of many structural parts and the use of a crane to lift these into position helps reduce the construction time and minimises the required track closure times for the suburban and mainline railways. Considering the importance to traffic of the Berlinertordamm Bridge, the selected option was also concluded to be the best option in terms of speed of project completion and from a safety perspective. In future, the needs of pedestrians will be met by 2.65m-wide footpaths on both sides of the bridge structure. Cyclists will be able to make use of a 4m-wide two-way cycle route on the north

side, and on the south side of a 2m-wide one-way cycle path which will connect to a newly planned cycle lane of the nearby "Borgfelder Strasse" project. An important objective was to significantly improve ease of use for bicycle traffic and to enhance the safety of pedestrians and cyclists. With the addition of 4m-wide planted troughs, the "Horner Geest" landscape axis will be connected to the "Alster-Bille-Elbe" green corridor. The planning and design work was carried out in a well-coordinated and model-based manner using the BIM approach. The construction work will commence in 2024 and is expected to be completed in 2027.

The BIM approach was used to create all the specialist models and to prepare the tender documentation. This facilitated development of a well-integrated design, complete with a model-based quality check.

Info

General Planning scope

- Civil engineering structure (HOAI service phases 1, 2, 3, 4, 6)
- Structural design (HOAI service phases 2, 3, 6)
- Traffic engineering
- Transport infrastructure planning and design
- Project management

Services:

- Planning and design of pipework and cabling infrastructure
- Planning of demolition work
- Planning of construction process
- Planning of construction-phase traffic management
- Supporting on-site investigations and the preparation of expert reports
- Advice on construction design
- Health and safety coordination

Precise planning and digital coordination

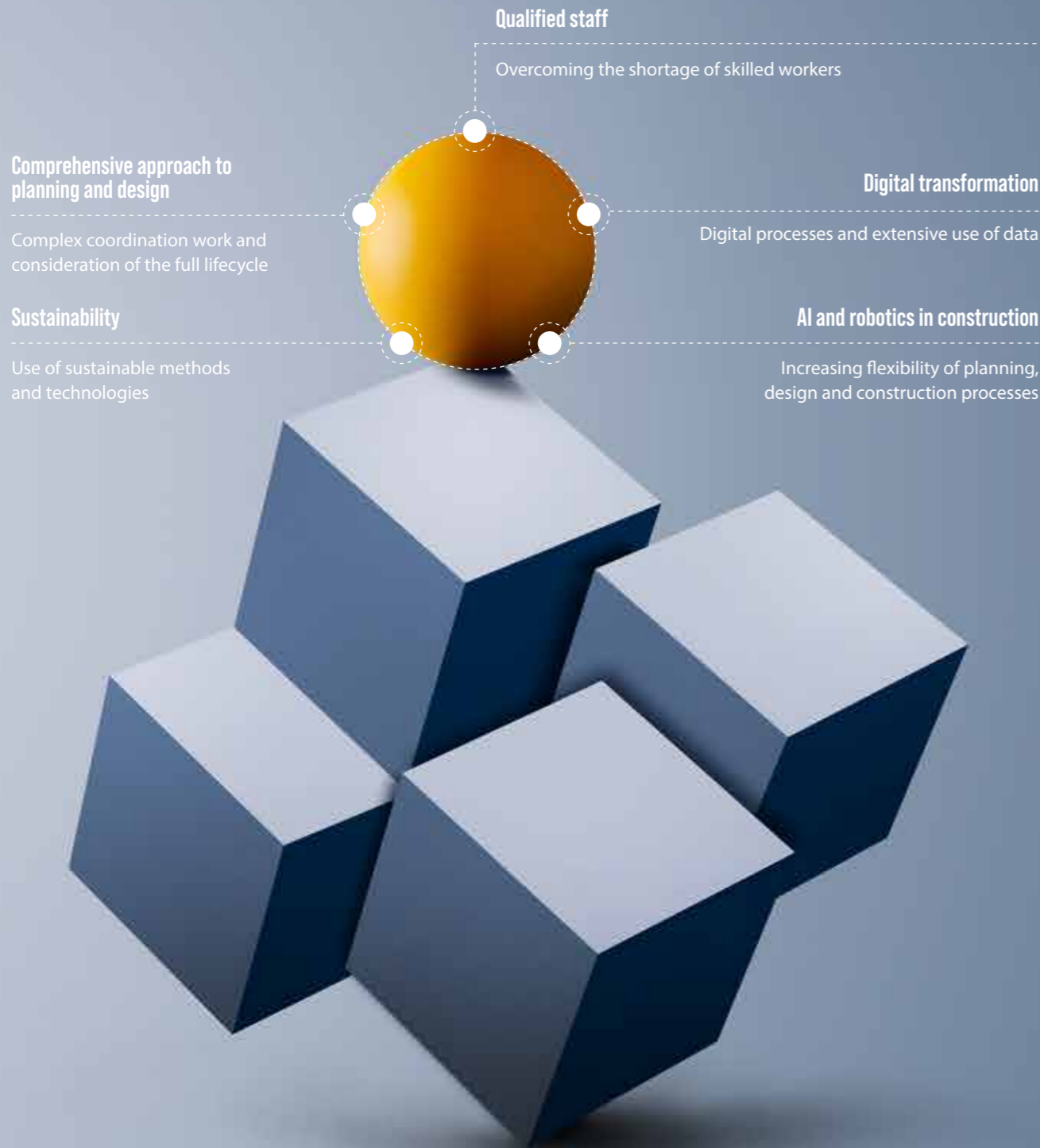
Dr.-Ing. Jörg Alex
Head of Structural Engineering

