BAUER SPEZIALTIEFBAU

EN

YESTERDAY AND TODAY FOR TOMORROW'S FUTURE

PROFOUND

These are our services, and they are by no means apparent or of minor importance. They reliably support below surface, often hidden from the clients' eyes.

As a wholly owned company of the BAUER Group, we have been specializing for more than 60 years in everything that happens underground. And in the process, we shape the development of specialist foundation engineering. With novel ideas and innovative methods, we work on sites around the world and establish the basis for unique construction projects as a team. From excavation pits for complex residential facilities to foundations for the tallest buildings in the world, soil improvements on land or in water, or repairing cut-off walls and enormous dams: Our expertise is based on decades of experience, continual development work and the specialist knowledge of our employees. As experts in specialist foundation engineering, we deliver the most economically efficient solution for every task and execute all kinds of soil improvement work, bored piles, anchors and micropiles, soil mixing techniques, diaphragm walls and cut-off walls, grouting and soil freezing, sheet pile walls and offshore foundations. In our work, we rely on groundbreaking innovations as well as digital work routines, processes and tools. This enables us to ensure the highest level of transparency for everyone involved, while maintaining optimal quality. During the execution of our projects, our focus is on efficiency and sustainability above all. For us, sustainability means future viability. Accordingly, the development of resource-efficient, environmentally compatible methods and technologies is a clear focus. Our goal: to minimize our carbon footprint. To this end, we reduce the environmental strain caused by specialist foundation engineering, use raw materials more efficiently, and sustainably manage projects in an environmentally compatible way.

After all, we have a "Passion for Progress." With the work we do today, we are shaping tomorrow's future.

Come and dive with us into the world of specialist foundation engineering.

We hope you enjoy reading!

The Management Board
of BAUER Spezialtiefbau GmbH

ACHIEVING GREAT THINGS TOGETHER

Specialist expertise, innovative ideas and patented methods – that's what BAUER Spezialtiefbau GmbH offers and lots more. But the most important thing of all are our employees. Day in, day out, they do their best to realize unique construction projects around the world. They help to shape our company with their experience, commitment and knowledge. And make it the innovation leader in specialist foundation engineering. One team with one vision. Enthusiastic about new developments and ready for the future. The key to our success.

We rely on open interactions and constructive dialog. Our Bauer values form the basis for a strong community.

Responsibility
We rely on mutual trust and encourage each other to make decisions independently. We overcome challenges by working as a team. The principles of integrity, reliability and correct behaviour govern our daily actions.

Openness
As an internationally operating company, we are open to new ideas and have the courage to make changes. The diversity of cultures and variety of people at our company make us who we are.

Appreciation
We put people first. We interact on an equal basis and treat each other with respect and honesty. Maintaining a positive attitude, we work together in trusting collaboration with our employees, customers and partners.

Innovation
We enthusiastically develop ideas and sustainable solutions for the challenges of the future. Our international experience and many years of expertise provide the foundation of our innovative capacity.

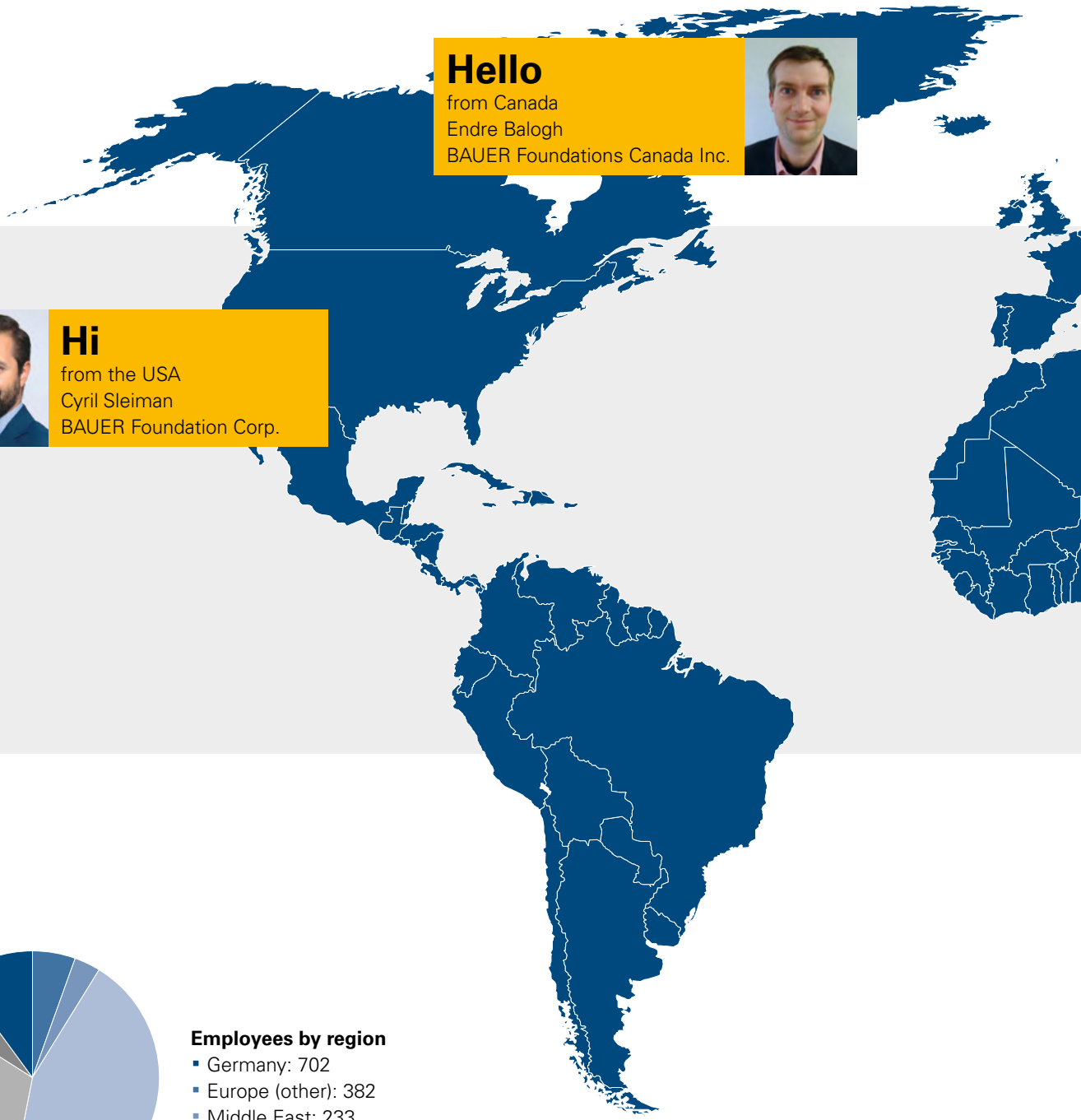
Down to earth
As a family business, we are committed to acting sensibly and appropriately. We make pragmatic decisions, with an eye on the bigger picture.

HEALTH. SAFETY. ENVIRONMENT.

The health and safety of our employees are our top priority. This is why we work hard each and every day to ensure occupational safety for every individual employee. After all, this is our responsibility: to do what's best for people and for the environment. We achieve this by maintaining:

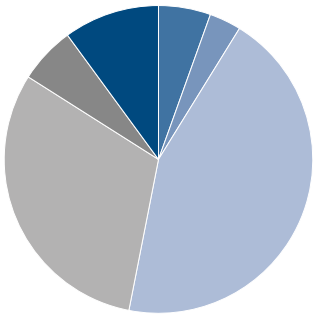
- a unified Health, Safety and Environment Management system (HSE) with globally applicable standards and guidelines
- an accident reporting and audit system
- behavior-based occupational safety (BAUER Behavior Based Safety)
- safety on sites: personal protective equipment for all employees
- consistent ongoing development and training

WORKING AROUND THE WORLD



Hello
from Canada
Endre Balogh
BAUER Foundations Canada Inc.

Hi
from the USA
Cyril Sleiman
BAUER Foundation Corp.



