BAUER RESOURCES

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Our actions today determine what the world will look like tomorrow. This is why we take on responsibility. For ourselves. For everyone. For the environment.“

Roman Breuer
Chairman of the Management Board
BAUER Resources GmbH

Dear readers,

You can't get things moving if you don't make a move. Is this a truism? No, it's our everyday reality! We move the world of today and tomorrow with innovative solutions to protect and conserve resources.

Looking back at our past, it's clear: we have achieved a lot, regardless of where we came from originally. Together we are now one company; one team with one vision. Not to mention a powerful all-round service provider. The key to our success: nothing more and nothing less than our employees. They are the brains behind our business. Always enthusiastic about new developments and ready for the future. That’s why we are always able to find the optimal solution for any sort of task. Because we know how to take on projects.

For instance, we revive contaminated sites for a new life by rehabilitating contaminated areas and cleaning polluted water. To ensure constant water supply, we drill wells and deliver well materials. And thanks to our support, structures stand rock solid and shine in new splendor: whether castle ruins, bridges or consumer markets. For projects that head deep underground or high in the sky, our shaft constructors are in demand for work on shafts, pumping stations or other powerful support structures.

Regardless of the task at hand, we are not afraid to take on any challenge. We are passionate about what we do.

I hope you enjoy reading!

Roman Breuer
Chairman of the Management Board
BAUER Resources GmbH

PROTECTING AND CONSERVING RESOURCES

Sustainability is the top priority at Bauer Resources, the third segment of the BAUER Group. With our efforts both yesterday and today, we protect and conserve the resources of tomorrow. Day in, day out. To ensure a sustainable future with a high quality of life. We collaborate with various subsidiaries and pool together numerous areas of expertise. These range from environmental services and constructed wetlands to water well construction and drilling services, all the way to mining and rehabilitation. As a result, our knowledge and experience are as multifaceted as the contracts we receive. Our limits? Nothing we can't overcome! Our specialists are at work all across Germany and around the world. And maybe they'll be in your area someday soon?

Our recipe for success is "togetherness." We are a strong team that always pulls together – just like one big family."

Tobias Bangerter >
Managing Director
BAUER Resources GmbH

We care deeply about the environment and handling resources. This is a commitment we renew every day."

Helen Wagner >
Head of Soil Treatment Center
BAUER Resources GmbH

When the projects are more varied, it makes everyday work more exciting. Things are never boring for us."

Björn Gorsboth >
Authorized Representative
SPESA Spezialbau und
Sanierung GmbH

Our companies

One team, one goal

BMU SPESA SBN GWE GERMAN WATER and ENERGY GROUP

A JOURNEY INTO THE PAST

1990

BAUER und MOURIK Umwelttechnik GmbH is founded

1994

The first soil treatment center is opened in Hirschfeld; further sites follow in Bleicherode, Hamburg and Weitwörth

1996

Bauer acquires all shares in BAUER und MOURIK Umwelttechnik GmbH

2003

Soil treatment center in Schrobenhausen is opened

2014

Innovative large-scale groundwater treatment plant is constructed in Leuna

2015

The order for rehabilitation of the Kesslergrube in Grenzach is the largest single order so far in the history of the BAUER Group

2016

- Bauer Umwelt is incorporated into BAUER Resources GmbH as a business division
- GWE expands the water supply for Las Vegas

2017

Bauer Umwelt receives major order for rehabilitation of Schwarze Pumpe Industrial Park

2018

Bauer Umwelt presents sustainable EcoVert® technology

2005

Europe's largest funnel-and-gate system for purification of polluted groundwater is commissioned

2011

Bauer Resources commissions world's largest constructed wetland in Oman

BAUER und MOURIK Umwelttechnik GmbH is renamed to BAUER Umwelt GmbH

2007

BAUER Resources GmbH is founded and the GWE Group is taken over

2022

Bauer Umwelt opens soil treatment center in Duisburg

2021

Schachtbau reaches 9,000 m of tunneling work in chromium mine in Kazakhstan

2019

Bauer Umwelt opens soil treatment center in Regensburg

GWE develops specially tailored well systems for flood protection

SPESA Spezialbau und Sanierung GmbH and the SCHACHTBAU Group are incorporated into the Resources segment