Existing underground and above-ground installations and structures in the area presented significant challenges for the project team. Demolition and construction work was planned in great detail to ensure the preservation of adjacent structures. It was also necessary to maintain road and rail traffic during the construction phase. This required extensive planning and coordination between the various parties and their design activities.

Using the design software Card_1, Allplan and iTWO, the model checker Solibri and the coordination software DESITE, the design models for the different specialisations were created, exchanged, checked and combined. After the quality check, the design models for the various specialisations were finalised and all-encompassing 2D plans were created.

WHAT IS IMPORTANT?

Combining tradition and transformation



SUPPLEMENT, NOT SUBSTITUTE!

The fields of application for digitalisation are diverse. It has enormous potential, but it is no substitute for well-trained staff. Only a highly qualified team of architects and engineers with appropriate training in the use of digital tools and methods can ensure the success of General Planning work on widely varying construction projects. Well-trained employees are the key to success, and maintaining an appropriately skilled workforce is important for the future of the company – especially considering that the shortage of skilled workers is likely to get worse in the coming decades.

45 %
“Shortage of engineers”

What factors substantially affected your company from an economic perspective in the year 2021?

VBI Business Survey 2022

89 %
“No”

Are you able to fill vacant engineering positions quickly and with appropriately qualified personnel?

VBI Business Survey 2022

How can the challenges be addressed?

- Investing appropriately in recruitment activities
- Considering trends such as part-time work and early retirement
- Increasing employer attractiveness
- Offering qualifications for on-the-job training
- Developing a new understanding of work/life models



EUROGATE

Moving the global economy

EUROGATE has established itself as the leading shipping-company-independent container terminal operator in Europe. Globalisation and increasing competition among ports demand future-oriented decision-making, complete dedication and 100% customer focus. These are the challenges we address every day.

Container handling in seaports is our core business. In 2022, we handled approximately 11.9 million TEU at our nine terminal locations. As a shipping-company-independent container terminal group we operate, together with our sister company Contship Italia, terminals on the North Sea and in the Mediterranean with excellent connections throughout Europe.

In addition to container handling, we offer additional "box-related" services such as seaworthy packaging and container storage, maintenance and repair. Our intermodal transport network connects our sea terminals in northern and southern Europe with important european economic centres.

Our success is partly based on our ability to form long-term partnerships and alliances. In Bremerhaven, we are involved in joint ventures with the terminal-operating companies of the two currently largest shipping companies, A. P. Moeller-Maersk and MSC Mediterranean Shipping Company. The Hamburg shipping company Hapag-Lloyd is our partner in Wilhelmshaven and Tangier (Morocco), and in future will also be our partner in Damietta (Egypt).

The head office of the EUROGATE Group is located in Bremen.



