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- APPLICATION MANAGEMENT
- MAX PLANCK INSTITUTE: SUPERALLOY RESEARCH
- OUR SITE IN CHEMNITZ

CHALLENGES OF ENERGY TRANSITION
BIOMASS, HYDROGEN, GEOTHERMAL HEAT

CONTENT

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EDITORIAL

ENERGY TRANSITION

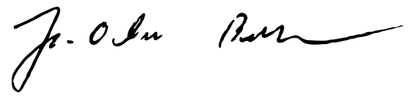
DEAR READERS,

The importance of an energy supply that is independent of Russia is particularly clear during the cold season. Not everyone will be sitting in a festively lit warm home this Christmas, as the shortage of gas has generated prices that are beyond the budget of many people. The development of energy sources away from fossil carriers is becoming increasingly important and, as a supplier to the energy industry, the BUHLMANN GROUP is adapting to these needs. In this issue starting on page 4, we report on our activities in the fields of geothermal energy, biomass and the hydrogen sector.

For us, an essential part of business is being open to future developments. That's why, as of page 14, you will find an interview with two experts from the Max Planck Institute for Iron Research who dive deep into the material that makes up the bulk of our business. Not an easy read, but an exciting insight into the world of science and research.

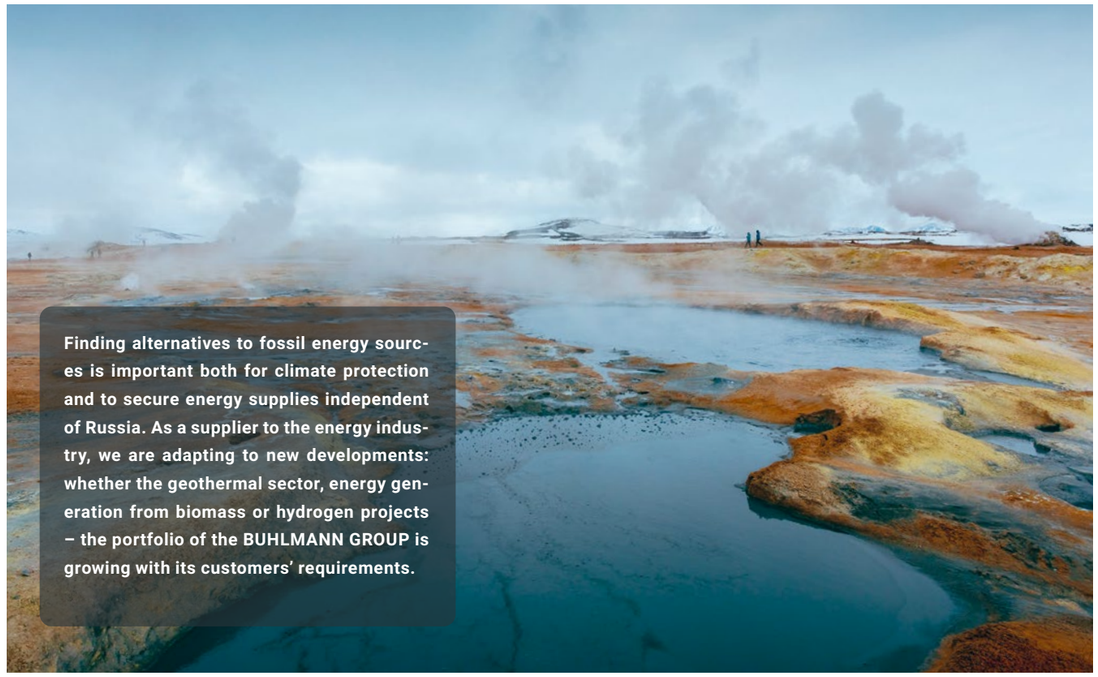
I very much hope that you have a wonderful Christmas and a pleasant New Year with relatives and friends. And even if we turn down the heating a bit this year and try to save electricity, we should remember that not far away people have to celebrate Christmas in much worse conditions. To ensure they don't lose hope in a better future, we are involved in different activities and a foundation. Perhaps you, too, would like to contribute something to the reconstruction of Ukraine. For more information, please see page 14 or visit: www.stiftung-solidaritaet-ukraine.de.

Have a Merry Christmas,
Yours sincerely,



Jan-Oliver Buhlmann

CHALLENGES OF ENERGY TRANSITION



Finding alternatives to fossil energy sources is important both for climate protection and to secure energy supplies independent of Russia. As a supplier to the energy industry, we are adapting to new developments: whether the geothermal sector, energy generation from biomass or hydrogen projects – the portfolio of the BUHLMANN GROUP is growing with its customers' requirements.

Mývatn, Island

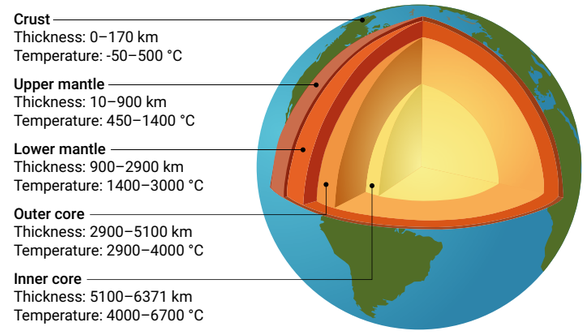
GEOTHERMAL ENERGY

History of geothermal energy

Hot springs and volcanic eruptions; the energy below the earth's surface has always been obvious. However, using the power it holds used to be limited to areas where volcanic activity actually occurred. A look back: the first boiler heating system using naturally escaping steam was built by industrialist Francois Jacques Larderel in 1827 in the volcanic area around Larderello in Tuscany – known as the "Valley of the Devil". At the beginning of the 19th century, the first geothermal power plant was commissioned there to generate electricity. In Iceland, too, the use of thermal energy was obvious: in Reykjavik, hot water from the depths has been used to heat greenhouses since the 1920s and entire city districts since the 1930s.