Employees by region

- Germany: 702
- Europe (other): 382
- Middle East: 233
- Asia Pacific: 3,095
- Africa: 2,162
- The Americas: 416

Around 7,000 Employees

Hallo
from Schrobenhausen
Veronica Stetter
BAUER Spezialtiefbau GmbH

नमस्ते
from India
Saurabh More
BAUER Engineering India Pvt. Ltd.

مرحبا
from Abu Dhabi
Meri Rose Rodriguez
BAUER International FZE

Magandang Araw
from the Philippines
Anna Cavizo
BAUER Foundations Philippines, Inc.

Bonjour
from Africa
Fadi Haddad
BAUER Spezialtiefbau GmbH

Click now and get in touch with us!

THE INNOVATORS

Having a "Passion for Progress"? Oh, yes – always have. Since the company was founded. We advance full speed ahead. This is because we pool our knowledge in research and development divisions, but also at a higher level in the Bauer Research Community. In this way, we promote the development of technology across the Group as well as the progress of the Group as a whole.

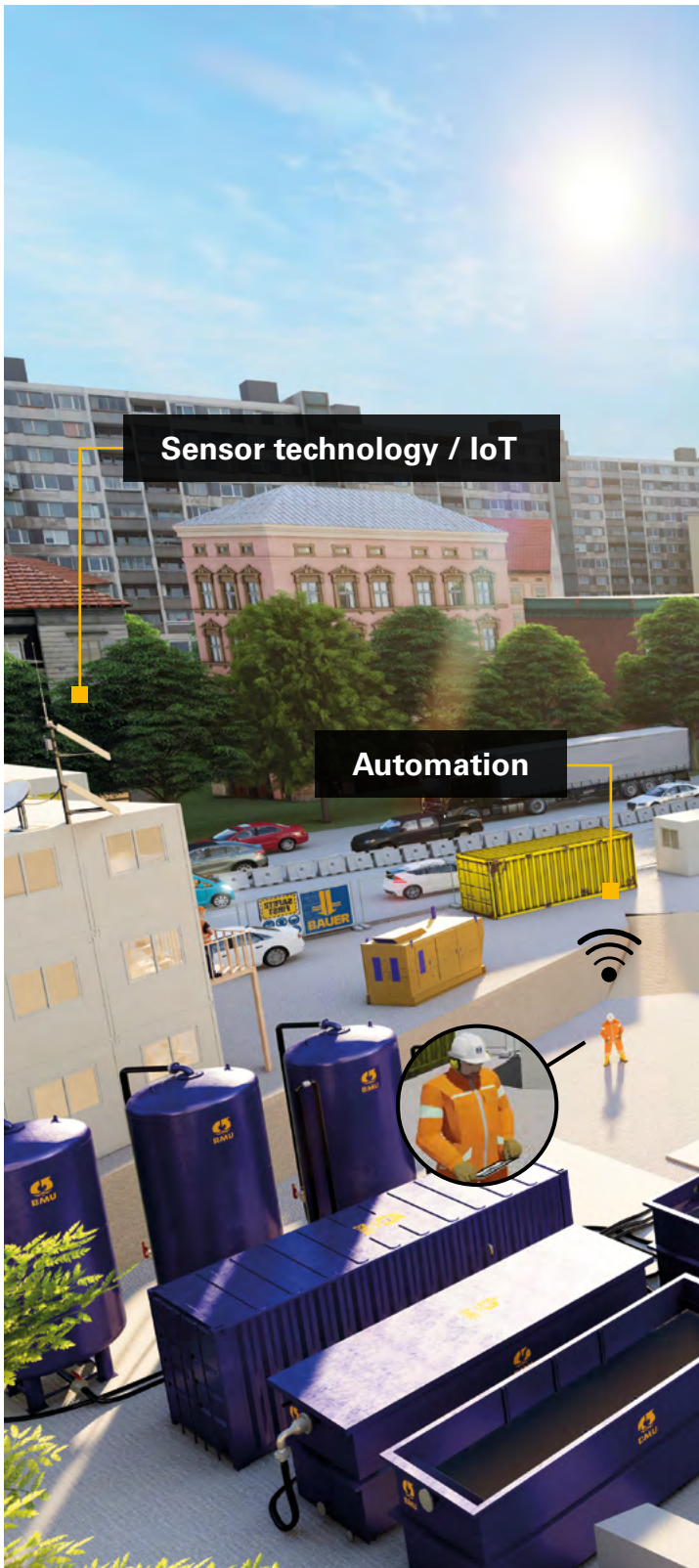
The **Bauer Research Community** draws on our collective power of innovation. Ultimately, innovation means progress. This is essential in order to be competitive on the market. At Bauer, we have a special way of developing innovations: every single one of our employees can participate in development. We regard people as the driving force behind innovation.

The **Research and Development** divisions at BAUER Spezialtiefbau GmbH are responsible for all projects that primarily concern specialist foundation engineering. The actual development work is carried out by a team – made up of employees from different departments. The impulse for many development projects frequently comes from a submitted suggestion for improvement, and thus directly from practice.

With our **company suggestion scheme,** we give each of our employees the opportunity to contribute their own ideas and drive innovation forward. Innovations aren't generated from organizations, systems and processes, after all – they can only come from our employees. They are the ones who generate innovative solutions. Together, we expand the boundaries – on construction sites and in our minds. Our teams act in concert towards a common goal.

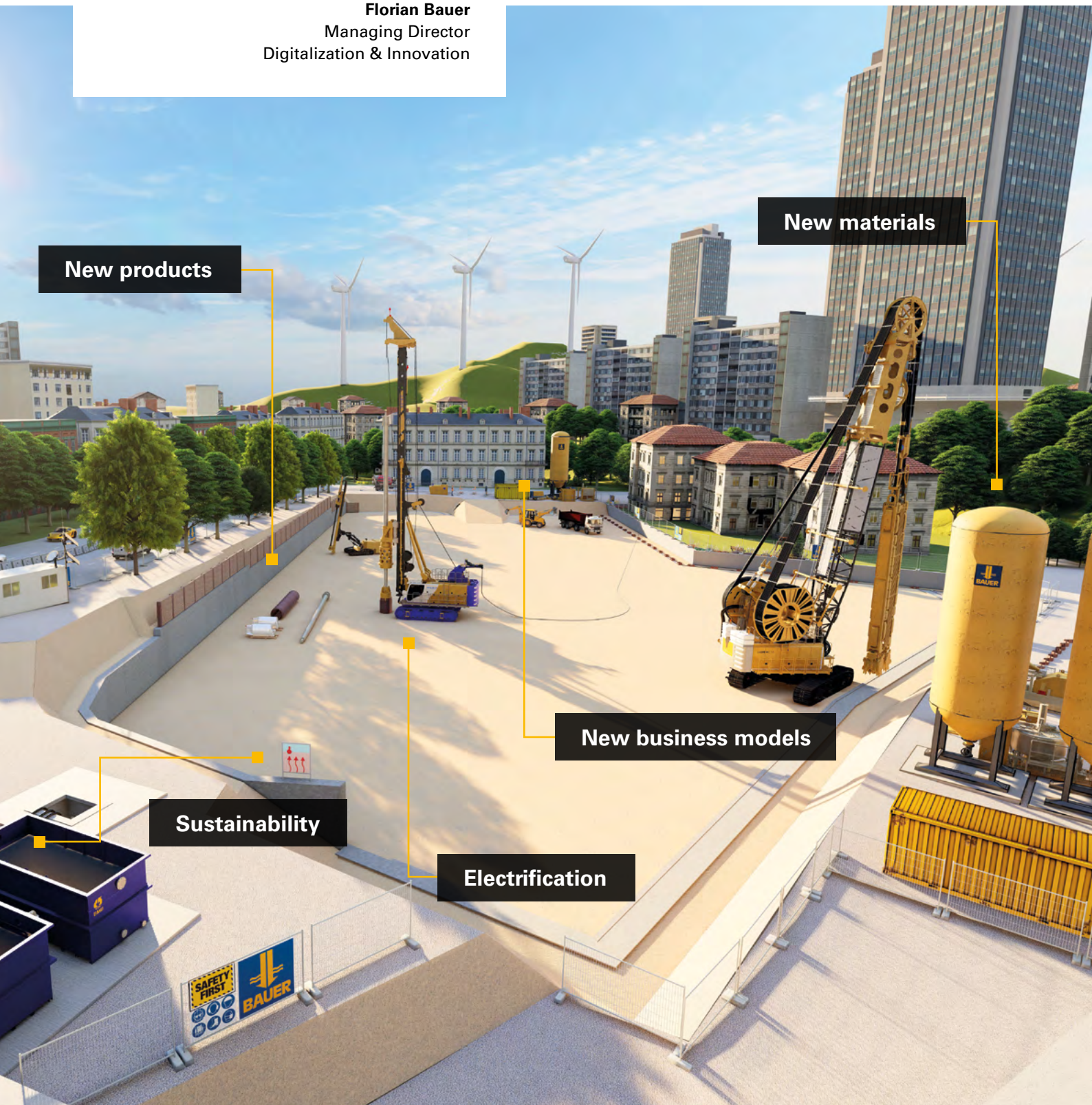
Innovative on the way
Together we develop ideas, drive innovations forward and embody progress. The key: our employees around the world, who achieve the impossible. And set new standards in specialist foundation engineering with groundbreaking ideas.