GWE introduces smart irrigation system Irri360° on the market

Spesa concludes rehabilitation work on the Innerstetal bridge

SHAPING THE FUTURE

Stagnation? Not for us! We're not content to wait until tomorrow, instead we're actively shaping the future today. Always enthusiastic, forward-thinking and pragmatic. Together, we tackle the big issues: water extraction and treatment, growing environmental awareness or digitalization. We face these trends with new and innovative technologies. For instance, EcoVert® enables environmentally-friendly treatment of polluted groundwater. We are also opening a new chapter in water supply with the smart irrigation system Irri360°-AgriSystem. For the construction and rehabilitation of shaft towers, we rely on fully automated readjustment with a software-based control system. And of course, digitalization is a constant companion in our work. But that's far from all. There's lots more still to be done. And we're working full steam ahead.

A green heart
Sustainable, energy-efficient and low-emission: this is the promise of the EcoVert® technology developed by Bauer Umwelt. It can be used to clean contaminated groundwater using a purely biological method, and all without the use of any chemicals or energy-intensive aeration systems. From large to small, custom sizes make it the perfect solution for every project and the whole spectrum of contaminants. Always safe and reliable.

From the spring to the root
The irrigation system Irri360°-AgriSystem counteracts increasing periods of drought. How does it work? By increasing efficiency during irrigation, thereby saving water resources. Whether drums, circle sprinklers, above-ground or below-ground drip hoses: the type of irrigation doesn't matter. The right quantity of water always reaches the root at the right time – that is truly smart.

Everything in balance
When headframes are rehabilitated or shaft towers are newly constructed, a specific approach is required each time. The technology for fully automated readjustment of shaft towers in disposal structures is highly effective: for this purpose, the tower and the underground shaft ceiling are moved onto flexible elastomers. Using hydraulic jacks and a software-based control system, both construction components can be realigned entirely automatically in case of earth movements. As a result, they are exactly horizontal at all times.

Digitalization on site
Whether drones, mobile LIDAR sensors or rover rods, digital helpers ensure easy and precise measurement on site. These data then facilitate the engineering process in BIM models, where all relevant data for a project, from construction diaries and costs all the way to analysis, are compiled and automatically linked together. Programming, machine learning and artificial intelligence are used to optimize the engineering and construction process.

Chemical laundry Schoof, Dresden:
Under extreme safety precautions, Bauer Umwelt replaced around 6,000 m³ of contaminated soil on the 870 m² Schoof site in Dresden using large-scale boreholes.

FOR THE GOOD OF THE ENVIRONMENT

Environmental services are our passion. Because we specialize in methods and solutions that help to reduce environmental pollution. For instance, numerous complex district development projects are only able to proceed because we have removed contamination from sites or properly dismantled old, decommissioned structures. When it comes to new construction projects, our turnkey excavation pits and our expertise in harnessing energy potentials are highly in demand – whether for modern underground garages or innovative building projects. Thanks to our sustainable technologies, polluted water is reliably cleaned of contamination. And for the disposal of contaminated waste, our own soil treatment centers with modern treatment and plant technology guarantee the highest possible reliability of disposal. All for the good of the environment.

Grand cinematic scenes at a large site
It seems like something out of the movies: men in yellow protective suits equipped with mouth protection, protective goggles and safety shoes are working inside a giant encapsulation. The site: Schwarze Pumpe industrial park, former location of a gas combine plant, which is about as large as 1,000 football fields with an area of 720 ha.

And action!
Click now and see this major project up close.

1 Underground garage, Munich:
140 m long, up to 45 m wide and 13 m deep: the excavation pit for a multi-story underground garage below the eastern Altstadtring ring road in Munich was constructed by Bauer Umwelt in spectacular fashion using mining techniques – from the top down.

2 Residential project at the traffic circle, Lindau:
More than 100 kW of power will be generated using the geothermal activation of a 3,200 m² BAUER energy wall and a 2,000 m² foundation slab for a residential and commercial property in Lindau – approximately 10 km of pipeline were installed for this project.

3 Gas combine plant, Schwarze Pumpe:
To remove the traces of a former gas combine plant on the grounds of the Schwarze Pumpe industrial park, Bauer Umwelt is moving and cleaning 286,000 t of contaminated soil.