In the 1960s, hot water was discovered while drilling for oil and natural gas, for example in Hungary and in the Paris Basin, a fossil sedimentary basin under parts of France, Belgium and England. In Paris, this heat source was used to heat housing estates, while in Hungary the heat was used for greenhouses. After the oil crisis in 1973, when research into other energy sources was vigorously pursued, interest in geothermal energy increased. By the mid-1980s, research in Europe and overseas had laid the foundations for widespread use: The geological subsurface had been explored to the point where it was possible to define areas where drilling seemed hopeful. In addition, various test facilities had provided initial practical experience and also a calculation basis for estimating costs.

Geothermal heat plant



Geothermal Gradient

Unlike in the past, the use of thermal energy has long since ceased to be reserved for areas where the heat is easily accessible. Boreholes are now used to bring water or steam up from depths of up to several kilometers and either use it directly for heating or to generate electricity. In principle, the energy increases with increasing drilling depth. The so-called geothermal gradient in Germany is 3 °C per 100 meters. The temperature in the earth's core is about 5,000 to 7,000 °C.

HOW DEEP, HOW WARM?

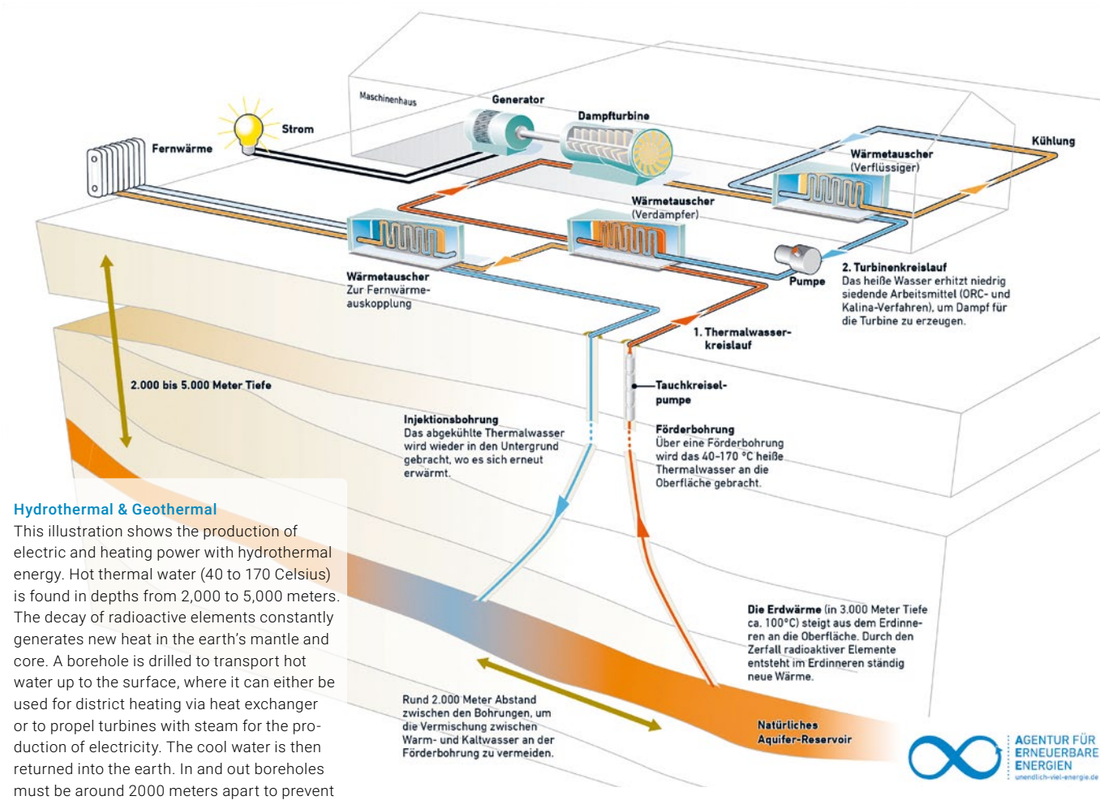
Near-surface: Uses the geothermal energy of the uppermost 400 meters of approx. 20 °C; extraction via geothermal probe or heat pump.

Medium-depth A: Uses the depth range between 400 and 1,500 meters of 20-60 °C. This depth is particularly interesting for energy storage.

Medium-depth B: Uses the depth range 1,000 to 1,500 meters at temperatures of 60 °C. Here, direct use of geothermal energy is possible without raising the temperature by heat pump or heat transformation.

Deep geothermal energy: Uses the depth range up to 6,000 meters and produces so-called fluid (= In the context of geothermal energy, fluid is a collective term for both water from deep rocks, which can contain dissolved salts and/or gas, and for gases such as water vapor). Currently, the deepest borehole is about 12 km.