And action! **Click now** and discover our latest innovations.



Expanding the boundaries. This is the challenge that we set for ourselves again and again. Our goal is to develop groundbreaking and sustainable ideas – with the help of our employees.“

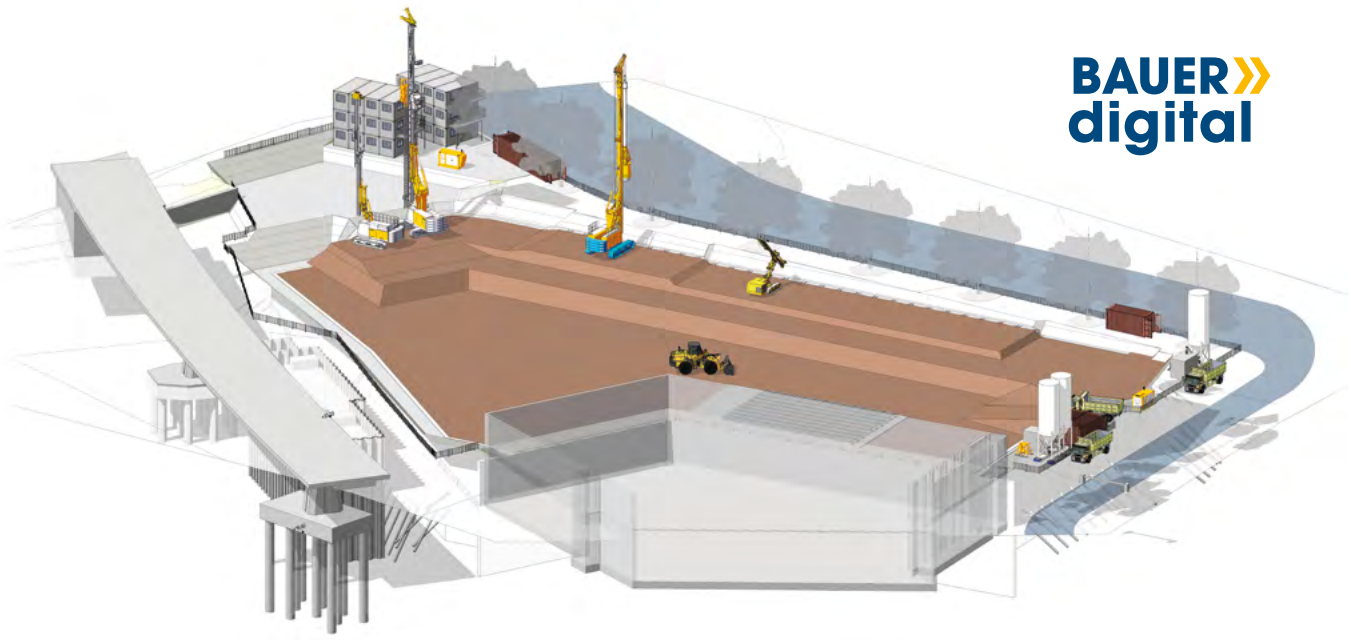
Florian Bauer
Managing Director
Digitalization & Innovation



DIGITAL AND GROUNDBREAKING

The site of the future is where we already work today! After all, we rely on digital work routines, unified processes and practical tools. In this way, we prevent waste, save time and reduce costs while continually expanding our digital portfolio. Our focus is always on making day-to-day work easier for our employees. Efficient and sustainable work processes. Collaborating as partners with our customers. Transparency and traceable quality. This is the foundation on which all innovations in the area of digitalization are developed at BAUER Spezialtiefbau GmbH. For transparent, sustainable and efficient processing of our construction projects.

- **Building Information Modeling (BIM)**
  Cooperative planning tool which visualizes the construction process from design to work preparation all the way to execution and as-built documentation
- **b-project**
  Data management software for digital collection, linking, and evaluation of all relevant data generated when handling a project
- **BAUER site apps**
  Digitalization of site documentation with mobile recording of information on the construction plot
- **BAUERdigital portal**
  Portal with central, role-based access to project-related information and systems for employees and customers
- **BAUER GIS platform**
  Geo-referenced documentation of information generated at the project on a GIS platform for a quick overview
- **Monitoring**
  Transmission of measurement data from equipment technology and geotechnical monitoring, or of weather data for status detection and as alarm system



Digital site
The site of the future: On our construction project “Hamburg A26” we are assisted by various digital tools.

See more in the video: **click now!**

Our digital tools are developed by the site, for the site, to guarantee transparency and verifiable quality. “

Marcus Daubner
Head of Digitalization
BAUER Spezialtiefbau GmbH

FOR A GREEN FUTURE

The development of sustainable innovations and technologies has been our clear focus for years. The aim is to reduce environmental impacts through resource-efficient and low-emission specialist foundation engineering by using raw materials more efficiently and strategically, and sustainably managing projects in an environmentally compatible way. This is the challenge we have set for ourselves. Our focus here is on energy and climate protection, adaptation to climate change, resources and circular economy, local pollution as well as employee development and training. We want to establish the sustainable site as the industry standard. And make our contribution to a green future. Together as a team.
For ourselves. For everyone. For the environment.


1


2


3


4


BCP


Digital methods


Design


Geothermal energy


Automation


Training


Digital twin


Surveying


Monitoring


Materials

B_sustainable

What we do

- Reduce our carbon footprint on sites through sustainable products and solutions for specialist foundation engineering
- Use of resource-efficient, ecological, low-emissions and energy-saving methods: **Mixed-in-Place, Cutter-Soil-Mixing, LWS soft gel blanket, vibro displacement, vibro flotation, dynamic intensive compaction, etc.**
- Generation of renewable energy using geothermal heat and offshore and onshore foundations for wind parks
- Use of recycled and alternative materials
- Use of efficient construction equipment, machines and tools
- Value enhancement with BAUER Construction Process (BCP)
- Strict supplier and subcontractor selection
- Training and education of our employees
- Research and development
- Smart Design Approach

Sustainability strategy for construction projects – click now!

1 | In addition to geothermally activated foundation elements, **geothermal heat** can also be used directly for energy production. We make the energy available in the building's equipment room.

2| Compared with the HPI method, the **LWS injection base** makes it possible to reduce CO_{2e} emissions by up to 87% per m². The energy consumption in kWh per m² can be reduced by up to 83%. The soil remains where it is and an environmentally friendly silicate gel is simply injected into the pore channel.

3 | Using the **Mixed-in-Place method** makes it possible to reduce CO_{2e} emissions by up to 30%. The construction material is produced on-site using the existing soil, and with a minimum quantity of hydraulic binding agent mixed in.