► www.eurogate.eu

EUROGATE GmbH & Co. KGaA, KG
Präsident-Kennedy-Platz 1A
28203 Bremen
Germany

Inros Lackner has provided planning and design services for a number of EUROGATE projects. These include stability analyses at Container Terminal CT 1 for heavy goods handling and the construction of a new crane system for a multimodal transport terminal at the EUROGATE container terminal in Bremerhaven. Here, as in Wilhelmshaven and Hamburg, condition assessments of the lighting masts and foundations are currently underway. Inros Lackner is also acting as General Planner for the EUROGATE, Contship Italia and Hapag-Lloyd consortium in Damietta, Egypt. The container terminal there will commence operations in 2025.

HTG AWARD

For sustainable design concept

Our team consisting of specialist engineers in hydraulic engineering and electrical engineering, in consortium with Fichtner Water & Transportation GmbH, received the 2023 sustainability award from the Hafentechnische Gesellschaft (HTG). The project team was honoured for its convincing concept for modular onshore power supply systems in ports. The innovative solution makes a significant contribution to the transition to sustainable energy sources and environmentally friendly technologies. The onshore power supply systems enable ships to switch off their diesel generators on land and instead use 100% green electricity from the public grid. This measure significantly reduces CO₂ emissions, as well as emissions of pollutants such as sulphur oxides and nitrogen oxides.

"Together with our clients and partners, we work to promote sustainability for the sake of future generations. We are delighted to have received the HTG Sustainability Award, which we see as recognition of our wide-ranging professional expertise."

In conversation

What particularly impressed the jury and led to the company's being presented with the 2023 HTG Sustainability Award?

I think what especially impressed the jury was the modular scalability of our onshore power supply systems. Their versatility of use sets them apart as a solution to the important challenge of implementing onshore power supply systems in European ports. Their modular design enables them to be efficiently adapted to suit different types of harbour infrastructure and they are currently being used in various projects, such as the Aarhus container terminal in Denmark. I am delighted that our work in this field has been recognised by the jury.

Are there any specific aspects that were highlighted as being particularly pioneering?

Our solution combines IEC-compliant design with needs-based application. A single system can meet the needs of several ships simultaneously, depending on their individual sizes and actual power consumption. This innovative approach enables costs to be substantially reduced, both in terms of system infrastructure and of the provision of power grid connectivity. This key aspect was central to our submission, and the jury recognised its significance.

What does the award mean to the team?

Winning the sustainability award is a special acknowledgement of our team's efforts. We are all thrilled! Every day, we focus on developing resource-saving and CO₂-reducing solutions. Our work designing and building onshore power supply systems enables us to make a real impact in this regard. Throughout Germany, Inros Lackner has more references than any other company in the design of onshore power supply systems. The key factor here is our interdisciplinary teamwork, with everyone, from electrical engineers to hydraulic engineers, making his or her own specialist contribution.

Tobias Günzl
Head of Hydraulic
Engineering and
Waterway Construction

Tobias Günzl has worked at Inros Lackner for 24 years. With his extensive expertise and dedication, he has played a leading role on various projects in the field of onshore power supply systems.



IMPRINT
INROS LACKNER Special
© 2024

Publisher

INROS LACKNER SE
Rosa-Luxemburg-Str. 16
18055 Rostock, Germany
Telephone +49 381 4567 80
Fax +49 381 4567 899
rostock@inros-lackner.de
inros-lackner.de

Drafting and editing

IN PUNKTO design communication
in-punkto.com

Layout

sandra-zenkert.com

Photographs

Page 6, 12, 26 Cakan/stock.adobe.com
Page 8 Joel Filipe/Unsplash
Page 14, 16 Technologie- und Gewerbezentrum e.V. Schwerin/ Wismar
Page 30, 31 AnyMotion GmbH (Visualisation of Berlinertordamm Bridge)
Page 34, 35 EUROGATE GmbH & Co. KGaA, KG

Translation

Colm O'Suilleabhain/acemarketing.ch

Printing

Druckerei Weidner GmbH





INROS-LACKNER.DE

Berlin | Bremen | Cottbus | Dresden | Freiburg | Hamburg | Hanover | Munich | Potsdam | Rostock | Schwerin | Stuttgart |
Woerth am Rhein | Angola | Benin | Cambodia | Cameroon | Congo | Czech Republic | Guinea | India | Kenya | Mozambique |
Pakistan | Senegal | Tanzania | Togo | Vietnam