In deep wells, a thermal water circuit is usually created, i.e. there is a production well and an injection well. In addition to heat, electricity can be produced from a temperature level of about 120 °C by a thermal power plant. At a depth of five to seven kilometers, the temperature is around 200 °C.



Hydrothermal & Geothermal
This illustration shows the production of electric and heating power with hydrothermal energy. Hot thermal water (40 to 170 Celsius) is found in depths from 2,000 to 5,000 meters. The decay of radioactive elements constantly generates new heat in the earth's mantle and core. A borehole is drilled to transport hot water up to the surface, where it can either be used for district heating via heat exchanger or to propel turbines with steam for the production of electricity. The cool water is then returned into the earth. In and out boreholes must be around 2000 meters apart to prevent the mixing of cool and hot water in the production well.

Drill Pipes, Casing, Tubing – How does it work?

Drilling

Drill pipes are durable steel tubes that transfer the power to the drill bit and rotate it. The drill bit mills through the rock until it reaches the reservoirs. Drilling with drill pipes is the first phase of any drilling operation.

Lining with casings

The outer pipes that line the borehole are called casings or liners. They protect the soil and especially the groundwater layers from contamination by rock fragments or drilling fluids. They also stabilize the borehole, which is why casings have to withstand particularly high strains.

Tubings

The production tubings transport oil and gas from the depths of the well to the surface – the third phase of drilling. Sometimes oil and gas rise on their own, but pumps are usually needed to do this. Tubings, by their nature, have a smaller diameter than casings. The exception is an outside diameter of 114.3 mm (4 ½ inches). This is considered the limit and can apply to both tubings and casings. Anything below this is referred to as tubing, and anything above is referred to as casing.

From the surface toward the source, casings or lining tubes become telescopically smaller. Depending on their use and diameter, there are different types of casings. The "kickoff point" is the point from which the bore gradually becomes horizontal. Thanks to this directional drilling ("horizontal drilling"), deposits can be reached in a more targeted manner. Finally, the drill string is removed and the production casing is inserted and cemented into the borehole. After hydraulic treatment, the production pipe (tubing) is installed in the production pipe.

BUHLMANN Know how

BUHLMANN Head of Sales North & East, Torsten Cordes, and Sales Manager Alf Schmeichel agree that geothermal heat is decisive in the energy transition. Extracted on site and fed into existing heating networks, geothermal heat is CO_2-neutral and provides reliable warmth around the clock, all year round. "It offers the opportunity to make the local heat supply less dependent on geopolitical risks and volatile world market prices."

Heat generated from geothermal energy is available 365 days a year, is independent of weather conditions and time of year or day and is therefore base-load capable. "At BUHLMANN, we attach great importance to the field of geothermal energy."

Text: Gabriele Wiesenhavern

BIOMASS AS ENERGY SOURCE

Alternative power for France

France and its energy policy frequently made the news within the last year – almost always in reference to the fact that power plants weren't running. At the height of the nuclear slack last summer, the state-controlled energy company EDF had to do without 32 of France's 56 reactors, more than half. EDF had to temporarily shut down some of them to check pipes in the emergency cooling system for cracks. In addition, more reactors than usual were shut down for routine maintenance. During the lockdown phases in the pandemic, repair work had been postponed; now it overlapped with the corrosion problems. Since the country relies almost exclusively on nuclear power for its electricity supply, the French fear that they are in for a very harsh winter in view of the energy crisis – most of the heating in France runs on electricity. Renewable energies have hardly played a role so far: France is considered to be at the bottom of the European league when it comes to tapping regenerative sources. This is precisely why a project that relies on renewable energy on a large scale is of interest: The GVE biomass power plant currently under construction in Golbey, France.

BUHLMANN supplies AET

The GVE biomass boiler will be the largest cogeneration plant of its kind in France. BUHLMANN is involved in the construction: Nicole Herbort and Stefan Knuth from the department Export West have been commissioned by the Danish engineering company Aalborg Energie Technik (AET) to supply stainless steel tubes in TP3210HCbN and Alloy 28 as well as alloyed carbon steel tubes. Nicole Herbort explains that Denmark has been a pioneer and world leader in the field of renewable energy for many years, particularly in the development of technologies and processes for the pre-treatment and processing of biomass. Even though it is not the first cooperation, Nicole Herbort finds this order particularly exciting: "Due to the large order volume, close cooperation with all involved departments as well as the management is necessary."

The goal is to commission the plant in Golbey in September 2024. The advised output of more than 200 gigawatt hours of electricity and more than 700 gigawatt hours of renewable heat corresponds to the annual consumption of more than 13,000 households represents a saving of 210,000 tons of CO_2 per year. The GVE biomass boiler will use 230,000 tons of recycled wood and 20,000 tons of residues from Norske Skog Golbey's industrial processes annually.

Heating and Cooling

New ideas are needed in the energy sector, as upon signing the Kyoto Protocol, many countries committed themselves to reducing consumption and pollutant emissions. A combination of heat pump and biomass boiler brings advantages, as heat pumps can not only produce heat, but also provide cooling. If the pumps are operated electrically, there are CO_2 emissions. If biomass is used instead, heat serves as the driving energy. Heat pumps with biomass boilers therefore operate largely in a CO_2-neutral manner. These so-called absorption heat pumps (AWP) can use natural refrigerants such as ammonia and water for cooling, which are more environmentally friendly than the fluorinated hydrocarbons used in compression chillers.

What counts as biomass?