4 | **Offshore wind turbines** are an important step towards the future market for renewable energies. We have already efficiently constructed foundations in this area with our own underwater drilling rigs.

RELIABLY OUT OF SIGHT

Whether innovative residential construction projects, complex neighborhood developments or modern infrastructure concepts – we offer individually tailored and optimized solutions for all of your projects. We construct turnkey excavation pits according to the geological, local and engineering conditions, relying on established methods, state-of-the-art technology and decades of experience. Depending on the requirements, we execute soldier pile walls, our patented Mixed-in-Place method or sheet pile walls, bored pile walls, diaphragm walls and cut-off walls. The required support systems in the form of tie-backs, struts or injections are expanded as needed. Dewatering measures and earth works complete our portfolio of services. In the area of excavation pits, we offer the optimal method and the best solution for all requirements – after all, compact securing of deep excavation reliably support below surface and form the ideal basis for your project.

A site with a lake view
In the beautiful town of Lindau on Lake Constance, a geothermally activated MIP wall was constructed with a total area of approx. 4,000 m² up to a depth of 22 m. This is a particularly sustainable and space-saving solution for supplying energy to the building.

Sounds interesting? Then take a trip to Lindau with us – **click now!**

1


2

Residential and commercial property, Lindau upon Lake Constance, Germany
Bauer was commissioned to construct an excavation pit for a commercial property. The installation of a BAUER energy wall for this project involved several challenges. No problem for our experts.


3

1 Skypark, Bratislava, Slovakia
For a tower in the Skypark complex in Bratislava, Bauer executed the foundation and the excavation pits. Among other works, more than 4,600 m² of Mixed-in-Place wall were constructed as well as more than 2,600 linear meters of CFA piles.

2 South entrance to exhibition grounds, Frankfurt am Main, Germany
In addition to foundation piles, a two-phase diaphragm wall was also constructed, which forms the basis for the construction of a 123-m-tall skyscraper with a four-story underground garage.

3 Operaparken, Copenhagen, Denmark
Bauer carried out extensive diaphragm wall and anchor works in the harbor of Copenhagen for the "Operaparken" project. The two-layered anchored diaphragm wall will act as the permanent exterior wall of the underground garage.

Construction of

145 piles

at the Red Sea

FOR AN OPTIMAL FOUNDATION

Record-breaking skyscrapers with residential, office and business spaces, imposing bridges or extensive industrial and commercial buildings: All these buildings require a solid basis to discharge the generated loads safely and reliably into the stable construction soil. With proven pile foundations up to depths of far more than 100 m and diameters of more than 2 m, we offer perfect results for your project as well. Depending on the requirements, base and skin injections or bell-out piles are added.

Diaphragm wall panels, Mixed-in-Place elements or grouting of underground cavities and weather zones with injections are additional effective, economical and established options for discharging the structural loads into the subsoil. We offer the optimal foundation type for the construction of every standard building, bridge or transport route with state-of-the-art technology and create the optimal basis for your one-of-a-kind construction project – individually tailor-made to the existing conditions.

Red Sea Islands, Umluj, Saudi Arabia
A new, sustainable recreation area is being created by the Red Sea. For the construction of multiple bridges, Bauer was commissioned to install a number of piles – some of them offshore.

1 Major bridge, Hong Kong-Zhuhai-Macao Bridge, Hong Kong
In total, Bauer constructed 230 offshore bored piles with lengths of up to 115 m for the enormous infrastructure project in Hong Kong.

2 Novaliches-Balara Aqueduct 4, Philippines
For one of the largest water supply infrastructure projects, Novaliches-Balara Aqueduct 4, a total of 42 piles were drilled with a diameter of 800 mm.

3 West bypass, Rosenheim, Germany
To construct a bridge foundation for the Rosenheim west bypass, Bauer installed piles with a diameter of 1,200 mm in highly challenging marine clay.

DEEP STABILITY

Challenging soil conditions and difficult construction soil with a low load-bearing capacity? That's no problem for us! We make it possible to use these sites for construction through soil improvement, helping your individual project become a reality. As a result of increasing urbanization, particularly in metropolitan areas, more and more buildings are being constructed in areas with difficult, weak load-bearing subsoils. By using suitable methods, we make it possible to implement demanding construction projects. From Vibro Compaction (VC) and Vibro Replacement (VR) to Vibro Concrete Columns (VCC) as well as Dry Vibro Concrete Columns (DVCC) all the way to Dynamic Compaction: We offer efficient and economical solutions to minimize settlements, to discharge structural loads broadly into load-bearing soil strata and to optimize the stability and safety of slopes. We also use our patented Mixed-in-Place method or injections to considerably increase the load-bearing capacity of the soil.

Diving deep
To construct a dam in Timrå-Östrand, Sweden, it takes the expertise of our specialist foundation engineering team: Using the Deep Soil Mixing (DSM) method, roughly 210,000 m³ of mixed columns were constructed – under water at that. A sensational accomplishment for us in terms of the XL extra large mixing tool.

Click now to see this major project up close:


1

1 Metro, Cairo, Egypt
The expansion of the metro in Cairo is advancing in great strides. For the museum station on Line 4 in Gizeh, Bauer Egypt injected 50,000 m³ – soft gel.

2 A26 Highway, Hamburg, Germany
During the expansion of the A26 highway, Bauer carried out extensive works including 3,000 m² of secant pile wall, 16,200 linear meters of ground anchors and 12,100 m² of soil improvement using geotextile-encased sand columns.

3 Red Dog Mine, Alaska
Around 170 km north of the Arctic circle, Bauer carried out field tests at the "Red Dog Mine," a large zinc and lead mine, using the jet grouting and cutter soil mixing methods.


2

Soil improvement, Östrand, Sweden
Using the Deep Soil Mixing method, roughly 210,000 m³ of mixed columns were constructed under water to improve the soil. Our mixing tool with a diameter of 3 m was used for this task.


3

More than

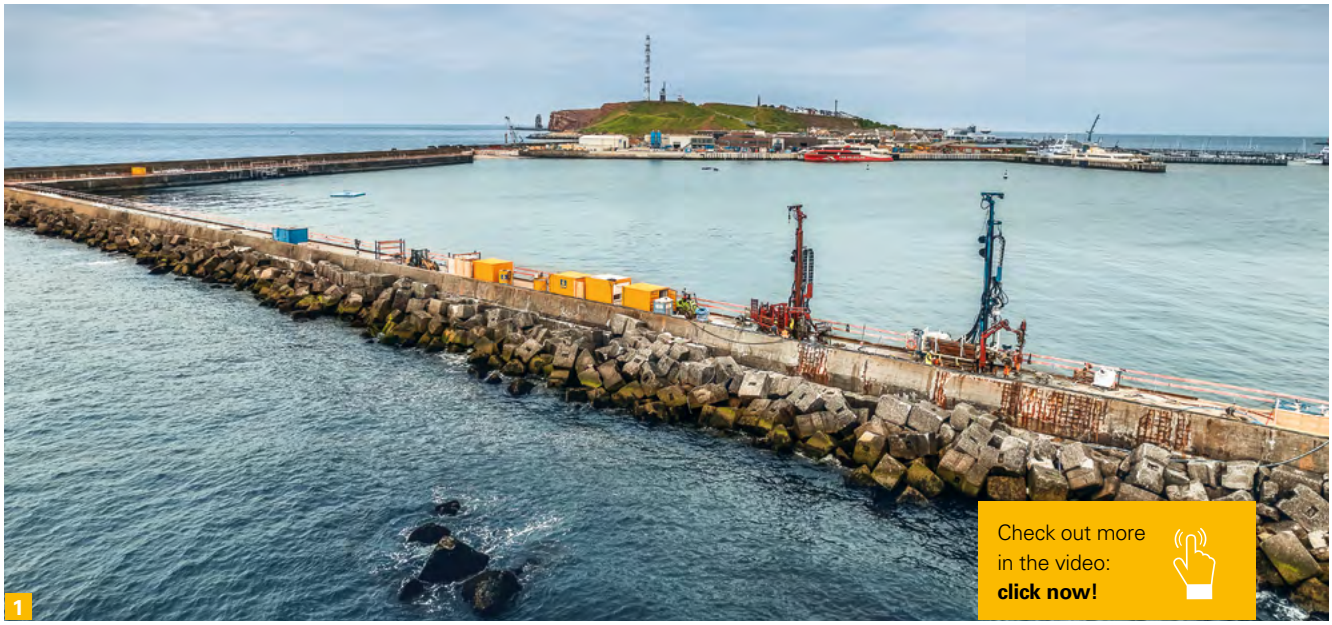
336,000 m²

of cut-off wall

Arab Potash, Dead Sea, Jordan
Bauer carried out cut-off wall work over a length of 13 km for the rehabilitation of a dike at the Dead Sea.