WITH THE POWER OF NATURE

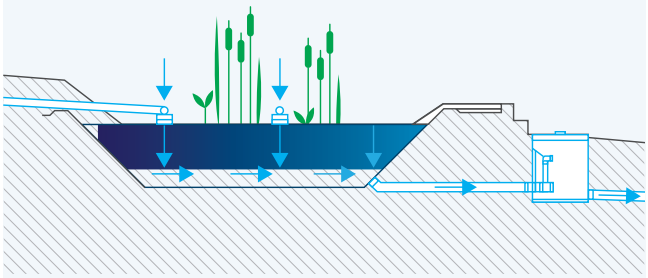
Water treatment using the power of nature? No problem! Our natural methods make this possible. And they work for any kind of wastewater, whether produced water, industrial wastewater or sewage sludge. The success of this technology relies on the harmonious interaction between plants, filter gravel and microorganisms. We know exactly what it takes. After all, we are responsible not only for the design and financing of the treatment plants, but also for construction, operation and maintenance. We have already shown we are capable of great things with the world's largest constructed wetland in Oman over an area of 13.5 km^2. In con-trast, our compact Reedbox® is small enough to clean smaller volumes of water in tighter spatial conditions. It's that easy. It's that sustainable.

Water as far as the eye can see
70 times the volume of an Olympic swimming pool: that's how much contaminated water our constructed wetland in Nimr cleans every day using approximately 1.5 billion reed plants. And there's more: thanks to the sustainable operating principle, around 225,000 t of CO_2 emissions can be saved every year.

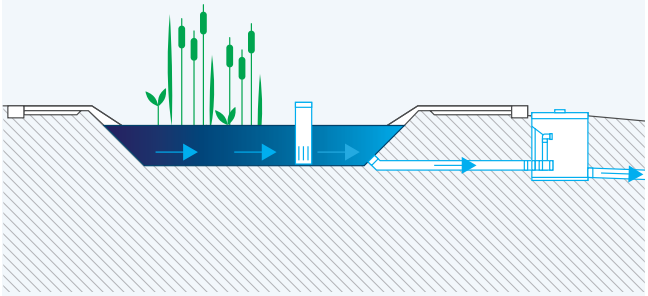
Click now and take a closer look at the world of our constructed wetlands.

Natural solutions for all locations

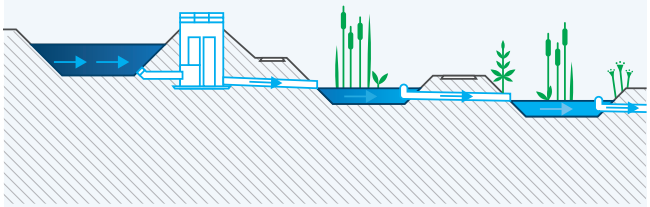
Type 1 - Vertical flow



Type 2 - Horizontal flow



Type 3 - Surface flow



Type 1 is a vertical flow system and an optimized and flexible standard solution for many locations that can be used for the treatment of sewage.

Type 2 is a horizontal subsurface flow system which is used in combination with pretreatment or with the Type 1 system. A hybrid system (Type 1 followed by Type 2) achieves high treatment quality while preventing the production of sewage sludge.

Type 3 is a surface flow wetland which is suitable for large scale applications including polishing of sewage effluent, produced water from the oil and gas industry, agricultural runoff and urban stormwater.

ReedBox®

Sustainable, user-friendly, affordable: there's really no other way to describe our compact ReedBox®. By means of an aerated constructed wetland, waste water can be treated very easily with minimal maintenance and operational requirements – even without using chemicals.

Hand and solar pumps, Africa: *The solar-powered GWE aquasolar hand pump systems facilitate and secure village water supply in many arid regions of Africa.*

With our pump systems, we enable vital access to clean water for people in many African countries. This makes us very proud.“

Markus Hollmann
Managing Director
GWE GmbH

MOVING WATER

We design wells, extract water and arrange for its distribution. In this way, we ensure the water supply worldwide. This is more and more important in times of increasing droughts. With more than 100 years of experience, we produce the entire range of well materials. Or we engineer high- performance pump systems and customized solutions for individual needs, including technical support. Our products are used for public water supply, industrial applications or agricultural irrigation. In Africa, for example, we also offer water well construction in addition to all sorts of drilling services. And keep water moving.