In regard to energy, the term includes animal and plant products that can be used to produce heating and electrical energy or as fuels. In this context, the energy-related biomass term is narrower than the biological one: first, it refers exclusively to animal and plant matter, but not to microbial matter. Secondly, within animal and plant materials, it only includes those that can be utilized for energy purposes.

Text: Gabriele Wiesenhavern

HYDROGEN ECONOMY IN NORTHERN GERMANY

Hydrogen Plant with five storage tanks

Europe's leading trade fair for hydrogen technologies, materials, components and technical solutions took place in Bremen in October. A total of 400 exhibitors, 6,500 visitors as well as five conference areas with over 185 keynote speakers met at the Bremen exhibition center. Almost a home game for the Sales North department around Torsten Cordes and Michéle Ludwig, who represented the BUHLMANN Group with several employees at the conference.

BGLOBAL // Was the Hydrogen Expo Europe a general orientation about hydrogen topics, or were specific projects named and discussed?

Michéle Ludwig // *The conference revolved around the production, efficient storage and distribution of hydrogen and the goal of a carbon-free economy. Numerous national and international exhibitors presented their products and ambitions. With the energy transition, the hydrogen economy is taking a rapid development, so it was very important to appear at the fair as a premium trading company and to get in contact with potential customers and present our company, our possibilities and services. Of course, concrete projects depend on many factors, not least political decisions.*

Some news and discussions lead to the feeling that hydrogen is already fully operational as an energy carrier. But that's not true, because a great part of the infrastructure is yet to be built. What is the status here?

Torsten Cordes // *The infrastructure to support the development of a hydrogen supply chain is of course crucial. The expected expansion of hydrogen use goes hand in hand with a high investment requirement for hydrogen storage and transport pipelines. Transporting larger quantities of hydrogen via pipelines was part of the presentations and discussions at the conference – there are special requirements for the material due to the corrosiveness of hydrogen. The technical suitability of storage facilities and pipelines is a key issue to ensure that hydrogen can be used economically on an ever larger scale. The exchange with manufacturers represented at the trade fair and their experiences is enormously important for our H_2-suitable product portfolio.*

From right to left: Torsten Cordes, Michéle Ludwig and Bennet Meier in front of the BUHLMANN booth. Also present but not in the photo: Sales Manager Hendrik Wülbers.

What is the "Clean Hydrogen Coastline"?

Michéle Ludwig // *With the Clean Hydrogen Coastline project, industry partners in the Northwest are striving for market-relevant integration and scaling of hydrogen technology in the German and European energy system. Clean Hydrogen Coastline is a network of partners along the entire hydrogen industry value chain. By 2026, the companies aim to specifically integrate up to 400 megawatts of electrolysis capacity with corresponding storage of hydrogen into the energy system. Geert Tjarks from EWE's Hydrogen Business Unit gave a presentation on this and outlined the conditions for creating a "backbone" that includes the Netherlands, Lower Saxony, Bremen, and Hamburg.*

Why does northern Germany play such a big part?

Torsten Cordes // *Hydrogen production needs large amounts of electricity for electrolysis – preferably from renewable energies, in order to be sustainable. Northwest Europe has enormous wind power capacities offshore and onshore. Of the total of 62 hydrogen projects in Germany, 27 are located in northern Germany alone. It is also important that the existing main gas network extends directly from the North Sea coast down to North Rhine-Westphalia and has direct connections to major refinery customers. As a stockholding trader and service provider, we would like to participate in the market, for example regarding hydrogen storage in horizontal pipes and transport pipelines that have to be renewed or replaced.*

Questions by Gabriele Wiesenhavern

As a stockholding trader and service provider, we would like to participate in the market

BOOSTING RECRUITMENT SUCCESS

NEW APPLICATION MANAGEMENT

A shortage of skilled workers, demographic change, and an increased willingness to change positions pose enormous challenges for companies in Germany. In July 2022, almost 50% of companies in Germany were affected by the shortage of skilled workers.*

The human resources department at BUHLMANN is also feeling the effects of the developments of the past years. To be able to successfully skim the market for new employees and apprentices, a new applicant portal was installed at the beginning of 2022.

"Until now, applicants could apply to BUHLMANN in the classic way via e-mail. But as a growing company, we realized that applicants as well as our department would benefit from an applicant management system. Right from the start, our goal was to find a possibility to make applying quick and easy. We wanted a clear, efficient system that would make our operational recruiting work easier," says Laura Schweers, HR Manager at BUHLMANN.

What matters most:
There are many software solutions on the market. For HR departments looking to introduce new software, Schweers highlights four factors that she paid particular attention to during the selection process:


Laura Schweers

1. User Experience
A simple, intuitive user interface is a key feature. Once someone has landed in the applicant portal via a job ad or the company's career site, they should only have to think about the content of their own application – not about how to submit it. The design should be responsive, i.e., it should work on a laptop, smartphone or tablet.

2. Corporate Identity
Even if you technically leave the company website for the application process, you shouldn't notice it. A consistent look and seamless interfaces ensure that users can quickly find their way around, regardless of whether they are browsing the careers page, open positions or job ads on other portals. This also strengthens employer branding.

3. Multiposting
Another important efficiency issue: creation of the open position with one click and then posting it directly to various job boards – a feature that will appeal to any recruiter.