PROVIDING SAFETY

The elemental force of water, and its capacity to find an outlet, even under the most adverse conditions, continually endanger residents and buildings near still and flowing bodies of water or close to groundwater level. Whether for sealing off reservoirs, dams and dikes or for the encompassment of landfills, tank farms and industrial sites: We offer you permanent, well-established and economical system solutions for your project with bored and excavated cut-off walls or cut-off walls made by cutters. In addition, our project-specific retaining structures comprising diaphragm walls, pile walls and sheet pile walls make it possible to carry out construction in groundwater. The required horizontal seals in the form of grouting of underwater concrete slabs as well as soil improvements near existing buildings are added as needed. In this way, our proven cut-off walls ensure stability and act as a vertical seal to protect individual buildings, entire areas or the local environment against the force of water.



1

2

1 Helgoland Harbor Pier, North Sea, Germany
On the southern pier of the harbor on Helgoland, safeguarding measures were carried out over a length of roughly 70 meters.

2 Herbert Hoover Dike, Florida, USA
Rehabilitation of the roughly 250 km long Herbert Hoover dike is a project of enormous magnitude. As part of the partial sections Task Orders 1, 2 and 5, a total of 614 km of pre-drilling were carried out for 540,000 m² of cut-off wall.

3 Sylvenstein Reservoir, Lenggries, Germany
In the course of modernizing the Sylvenstein dam, Bauer was commissioned to construct a cut-off wall up to a depth of 70 m.

4 Teesta HEP VI, Sikkim, India
Electricity from hydropower: For the project Teesta HEP VI in the Indian state of Sikkim, 4,600 m² of cut-off wall were constructed. The scope of service also included drilling, grouting and anchor work.

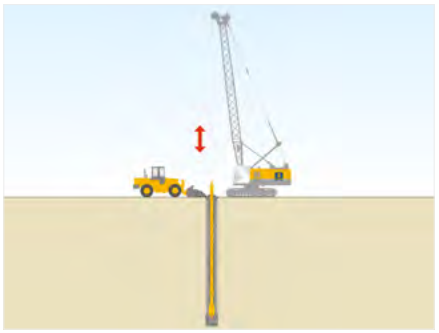
3

4

IMPROVING DIFFICULT SUBSOIL

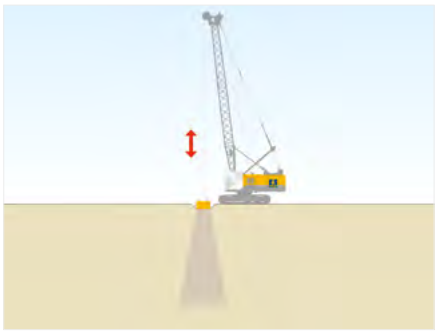
An increasing number of buildings are being constructed in areas with particularly difficult subsoil conditions. The methods we implement for soil improvement minimize settlements, increase the load-bearing capacity of the subsoil and ensure the stability of slopes. After all, we are specialists for challenging projects, and by using suitable methods we make sure that every construction project is future-proof.

Center for Deep-Sea Research (Zentrum für Tiefseeforschung – ZfT), Bremen, Germany
For the new ZfT building in Bremen, Bauer executed 5,500 m of vibro compaction work.



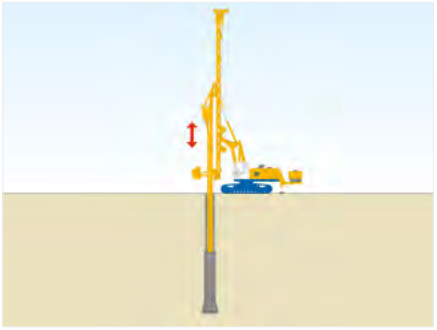
Vibro Compaction (VC)
Non-cohesive and low-cohesive soils such as sand or gravel often have insufficient bulk density. To improve the characteristics of the soil it is treated by a deep vibrator combined with air and water flushing. The energy applied can be varied to meet specifications with areas of 2 to 20 m² per point.

Dubai Creek Harbor, Dubai, UAE
Improvement of the construction soil over roughly 500,000 m² using vibro compaction and dynamic compaction.



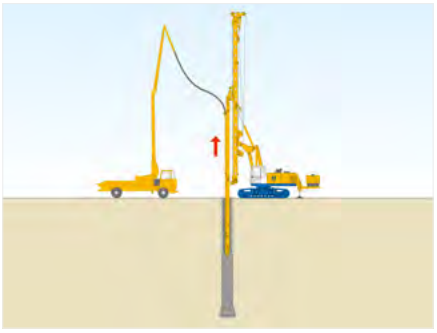
Dynamic Compaction
To improve the packing density of non-cohesive and silty soils, a mass is dropped from a great height. The kinetic energy emitted on impact compacts the soil via forced re-packing of the grains. The compression ratio depends on the soil properties, the size of the falling mass and the drop height and the spacing between the compaction points.

Wind park, Silberstedt, Germany
For the foundation of several wind turbines, a total of 3,200 m of vibration replacement were carried out.



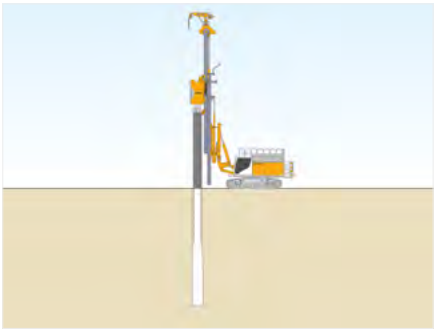
Vibration Replacement (VR) /
Dry Vibro Concrete Columns (DVCC)
In cohesive soils, the load-bearing capacity is enhanced using VR or DVCC. With these methods, non-cohesive material is fed to the vibrator tip, where it is compacted into the soil in multiple vibration stages. While VR involves the construction of columns from ballast, gravel and/or sand, moist concrete is used for DVCC.

Logistics Center, Karlsruhe, Germany
For the foundation work on a logistics center, Bauer carried out 2,700 m of vibro concrete columns.



Vibro Concrete Columns (DCC)
For predominantly cohesive to organic soils with particularly low stability, vibro concrete columns with a high strength are constructed. These have similar properties to unreinforced piles, which serve to discharge structural loads into the deeper subsoil, but with the benefit of no soil arisings due to the displacement system.

New construction B2, Eschenlohe, Germany
For the new B2 bypass, a total of 6,200 m of vibro textile columns were constructed.



Vibro Textile Columns (VTC)
In very soft, cohesive soils which do not offer sufficient lateral support, vibro textile columns are encased with a geotextile sheath. This provides the necessary lateral support for the installation material such as gravel or sand.

DEEP UNDERGROUND

They form the foundation without which countless buildings would be impossible to construct: our bored piles. These are cylindrical bodies made of concrete with or without reinforcement. They discharge high structural loads into load-bearing soil strata and are constructed in a line or with overlapping secant design to form a supporting wall for an excavation pit or to seal off groundwater. The length, diameter, material, formation and placement of the piles can vary according to your individual requirements.

Subway line crossing, Vienna, Austria
Construction of roughly 35,000 m of bored piles with varying diameters of up to 1,180 mm and drilling depths of up to 61 m.

Kelly pile
For this method, the drilling tool is attached to a telescopic Kelly bar, which is continually turned into the subsoil while the soil is gradually removed from the casing. This method can be used to install uncased, partially cased, fully cased or slurry stabilized piles.