1 Water supply Las Vegas, USA:
To expand the water supply of Las Vegas, GWE designed and manufactured the stainless steel riser pipes and wellheads for 32 pumping stations – each of them with a diameter of 800 mm.

2 PVC well materials:
The established PVC installation material from GWE, coordinated on a project-specific basis, are used for turf irrigation with the strictest quality requirements.

3 Stainless steel wire-wrapped screen:
Using the GWE stainless steel wire-wrapped screen with a diameter of 1,200 mm, large volumes of water can be absorbed and thus rising groundwater levels can be strategically lowered when floods occur.

4 Exploration drilling, West Africa:
For sample extraction of rare earths, multiple bore holes were constructed in a project region in West Africa – up to a depth of 24 m.

For more information about GWE **click now**.

PRESERVING VALUE, CREATING NEW STRUCTURES

They tell stories. And they are incredibly valuable: historical buildings. This is why we appreciate their importance and protect them from destruction. With a sensitive touch and sophisticated expertise in the preservation of historical monuments, we remediate and repair retaining walls, castle ruins or other structures. Or in some cases, we take care of constructing replacement buildings. Our expertise in concrete rehabilitation is demonstrated in complex projects such as repair of the Innerstetal bridge on the A7 highway near Holle – a major project. The revitalization of consumer markets completes our portfolio in rehabilitation. Wherever transport routes, properties or buildings are endangered by falling rock, collapsing cliffs or landslides, we ensure safety.


1

1 Castle ruins, Elsterberg:
A lot of sensitivity and precise knowledge about materials was required when safeguarding the historically listed masonry of the castle ruins situated above the town of Elsterberg.

2 Heidkopf tunnel, Göttingen:
Against a breathtaking backdrop, Spesa safeguarded the 11,500 m² rock slope at the Heidkopf tunnel with approximately 2,200 m² of rock nails and 5,400 m² of wire netting.

3 E-Center, Niederfüllbach:
From the demolition of the existing E-Center supermarket all the way to turnkey construction of the new building, including parking facility, a lot of work was done on the 20,500 m² property in Niederfüllbach.

For more information aboout Spesa **click now**.


Innerstetal bridge, Hildesheim:
Spesa demonstrated good planning and organization during rehabilitation of the Innerstetal bridge on the A7 highway.


2


3

A RANGE OF SERVICES FROM LOW TO HIGH

Our mining solutions are robust and future-oriented. This is because everything that takes place underground or at heights has to be able to withstand extreme conditions. Deep underground, we develop deposits with new drifts or excavate shafts. After their active extraction phase, we safeguard them sustainably for long-term safety. In the area of plant engineering, we develop and install innovative systems for pumping stations, sewage treatment plants and mine water treatment plants. When it comes to steel, we show our strengths in new building or repair: whether for crane tracks, bridges or other powerful support structures. What do all these services have in common? They improve standards and increase safety. For decades and for centuries.

> *The structurally identical new construction of the Reiche Zeche headframe in Freiberg was not a run-of-the-mill job. This was an order with great historical value – a real passion project for us.“*

Danny Bodenstab
Managing Director
SCHACHTBAU NORDHAUSEN GmbH

Reiche Zeche headframe, Freiberg: *In an impressive initiative, the heritage-listed Reiche Zeche headframe of the Freiberg University of Mining and Technology's research and training mine was replaced and partially rehabilitated by Schachtbau.*

1 Pumping station, Oberhausen:
For construction of the Emscher waste water canal, one of the most modern waste water systems worldwide, Schachtbau designed and constructed all three pumping stations, finishing with the Oberhausen station.

2 Shaft Konrad, Salzgitter:
Tunnel view into the planned shaft tower Konrad depository: Installation of the shotcrete inner shell, 30 cm thick and reinforced in two layers, was the last work section completed by Schachtbau when preparing the future infrastructure and workshop areas.

3 Weser Bridge, Beverungen:
Weighing in at several tons, the replacement structure of the Weser bridge constructed by Schachtbau was moved using six strand jacks. This required a total pulling force of 4,000 kN.

For more information
aboout Schachtbau **click now**.

The materials and specifications may be changed without prior announcement. The figures may contain optional equipment and do not show all possible configurations. These specifications and technical data are intended for information purposes. Errors and misprints are excepted.

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