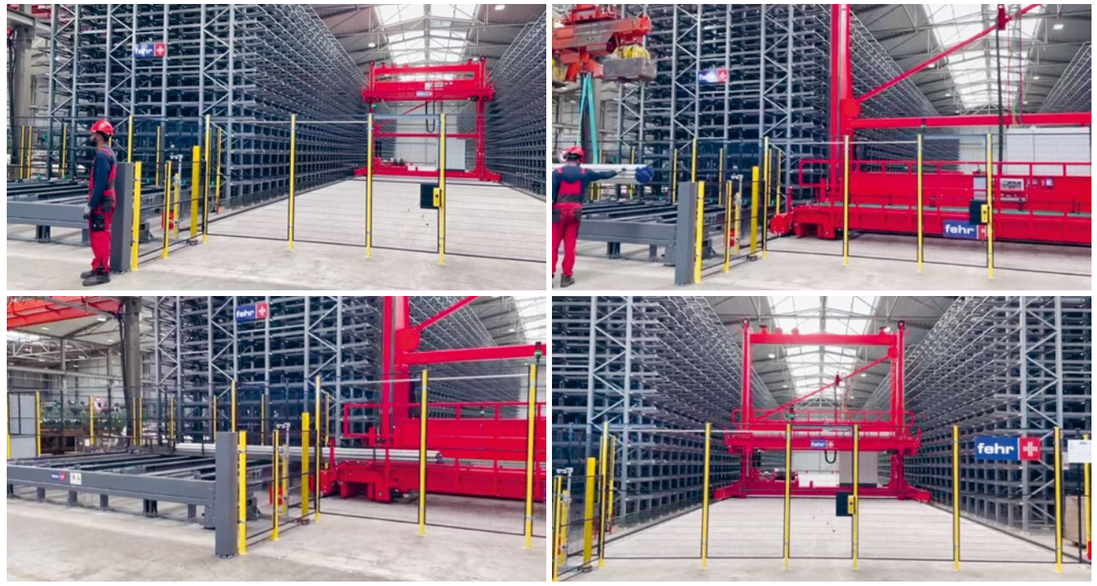
4. Internal communication
Here, too, it's all about efficiency: sending the department the newly received applications, coordinating meetings, sorting and filing documents – all this costs valuable time. A system that links applicants, the HR department and the specialist department on a job-specific basis speeds up the recruiting process through automation.

Ultimately, Schweers sums up the benefits of the new BUHLMANN applicant management system as follows: "We cannot solve the shortage of skilled workers, but we can ensure that applicants feel they are being well received directly at BUHLMANN: through a professional look, a fast and functioning system and, last but not least, our fast response time. Because there's one thing that we HR managers all know for sure by now and that's that good candidates are snapped up quickly."

*source: ifo Institute, Text: Aylin Krieger

The new BUHLMANN applicant portal successfully went live in November 2022. Feel free to take a look around!

WIDER, HIGHER, FASTER: AUTOMATED PIPE STORAGE



Almost like a Borg Cube from a Star Trek movie: the new automated pipe storage system is now in operation.

With an impressive length of 73 meters, a width of 23 meters and a height of over seven meters, the gigantic steel mesh in Duisburg's warehouse 6 would make a perfect backdrop for science fiction films. The new automated tube storage system has been in operation since October 2022 and will ensure that order picking in the world's largest BUHLMANN warehouse will be accelerated many times over in the future.

A total of 2,360 cassettes house the unalloyed, alloyed and stainless-steel pipes with lengths of up to seven meters and diameters of up to 168 mm. The stacker crane moves them in and out of the warehouse, which was planned and built with the company Fehr over the past year and a half. The automation of the periphery of the ARL with additional services such as sawing, color marking, special packaging and capping will be finalized in the coming months.

"The optimization of order picking, especially for the smaller pipes, and thus being able to meet customer requests much faster was one reason for building the ARL. The second was to ensure optimal use of the storage space and height," says Chief Technical Officer and Managing Director Dr. Christian Baum, who sees the project as a milestone for the company – also in terms of our commitment to drive forward automation and digitalization. Preparation, construction and connection to the merchandise management system were a tour de force in Corona times: "The rapid implementation within a year is a small miracle in view of the pandemic as well as the pronounced supply bottlenecks for electronic components," finds Christian Baum.

Head of Warehouse Michael Thölken is also pleased to have mastered the challenges surrounding the construction. "Creating space in the halls and relocating the tubes was the first step – of course, we had to remain operational and able to deliver despite this mammoth logistical task. It took 120 trucks alone to transport away the excavated soil for the ARL's subsoil and to place concrete for the new subsoil. Saws, cranes – everything had to be regrouped." In order to master the effort, project manager Johanna Theisen joined the team about a year and a half ago: "After the ground preparation, the huge facility was constructed in just six months. Overall, the speedy implementation of the project speaks for the good cooperation between all those involved."

Text: Gabriele Wiesenhavern

INTERVIEW WITH MAX-PLANCK EXPERTS

RESEARCH ON SUPERALLOYS

The aim of CO 2 reduction in the production of materials has a profound impact on the steel trade. As supplier of the energy sector, we aim to keep up to date with the latest scientific developments. Dr. Souza Filho and Dr. Yan Ma from the research group "Sustainable Synthesis of Materials" at the Max-Planck-Institut für Eisenforschung took the time to talk about their current work.

GLOBAL // Please explain your field of research to those of us who aren't scientists …

Dr. Ma, Dr. Souza Filho // *Our research lies in the fundamental aspects of the field of sustainable metallurgy and materials, with a special focus on a basic understanding of physical and chemical mechanisms in the new metallurgical processes.*

The research focuses on new and different materials?