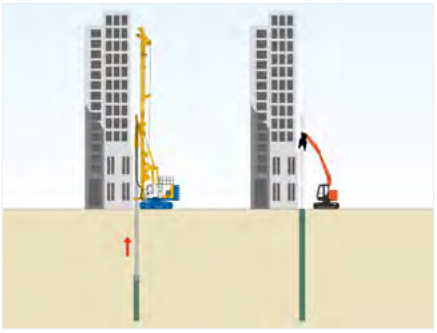
New building of central laboratory, Herzogenaurach, Germany
Drilling of foundation piles with a diameter of 1,000 mm and depth of 18 m using the CFA method.

Continuous Flight Auger pile (CFA)
With this method, an auger is used as drilling tool. Once the tool reaches the final depth, the hollow stem auger concretes from the bottom up. The reinforcement is installed afterwards, assisted by vibration if necessary. This rotary drilling technique enables high drilling performance.

Businesspark, Hannover, Germany
Construction of secant pile wall with a diameter of 880 mm and depth of 16 m using the double-head drilling method.

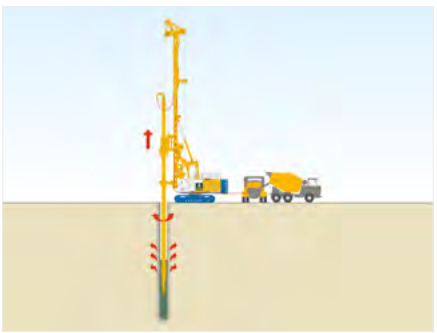
Double-head drilling system
The double-head system combines the CFA method with the cased Kelly drilling method. The result is a cased borehole created with a continuous flight auger. This is particularly advantageous in areas with high groundwater and soil which are in danger of being lifted, and require drilling under water load.

New construction of office building, Munich, Germany
Execution of secant pile wall with a diameter of 620 mm and depth of 18 m using the FoW method.



Front-of-Wall method (FoW)
With the particular structural design of the two rotary drilling heads, this method makes it possible to drill directly in front of buildings. The machine and equipment are free of interfering edges which exceed the dimensions of the pipe diameter. The FoW technique is an especially vibrationless and low-noise drilling method.

New construction of logistics halls, Maglód, Hungary
Construction of foundation piles with a diameter of 360 mm using FDP method.

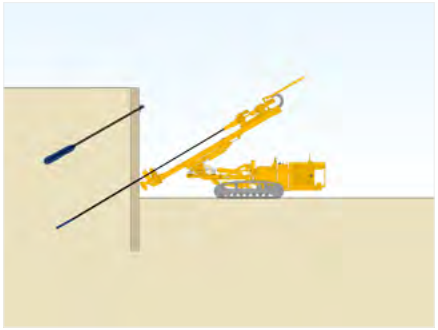


Full Displacement Pile (FDP)
Almost no drill spoil is brought above ground with this method – a decisive advantage. The drill string consists of a starter auger, the displacement pile body and an extension pipe. During extraction and pulling the existing soil is displaced, concreting and reinforcement are carried out in the same way as CFA piles.

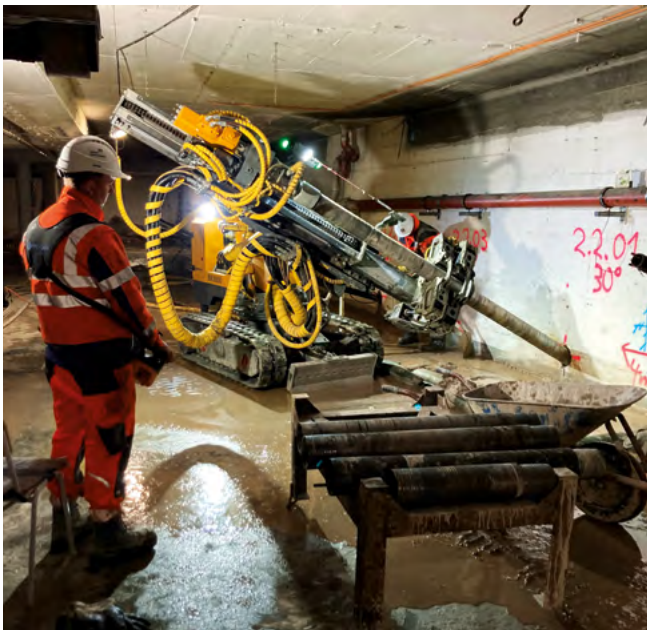
FIRMLY ANCHORED

Retaining systems without a tie-back? Almost unconceivable today. Since we invented it in 1958, the ground anchor has provided a technically elegant yet economical and commercially attractive structural engineering solution. Achievable in all types of soil including rock – whether temporary or permanent – excavation pits without obstructive struts have been a matter of course since then. With our many years of experience, we guarantee flawless technical implementation.

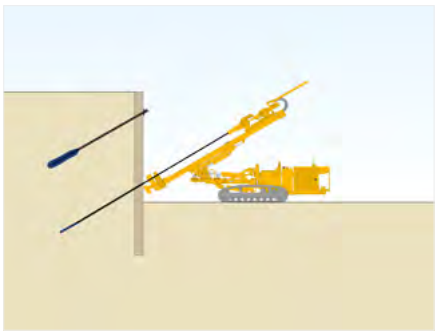
Operaparken, Copenhagen, Denmark
Tie-back of a diaphragm wall in two anchor layers with a total of 186 temporary strand anchors.



Temporary anchors
Temporary anchors – as bar anchors or strand anchors, fully or partially reconvertible – are used to safeguard retaining walls for a period of two years at most. The bearing behavior of each anchor is tested and recorded during the acceptance process. Strand anchors can also be used in tight spatial conditions.



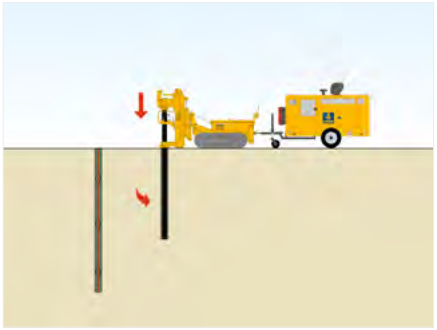
LVR building, Cologne, Germany
Installation of 80 ground anchors as permanent strand anchors to tie-back an underground garage wall.



Permanent anchors
Permanent anchors are used for a period of more than two years and are thus part of a permanent structure. They are designed as permanent strand anchors or single-rod corrugated tube anchors. The steel tendon and anchor head are protected against corrosion, each cavity of the anchor head is filled with permanently plastic corrosion-proof compound.

SMALL PILES, BIG EFFECT

Depending on the requirements, micro piles are constructed as single piles as well as pile groups or walls. They are used for new buildings, rehabilitation or conversion of structures and serve to stabilize the subsoil – even under existing buildings. Using our versatile equipment technology, we construct micro piles with diameters from 114 mm to 300 mm in cased or uncased drilling methods – entirely based on your individual project needs.



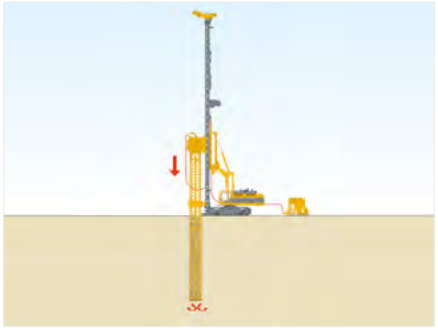
Micro piles
The pile shaft is composed of cement slurry, cement mortar or concrete. Through single or multiple post-grouting injections, the external load-bearing capacity can be increased to fulfil the requirements and adjusted in this way. The internal load-bearing capacity is secured using base elements made of threaded steel or reinforcement cages.

The Bridge, Amsterdam, Netherlands
Execution of 375 GEWI micropiles working from a pontoon for the foundation of buildings with an underground garage.

EFFICIENCY MEETS SUSTAINABILITY

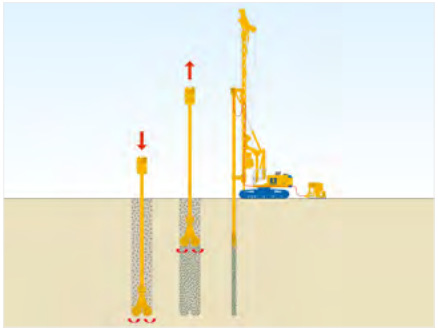
The soil mixing methods we have developed reduce the time-consuming coordination of transport, lower costs, minimize emissions and offer an attractively efficient, economical and environmentally friendly alternative to conventional methods. Because they are proprietary developments, both the base carriers as well as the tools and equipment can be flexibly adapted to the requirements of your specific construction task. Sustainable methods for the projects of the future.

Parkstadt Schwabing, Munich, Germany
Construction of a 6,000 m² single-anchored Mixed-in-Place cut-off wall for a 9 m deep excavation pit.



Mixed-in-Place (MIP®)
Due to decades of experience, the MIP method can be used in nearly all types of soil. Due to the counter-rotating triple auger, all soil strata are optimally mixed together at the overall drilling depth. What makes this method unique: The construction material is produced on site in a sustainable and resource-efficient manner.

Herbert Hoover Dike, Florida, USA
To improve dam security, a 28.3 km cut-off wall was installed with a depth of up to 20 m.

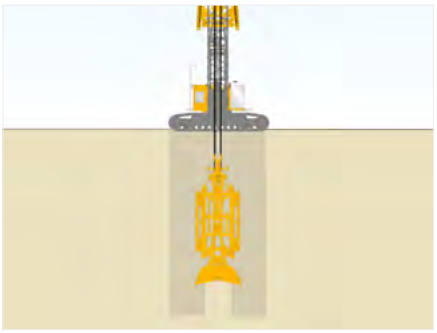


Cutter-Soil-Mixing (CSM)
To safeguard particularly deep excavation pits or to rehabilitate tall dams and dikes, the CSM method is used. This method combines features of diaphragm wall and soil mixing techniques, and modified, powerful cutters enable it to be used at very great depths or in densely bedded and even rocky soils.

RELIABLE AND STABLE

Diaphragm walls have a structural and/or sealing function and can be used both as a cut-off wall for a dam or excavation pit or as foundation for or to encapsulate a building. They are produced as concrete or reinforced concrete walls and are nearly impermeable for water. Excavation is carried out by duty-cycle cranes with suitable diaphragm wall grabs or cutters using a stabilizing slurry – your project, our methods.

South entrance to exhibition grounds, Frankfurt am Main, Germany
Execution of a 2-phase diaphragm wall using an MC 64 duty-cycle crane with grab.



Diaphragm wall grab excavated
Two different grab systems are available for diaphragm wall excavation depending on the requirements – suitable for typical wall thicknesses of 600 mm to 1,500 mm or even wider. The grab is lowered into the diaphragm and the soil is conveyed cyclically. To verify verticality, measuring systems are always installed.

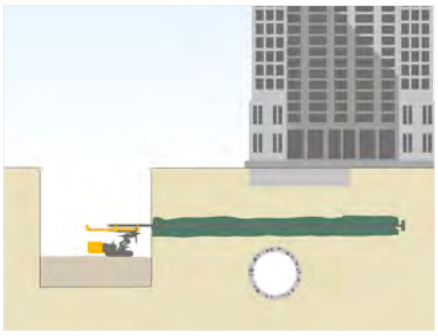
Hobson Bay, Melbourne, Australia
Construction of two shafts using an MC 96 duty-cycle crane with a BC 48 trench cutter.

Diaphragm wall cutter excavated
Trench cutters are used to construct diaphragm walls with regular wall thicknesses from 600 mm to 1,500 mm or wider – up to depths of 250 m. Trench cutters operate with two counter-rotating cutter wheels that continually loosen the excavated material, in a wide variety of soil types all the way to the hardest rock.

FREE OF CAVITIES

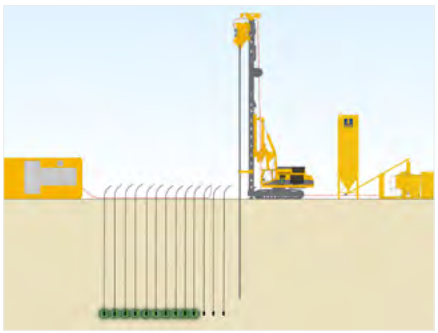
Injections involve introducing hard-setting slurries and solutions into fractures, cavities and gaps in soil or rock. A distinction is made between injections with and without modification of the construction soil. The choice of injection agent depends on the purpose of the activity and the geological characteristics of the construction soil. Thanks to our know-how and our worldwide experience in a wide range of injection methods, we are just the ideal partner for your project.

Pedestrian tunnel, Doha, Qatar
Controlled drilling for sealing and stabilizing injection in a 90-m pedestrian tunnel.



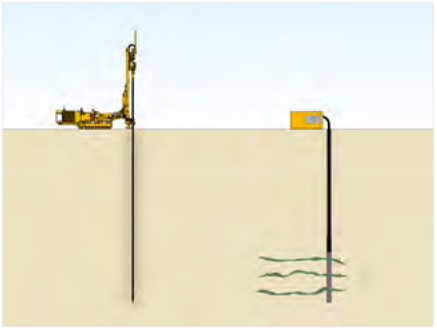
Compensation grouting
During compensation grouting, bore holes distributed under buildings are constructed from shafts. Tubes-à-manchette are installed in these bore holes with a self-hardening skin mixture. First the soil is filled, then later braced, through the targeted injection of binder slurry.

Quartier Heidestraße, Berlin, Germany
Execution of 16,000 m² of LWS silicate gel base by means of pore injection.

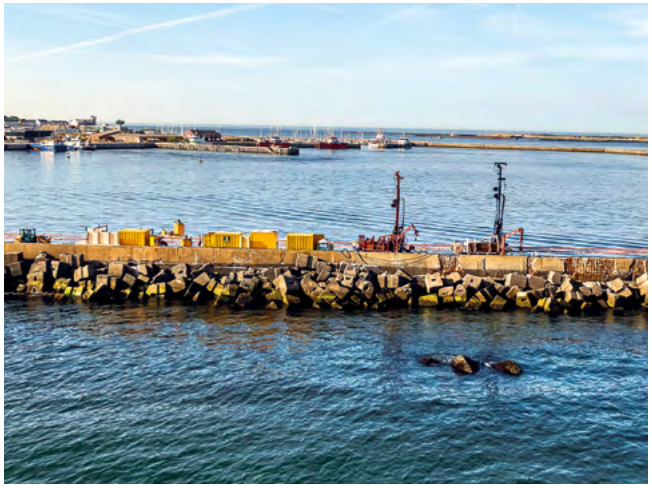


Permeation grouting
Permeation grouting can be used to construct deep sealing blankets in sand or gravel. Grout pipes with valves are inserted in a grid spacing into the ground, using vibration or installed in drill holes through which the grout is then injected. Grout bodies are created around the valves, forming a continuous sealing blanket.

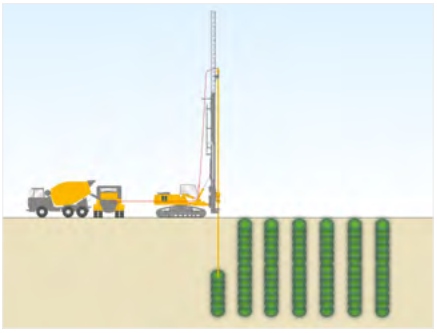
Rosshaupten Dam, Germany
Installation of a rock grouting curtain up to a maximum depth of 91 m.



Rock grouting
Rock grouting is carried out in order to fill gaps, fractures and cavities in solid rock. In stable rock, injection follows the upstage sequence (from bottom to top), while the downstage sequence (from top to bottom) or multiple packer sleeved pipe (special design) is used in unstable rock.