The group is also concerned with the effectiveness and technological readiness level (TRL) of individual measures in Sustainable Metallurgy. We work on novel materials that enable improved energy efficiency through their reduced mass, higher thermal stability, and better mechanical properties than currently available alloys.

What are these novel materials? What are they made of and how are they manufactured?

The novel materials include advanced performance metallic materials for both structural and functional applications, e.g., advanced high-strength steels, high-strength aluminum alloys, nickel-based superalloys, and compositionally complex alloys; mixing of multiple components rather than having only one major element. So far, they are under laboratory-scale development and testing.

When will they be market-ready?

Before they can enter the markets, different properties have to be evaluated. To be honest, we do not have the answer to when they will be market-ready from a commercial point of view. That depends on massive investments to educate highly qualified scientists to first develop, characterize and understand these materials, which are necessary for further scaling up.

Can you give an example of your current work?

Let's take the example of synthesizing sustainable iron: in our group, we have been extensively exploiting alternative synthesis routes, which include the hydrogen-based direct reduction and hydrogen plasma reduction process variants. In such cases, we expose the iron ore to hydrogen gas and hydrogen plasma, respectively, to fully convert the oxide into metallic iron. In the first process, all transformations occur in the solid state. The second one allows for processing the material in the liquid state. In both processes, no direct CO_2 emissions occur and the by-product is non-harmful water.

Green Hydrogen is a big issue in terms of sustainability. The corrosiveness of the gas is a problem for metals – what are the perfect properties of suitable metal pipes, what does H_2-ready metal really need?

An important property of metals is the resistance to hydrogen embrittlement whilst at the same time possessing high strength and good toughness. Because hydrogen atoms are very small and diffuse easily inside the materials, research has shown that the accumulation of hydrogen at crystal defects in materials can embrittle them and lead to premature failure and catastrophic disasters.

I also found references to metal recycling on your website. Especially with the difficult sourcing of materials due to the war in Ukraine and Chinese lockdowns, shouldn't we pay more attention to the recycling of metals and alloy materials? How can the ratio of reusable material be improved?

Indeed, we need to recycle materials, as the recycling routes normally require significantly less energy compared with primary synthesis processes, which can drastically reduce CO_2 emissions. The major challenge in this field is the impurity inherited in scraps. We need to either have a more efficient way to separate scraps or design new alloys with a high tolerance of impurity elements.

Questions by Gabriele Wiesenhavern

Dr.-Ing. Yan Ma

Dr. Isnaldi R. Souza Filho

MAX PLANCK INSTITUTE FOR EISENFORSCHUNG (IRON RESEARCH)

The Max Planck Institute for Eisenforschung (Iron Research) in Düsseldorf is entirely dedicated to the one material. Two scientists from the department "Microstructure Physics and Alloy Design" were available for an interview about their work:

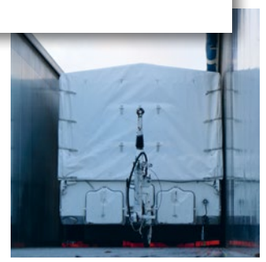
Dr. Isnaldi R. Souza Filho is a physicist and group leader in the department. His research focuses on sustainable synthesis of materials. Dr. Yan Ma is also a group leader and research associate. Both are investigating the fundamentals of the relationships between fabrication, microstructure and the resulting properties of often complex nanostructured materials. The focus is on metallic alloys such as aluminum, titanium, steels, high and medium entropy alloys, superalloys, magnesium, magnetic and thermoelectric alloys. Simulations and characterization methods from the atomic level to the macroscopic scale are used to study the microstructures and material properties in depth.

NEWS FROM OUR UKRAINE AID

A field kitchen is loaded onto a truck

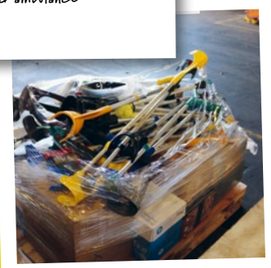
Loading of goods donated by BUHLMANN in Bremen

Fully equipped ambulance



Field kitchen on the truck

A wheelchair is among the donations



Crutches donated by BUHLMANN employees

Crowd gathering at the Robota booth in Bremen

Hotel and restaurant association members Detlef Pauls and Guido Zöllick in Berlin

The Robota job fair team in Bremen

Bilingual Robota flyers distributed at the job fair

Right from the start of the terrible Russian aggression, supporting the Ukraine has had top priority for the BUHLMANN GROUP. Our aid is based on three pillars. Here's what's been happening during the last months.

1st pillar: Aid deliveries
Our employees at the major sites continue to collect internally what is missing in the war zones: hygiene articles, food, medical goods such as crutches and more. "We are in constant exchange with our contacts on location and are therefore up to date on what is currently needed," says Ronald Speidel, Director Corporate Business Division. "At the beginning of fall, we started collecting winter clothing, which will also be transported to Ukraine," he adds. The majority of the 19 aid shipments that have arrived in Ukraine were financed by the company with purchased relief supplies. Our contacts have requests for specific supplies, such as sleeping bags, insulated mats, flashlights, protective vests, bandages and more. "We are currently able to send a relief transport to Ukraine approximately every two weeks," says Ronald Speidel. BUHLMANN also succeeded in bringing a field kitchen and an urgently needed ambulance into the country. The ambulance was purchased by BUHLMANN and refurbished and stocked by the Johanniter Bremen (an aid organization of the Order of St. John) so that it is now fully operational in the Ukraine and can hopefully save lives.

Stiftung SOLIDARITÄT UKRAINE

2nd pillar: Foundation Solidarity Ukraine
Solidarity Ukraine, which was founded in cooperation with HANSA-FLEX, continues to raise funds to support civil reconstruction in Ukraine after the war. For Christmas, BUHLMANN has donated thousands of bags to the foundation which were filled by children and their parents in schools and kindergardens in Bremen to bring some joy to Ukrainian kids. Small gifts, sweets and personal greetings will now be distributed to orphanages or families near the frontlines. A little ray of hope, true to the motto printed on the bags: "Christmas is when someone lovingly thinks of you."

Robota Germany

3rd pillar: Job exchange Robota
In mid-August, the Bremen Employment Agency hosted a job fair for refugees. Robota Germany was also present. Ronald Speidel commented: "The interest in the fair and at the Robota booth was very high, the number of visitors was even higher than at normal job fairs." In order to be approachable for companies and refugees, multilingual staff was on site and promoted the job platform. "We want to help Ukrainian refugees and find them a job here in Germany. The more companies register and the more the platform is promoted, the better we can support refugees," explains Ronald Speidel.

Text: Malte Addiks

You too can help and register your company free of charge: www.robota-germany.com

PASTOR HAMBURG'S LONG TRIP

At the end of October, Andreas Hamburg, pastor of the St.-Markus Chruch in Bremen and member of the board of trustees of the of the Solidarity Ukraine Foundation, personally got behind the wheel of the ambulance donated by BUHLMANN to drive the vehicle to Ukraine.

He did not travel alone, but drove in a convoy with one of the aid transports organized by BUHLMANN, which, among other things, brought a field kitchen to the country. "I wanted to go to Ukraine in person, because I wanted to meet people there and see for myself, where our humanitarian aid is going. It was important for me to talk to those who were prisoners of war as well as those whose villages were bombed and destroyed."

Pastor Andreas Hamburg was born in the Ukraine and came to Germany in his early 20ies. He studied here and now lives in Bremen with his family. He has mixed feelings about the trip to his old home: "On the one hand, it gives me hope and I admire how the people are fighting. On the other hand, I feel sadness and horror, because I have heard many cruel stories from the residents. It's hard to personally see my former home attacked and destroyed."

Even though Ukraine is part of Europe, the journey was a long one: 14 hours to the Polish-Ukrainian border and, after a short overnight break in a hotel, another four hours to Ivano-Frankivsk where Andreas Hamburg handed over the vehicle. The ambulance, which was equipped by Bremen's Johanniter Service (Order of St. John) with all the necessary equipment before departure, will now be used to bring wounded soldiers from the combat zones to quieter and safer areas for treatment.

The return trip by train and bus took nearly 30 hours. No problem for Andreas Hamburg: "I am glad to have done this, because it gives me hope and motivates me to keep drawing attention and further aid to the Ukraine."

Text: Vincent Hamburg

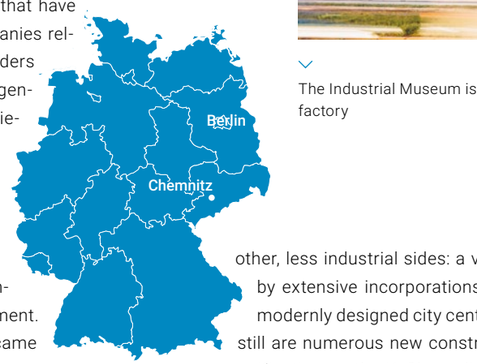
BUHLMANN SITES FROM A DIFFERENT PERSPECTIVE: A VISIT TO CHEMNITZ

CHEMISTRY, CHARME AND CULTURE

For more than 30 years, BUHLMANN has had a home in Chemnitz. The city in eastern Germany is located in the immediate vicinity of the well-known Erzgebirge mountains. Once a classic industrial city with a focus on plant and mechanical engineering, Chemnitz is now close to important chemical sites.

Alexander Wilhelm

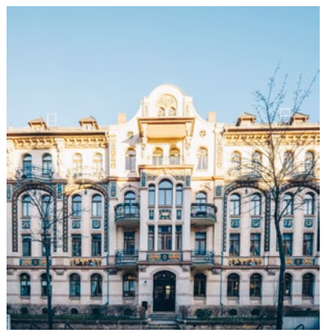
Alexander Wilhelm, Sales Manager at the site, comments: “To the north are the cities of Leuna and Bitterfeld with companies such as BASF, Linde, Total and DOW Chemicals. The Leuna chemical site alone is home to 40 companies on more than 1,300 hectares, with correspondingly large plants and several thousand kilometers of piping.” The same applies to the Bitterfeld-Wolfen Chemical Park. But the orthographic similarity of the city’s name to industry is just a coincidence: Chemnitz is the name of the river that meanders through the city, and it is a mere 50 meters from the site. Here, seven employees and one trainee work for BUHLMANN customers in the southern new German states. In addition to companies from the chemical industry, these primarily include power plant construction or its maintenance, which is why the team bears the name “Energy”, as well as the construction of pipelines. There are also relevant customers in the immediate vicinity, also from the industries that have strongly shaped Chemnitz. Among them are companies relevant to the world market, such as the machine builders Starrag with its Heckert plant, Niles-Simmons-Hegenscheidt or Union Werkzeugmaschinen, and also Siemens, VW-Motorenwerk and Chemieanlagenbau Chemnitz.