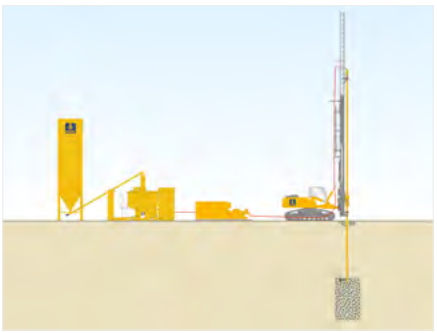


Southern harbor pier, Helgoland, Germany
By combining mortar with hybrid slurries, 6,307 m³ of compaction grouting were carried out.



Compaction grouting
For compaction grouting, a special mortar is injected into the loose subsoil in sections using the upstage sequence (from bottom to top). The goal is to compact the subsoil without breaking it up. This method can also be implemented using slurries with the tube-à-manchette system.

Strengthening the foundation of an industrial building, Munich, Germany
As a reinforcement measure, 130 columns were installed up to a depth of approx. 8 m using PI

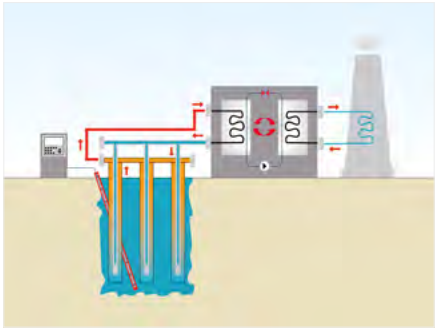


High Pressure Injection
High Pressure Injection is used for strengthening or deepening building foundations, for sealing bases or strut bases and for dam sealing. After reaching the target depth, a part of the soil is flushed out using fluid. The binder slurry introduced at the same time hardens the remaining soil.

GAINING STABILITY WITH ICE

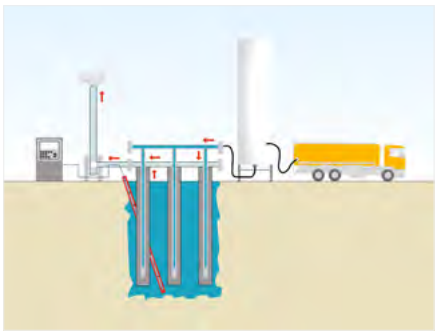
One unique method for temporary stabilization and sealing of the subsoil: soil freezing. With this method, pore water in the soil is frozen into ice by circulating liquid nitrogen or a saline solution. After it has been stabilized, the subsoil serves as the basis for the construction of load-bearing and impermeable structures – among others for tunnel construction. We would be happy to assist you with our specialist knowledge in the area of soil freezing.

Tunnel under Suez Canal, Ismailia, Egypt
Construction of four cross slats to connect two roadway tunnels with brine freezing.



Brine freezing
The brine used is a nearly 30% solution of calcium chloride in water. It circulates at a temperature of approx.-30 °C to -38 °C in low-carbon steel pipes, which form a closed circuit with the freezing system. Under normal conditions, freezing a soil body takes around 20 to 30 days.

Üsküdar Metro Station, Istanbul, Turkey
Construction of 33 horizontal freeze pipes and twelve thermometer pipes using nitrogen freezing.



Nitrogen freezing
Liquid nitrogen is stored in an insulated container at slight excess pressure and a temperature of-196 °C. The liquid nitrogen circulates through copper or stainless steel pipes and is converted into gas. Under normal conditions, freezing a soil body takes around five to eight days.

SAFETY IN STEEL

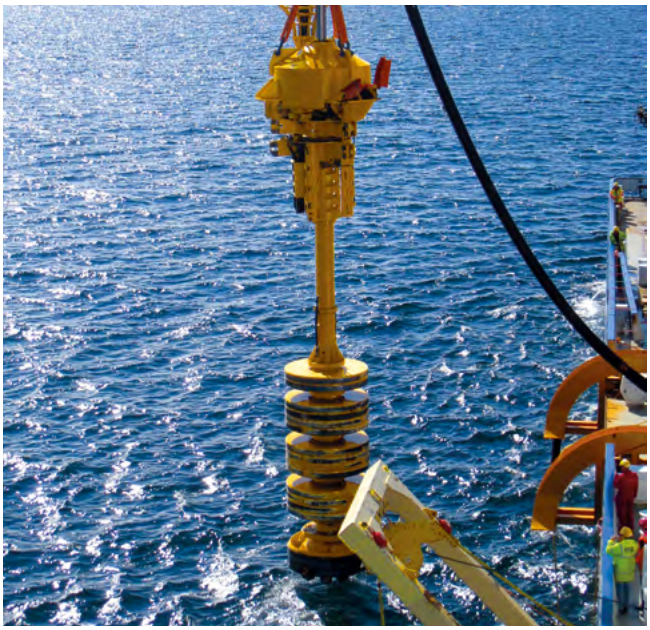
Steel sheet pile walls used to stabilize slopes are one of the oldest methods in specialist foundation engineering. However, the installation technique has developed considerably over the years. While in the past, sheet piles were generally driven or rammed into the ground, our gentle methods and state-of-the-art technology now make it possible to install sheet pile walls even in urban areas without problems. We would be happy to assist you!

Schwarze Pumpe, Leuna, Germany
To rehabilitate the former gas works in the "Schwarze Pumpe" industrial park, sheet pile wall boxes were constructed in varying sizes, depths and with plank lengths of up to 20 m.

High-frequency vibration
The majority of sheet piles are vibrated into the soil using high-frequency vibrators. One particularly gentle method is hydraulic pressing of sheet piles. Diesel or hydraulic impact driving is primarily used in heavy soils and at a large distance from sensitive buildings.

IN THE OCEANS

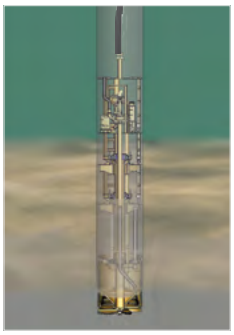
The world's oceans offer considerable potential for the generation of renewable energy from wind, waves, and tidal currents. Secure anchoring of offshore wind turbines and high-energy systems on the ocean floor is essential here. We have developed a range of equipment and innovative methods for underwater use to enable safe and economical foundations even with particularly difficult seabed.



Beatrice Offshore wind park, Orkney, Scotland
Foundation for a tidal turbine using a BSD 3000 seabed drill.

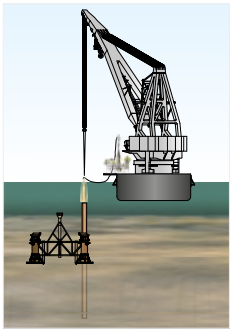
BSD 3000 seabed drill
This subsea drilling method was specifically developed for rocky subsoils and high current flow rates. It was first successfully used for the foundation of a tidal turbine in the sea near Scotland. The BSD 3000 equipment is lowered to the seabed from a floating vessel and operated by remote control.

Offshore wind park, Saint-Brieuc, France
Using the Dive Drill CU 40, bore holes are constructed up to 47 m deep with a diameter of 3 m.



Dive Drill CU 40
Dive Drill CU 40 is a further development of the conventional Dive Drill. The "U" stands for "Underreamer," because the drill head is able to cut out the soil strata ahead of the casing. The Dive Drill is lifted directly into the temporary casing by the vessels crane and clamps itself in place, before starting with the drilling work.

Beatrice Offshore wind park, Orkney, Scotland
Use of Dive Drill C 40 for relief drilling to reduce friction.



Dive Drill C 40
Foundations for offshore wind turbines are frequently carried out with conventional pile driving methods. In unfavorable soil conditions, however, it is possible that the piles cannot be driven any deeper. We developed the Dive Drill C 40 to achieve the target depth in these particular cases – a method known as Drive-Drill-Drive.

BAUER Spezialtiefbau GmbH
BAUER-Strasse 1
86529 Schrobenhausen
Germany
Phone: +49 8252 97-0
bst@bauer.de
www.bauer.de

905.002.2 03/2024