Once the wealthiest city in Germany

The city’s development began during the late Middle Ages with textile production, which made Chemnitz an important center of trade and transshipment. Mechanical engineering was added: Chemnitz became an industrial stronghold, soon after a major city and even the richest city in Germany at the beginning of the 20th century. The economic success continued to grow, but was halted by the world economic crisis and the Second World War. In GDR times, the city lost its name and was renamed Karl-Marx-Stadt (Karl Marx City), a fact that the huge bust of the city’s namesake in the city center still bears witness to. Economic development has also left its mark on the city in the long term: “Chemnitz has an industrial charm that doesn’t appeal to everyone. Dresden is more the place for beauty,” says Alexander Wilhelm. But Chemnitz also has other, less industrial sides: a village character, created by extensive incorporations of nearby hamlets, the modernly designed city center, where there were and still are numerous new construction projects after reunification, or the Kaßberg district with its impressive architecture as one of the largest Art Nouveau and Wilhelminian style districts in Europe.

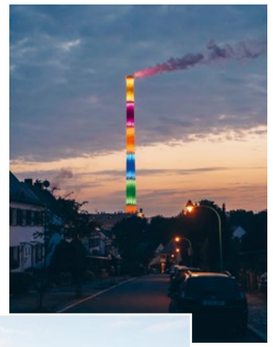
Between the many buildings in and around the city however, Chemnitz has a lot of green. “We are here in a scenically impressive region, not only because of the nearby Erzgebirge Mountains. Many forests and diversified nature invite you to go hiking or on a tour on two wheels,” says Alexander Wilhelm. “We also have a disproportionately large amount of greenery in the city itself. For example, there is a large park area with a castle pond right by our site,” he adds.

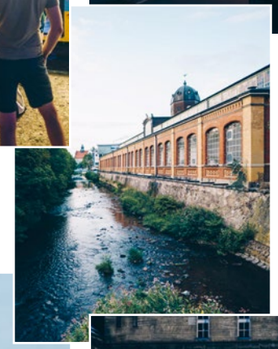


The Kaßberg Quarter with its unique architecture

The Industrial Museum is situated in a former tool factory

Relaxing in the city center





In the heart of the continent

Movie nights in Chemnitz are a favorite pasttime

Chemnitz is proud to be Europe’s Cultural Capitol in 2025

In the focus of Europe

But a major highlight is still to come: in 2025, Chemnitz will be the European Capital of Culture. Signs in the cityscape are already pointing out events, and plans are being developed to light up the cultural map of Europe in a few years. According to the motto “C the Unseen”, undiscovered places are to be brought to life and the invisible made visible. Chemnitz’ cultural landscape already has a lot to offer: Theater, opera house, art-house cinemas, the Chemnitz Art Collections, the State Museum of Archaeology, Klaffenbach Moated Castle and, of course, the Industrial Museum. So the city offers a wide range of leisure activities. But what does the Chemnitz native himself recommend to guests of the city? “Anyone who is here in the summer should take advantage of the impressive backdrop of the Chemnitz Film Nights on Theaterplatz with its varied film offerings,” says Alexander Wilhelm. He also recommends the Hat Festival, a street art event that attracts quite a few visitors to the city center every spring.

So, Chemnitz is more than the famous Karl Marx bust in the city center and its industrial character. It is a city that is always changing and daring to tread new paths – a city that is definitely worth a visit.

Text: Malte Addiks

DISCOVERY AND USE OF GEOTHERMAL ENERGY

13th century

At the beginning of the 13th century, the Italian poet Dante Alighieri visits the "Valley of the Devil" in Tuscany and describes the "vapor that the earth has in its belly" – a few years later his epic "Inferno" is published, which describes Dante's journey through hell.

1827

Francois Jacques Larderel builds a boiler heating system at Lardarello in Tuscany

1913

Building of the first geothermal power plant for electricity generation in Tuscany

1920

Iceland begins to use thermal energy for greenhouses

1930

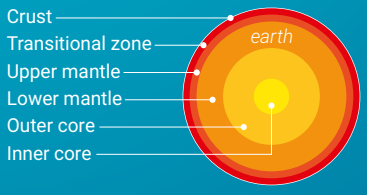
Reykjavik begins to heat entire city districts with hot water from the depths of the earth

1960s

Hot water reserves found in the Paris Basin are used to heat housing estates in the city of Paris. In Hungary, greenhouses are heated with hot water from the deep

1970s

The oil crisis brings geothermal energy into focus as an energy source. By the 1980s, geographic mapping in Europe had been completed to the point where promising areas for geothermal energy use could be identified.



1982

the first successful test series for extraction and re-injection started in Waren an der Müritz – the birth of modern deep geothermal energy in Germany.

1984

Commissioning of the first geothermal heating plant in Waren an der Müritz

1990er

The knowledge gained from plant operation in regions of southern and northeastern Germany and the accompanying research work, as well as improvements in turbine technology, led among other things to the conclusion that thermal water resources could also be used to generate electricity, at least in some regions.

2001

This resulted in the first pilot project, the ORC (Organic Rankine Cycle) power plant in Altheim/Upper Austria. ORC turbines can be used at temperatures as low as 100 °C and opened up new prospects for geothermal energy outside the classic (volcanically bound) regions.